Characteristics of Taxi Crashes in New South Wales

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ABSTRACT

While the taxi industry is highly regulated, the public perception of taxi drivers can be quite negative. Taxi drivers are often considered to be dangerous drivers, flaunting the road rules and taking unnecessary risks. If they do in fact drive less safely, then in addition to their own wellbeing, taxi drivers place their passengers, pedestrians, and other road users at risk as well. Risky driving may also arise from the challenges taxi drivers face while driving that many other drivers do not have to contend with, including long hours in their vehicles, and pressure from clients to make trips as quickly (and cheaply) as possible.

Crash patterns of taxis were compared to those of cars registered as fleet vehicles and non-fleet vehicles. Analyses were conducted for crash-related variables, driver-related variables, and behaviour-related variables. One of the principal findings was that the crash rates for taxis were higher than for other cars, but those crashes were less likely to be fatal. Additionally, crashed taxis were less likely to have been travelling at excessive speed at the time of the crash, and the crashed taxi driver was less likely to have been fatigued. However, of particular concern was that crashed taxi drivers were significantly less likely to have been wearing a seatbelt at the time of the crash. As taxis are workplaces, the results have implications for occupational health and safety as well as road safety.

Keywords: fleet safety, taxis, seatbelts, speed, fatigue, drink driving

INTRODUCTION

Taxis are an important element of the transport system, providing potential environmental and safety benefits for both urban and rural areas. The availability of a (convenient and efficient) taxi service should act to reduce the number of cars on the road in urban areas and the resources and space allocated for car parking – both environmental benefits. An average taxi trip in metropolitan Sydney transports 1.8 passengers and costs $16 for a journey of 7 km (Australian Taxi Industry Association - ATIA, 2004).

Injuries and fatalities that arise from crashes that involve drink-driving or drink-walking should also be reduced if drinkers heed the long-standing advice of a number of public health campaigns to catch a taxi home. In addition, taxis in New South Wales are required to be no older than 6_ years (ATIA, 2004). This should deliver further environmental and safety benefits, as the average age of the registered vehicle fleet in NSW is 9 years old (Australian Bureau of Statistics, 2004a), and more modern vehicles are generally safer and more fuel efficient than older vehicles. However, leaving aside patronage levels and encouraging taxi use by the travelling public, taxi travel will only realise the full potential of these benefits if it actually is as safe or safer to travel in a taxi compared with using one's own vehicle.

Australia's taxi industry is highly regulated, with state-based authorities setting the requirements for entry and controlling the number of taxi licences available, dictating quality criteria, particularly in relation to drivers, and controlling fares and/or fare setting procedures (Soon, 1999). Despite high levels of official scrutiny, the stereotype of a taxi driver, often confirmed by media reports of the "bad apples", is a view that can include regularly flouting the road rules and taking risks, a lack of city and route knowledge, and an underlying untrustworthiness and suspicion that the driver may attempt to maximise the fare for each trip. These negative stereotypes, however, are not necessarily supported by research. For example, Bruce and Jessod (2003) surveyed 1,347 users of taxis nationally, including 702 from NSW (200 in inner Sydney, 102 in outer Sydney, and 400 from rural areas). In NSW, between 70% and 84% of respondents rated their overall experience of their most recent use of the taxi service quite highly, with either a score of 4 or 5 out of 5.

Bruce and Jessod (2003) also asked their survey respondents about two aspects of their taxi use experience that the authors considered to relate to passenger safety – "Vehicle condition" and "Driving skills". Averaging across NSW respondents and across these two elements, 82% of respondents rated their experience as 4 or 5 out of 5, although the Sydney metropolitan area respondents gave a combined score of 73%, 11% lower than any other state's scores. However, these scores represent *perceived* safety rather than actual safety. Due to the significant distances taxis travel – the average annual mileage for a NSW taxi is around 175,000 km (ATIA, 2004), compared with 15,700 km annually for all registered vehicles in NSW (Australian Bureau of Statistics, 2004b) – most taxi drivers are likely to have a higher exposure to risk than other drivers. As the taxi, and the road, are the workplace of the taxi driver, road safety and occupational health and safety considerations overlap. In addition, their driving behaviour directly impacts the safety of the 174 million passengers they transport each year (ATIA, 2004) as well as that of other road users.

This study provides an examination of the safety of the NSW taxi system by examining the crash records of taxis that have been involved in a crash and making comparisons between these work-related vehicles, other fleet vehicles and non-fleet vehicles.

DATA

A number of data sources are often used to examine work-related crashes, each with its disadvantages. One such source is insurance claims data (e.g., Haworth, Senserrick, Watson, & Symmons, 2003), where a significant difficulty can arise in separating injury crashes from property damage only crashes, such as low-speed incidents within car parks. Surveys of targeted organizations are the other predominant source of data (e.g., Broughton, Baughan, Pearce, Smith & Buckle, 2003), but such studies are usually based on relatively small sample sizes, often involving only one or two large organizations. While surveys can potentially capture crashes of all severities, including minor car park incidents, they generally require time frames long enough to capture a useful number of crashes, where further problems can arise due to a reliance on the drivers' memory and their honesty in reporting crashes (particularly if they are concerned that their employer might find out).

Mass crash data, such as that collected in most Australian states, generally does not include variables such as whether the crashed vehicle was a commercial or work vehicle, or whether it was being used for work purposes at the time of the crash. Where such information is collected, it is generally unreliable. For example, Queensland's Police crash report form asks

whether a commercial vehicle was involved in the incident, but this data is likely to be incomplete if the vehicle is a car that does not have obvious signage (Newnam, Watson, & Murray, 2002).

A further approach is a linkage of data sets, a potentially rich source of hitherto unavailable data. Two separate but potentially complementary studies using New South Wales data have recently been conducted. The current study relates to the linkage between the NSW mass crash data and the vehicle registration data for NSW. In contrast, Boufous and Williamson (2005) used a linkage between worker's compensation claims data and that state's Police-collected road crash data, cross-matching using variables including the name and address of the injured worker and the date of the crash. As Boufous and Williamson do not report statistics specifically for taxi crashes no further comparisons between the studies will be made. The two approaches and their resultant findings will be compared in a future publication.

The current dataset covers the period 1996 to 2000 (inclusive), and the linkage was made using the vehicle's registration number, which was present in both the registration and crash databases. The registered keeper of the vehicle was the organization or individual on record within the six months immediately preceding the crash (a particular vehicle could therefore appear more than once in the crash database and be registered to different keepers). The crash data contains each crash reported to Police in NSW, and each crash is classified as involving a fatality, an injury or no injury (a towaway crash). The data was supplied to MUARC post-matched and de-identified. According to the New South Wales Roads and Traffic Authority, the matching process was successful for more than 94% of all crashed NSW-registered vehicles (see Symmons & Haworth (2005) for further details on the matching process and a more in-depth description of the data set).

The primary reason for linking the crash and registrations databases was that the latter included whether the vehicle was registered to a "fleet owner". Fleet owners included organizations or individuals with one or more business registrations, and organizations with more than two private registrations (vehicles registered to car dealers and rental companies were classed as non-fleet vehicles). Further, the registration database records the total number of vehicles registered to each keeper, resulting in a "fleet size" variable.

Two variables included in the file and analysed here in relation to taxi crashes concern whether the vehicle was thought to be speeding at the time of the crash and whether the crashed driver was considered to be fatigued, where those factors were determined to have contributed to the crash. According to the RTA guidelines, speeding is judged to have contributed to a crash if

- The controller (driver or rider) was charged with a speeding offence, or
- The vehicle was described by police as travelling at an excessive speed, or
- The stated speed of the vehicle was in excess of the speed limit.

Additionally, if the vehicle jack-knifed, skidded, slid, went out of control or ran off the road on a bend then speed was considered to be a factor. Thus, speeding refers to an excessive speed for the prevailing conditions rather than necessarily exceeding the posted speed limit, and so could be noted for any speed limit zone.

As specified by RTA guidelines, fatigue is judged to have contributed to the crash if the vehicle's controller was described by police as being asleep, drowsy or fatigued. Fatigue was also a factor if the vehicle was involved in a head-on crash while travelling on the wrong side

of the road (but was not overtaking and there were no other relevant mitigating circumstances), or the vehicle ran off the road (a straight section or the outside of a curve) but the vehicle was not considered to be travelling at an excessive speed.

Rather than only presenting the statistics for taxis involved in crashes in NSW, to put the numbers in context they will be compared with crashes involving fleet cars in general and cars registered to private owners. According to the registration database, in June 2000 5,783 vehicles were classed as taxis. This number comprised 5,653 fleet taxis (0.7% of all registered fleet vehicles at that time), 14 non-fleet taxis, and 116 fleet stand-by taxis (there were no non-fleet standby taxis).

RESULTS

Number of taxis involved in crashes, type of crash, and crash severity

According to the crash database, in the period 1996 to 2000 (inclusive), a total of 7,549 taxis were involved in crashes in NSW. More than half of the crashed taxis were registered to fleets of three taxis or less, and three-quarters of crashed taxis belonged to fleets of 10 taxis or less (see Table 1). Unfortunately the data provided for these analyses do not enable a comparison between the crashed taxis as a function of fleet size, and the total number of registered taxis as a function of fleet size.

Table 1 Numbers of crashed taxis and percent of the total number of crashed taxis registered as part of various fleet sizes.

Fleet size	Frequency	Percent
1	1,317	17.4
2	1,788	23.2
3	897	11.6
4	532	6.9
5	312	4.0
6	235	3.0
7	135	1.8
8	132	1.7
9	123	1.6
10	123	1.6
11-15	390	5.1
16-20	255	3.3
21-30	312	4.0
31-40	115	1.5
41-50	70	.9
51-100	377	4.9
101-500	435	5.6
Total	7,549	100.0

Table 2 indicates that around 60% of crashes of taxis, fleet cars and non-fleet cars consisted of the same types of crashes, and the rank order of those crash types were the same for each vehicle type. Rear-end crashes were by far the most common type of crash. “Right through” and “right rear” crashes are both intersection-type crashes, while “right through” crashes

occur between vehicles traveling in opposing directions. The dataset as provided did not include sufficient data to analyse which vehicle may have been at fault in any of the crashes.

Table 2 Four most common types of crashes for taxis, fleet cars and non-fleet cars.

Crash type	Taxis		Fleet cars		Non-fleet cars		Total	
	No.	%	No.	%	No.	%	No.	%
Rear end	2,052	27%	16,245	30%	67,537	25%	85,834	26%
Cross traffic	1,237	16%	6,025	11%	31,794	12%	39,056	12%
Right through	985	13%	6,425	12%	35,879	13%	43,289	13%
Right near	354	5%	3,097	6%	17,393	6%	20,844	6%
Total	4,628	61%	31,792	56%	152,603	60%	189,023	57%

The severity of crashes involving taxis, fleet cars and non-fleet cars differed significantly ($\chi^2(4)=161.9$; $p<0.001$). Taxis were involved in relatively fewer fatalities, more injury and fewer towaway crashes than fleet and non-fleet cars (see Table 3).

Table 3 Numbers of taxis, fleet cars and non-fleet cars in crashes by crash severity.

Crash severity	Taxis		Fleet cars		Non-fleet cars		Total	
	No.	%	No.	%	No.	%	No.	%
Fatal	21	0.3%	268	0.5%	1,793	0.7%	2,082	0.6%
Injury	2,793	37.0%	16,854	31.5%	91,048	33.5%	110,695	33.3%
Towaway	4,735	62.7%	36,354	68.0%	179,030	65.9%	220,119	66.1%
Total	7,549	100%	53,476	100%	271,871	100%	332,896	100%

Table 4 contains the crash rates per 10,000 registered vehicles per year for each level of severity for the three vehicle categories. The overall crash rate for taxis is more than ten times that of fleet and non-fleet cars. The rates for injury and towaway crashes are about ten times higher for taxis than fleet and non-fleet cars. However, the lower average severity of taxi crashes means that the fatal crash rate for taxis is only five times that for fleet and non-fleet cars.

Table 4 Crash rates per 10,000 registered vehicles per year for taxis and fleet and non-fleet cars by crash severity.

Crash severity	Taxis	Fleet cars	Non-fleet cars	Total
Fatal	7.5	1.3	1.5	1.5
Injury	997.0	79.6	78.1	80.2
Towaway	1,690.2	171.7	153.5	159.5
Total	2,694.6	252.6	233.2	241.2

Crash rates were also calculated as a function of distance travelled (using the accepted standard of 100 million vehicle-kilometres per year). Taxi numbers and annual distance travelled were sourced from ATIA (2004), while the number of and annual distance travelled by cars in NSW were from the Australian Bureau of Statistics (ABS, 2004b). Note that the figures for "cars" would include both fleet and non-fleet cars as well as (car) taxis. There are no suitable statistics that could be used comparatively to distinguish the fleet and non-fleet travel in the "all-cars" figures. As Table 5 demonstrates, the all-car fatality crash rate is almost twice as large as that for taxis, but the taxi crash rates at the lesser severity levels of injury and towaway are around 1.4 and 1.2 times that for all-cars respectively.

Table 5 Crash rates per 100 million vehicle-kilometres travel per year for taxis and all cars in NSW.

Crash severity	Taxis	All cars
Fatal	0.4	0.7
Injury	52.3	37.6
Towaway	88.6	74.8
Total	141.2	113.1

Location and time of taxi-involved crashes

Most (91%) of the taxi crashes occurred in the Sydney Metropolitan area, compared with around three-quarters of fleet car crashes and 69% of non-fleet car crashes (see Table 6). Table 7 shows the crash severity patterns separately for Sydney and the non-metropolitan area. Taxi crashes were more severe outside Sydney, evidenced by a greater percentage of fatal and injury crashes outside Sydney, with a higher proportion of towaway crashes within Sydney. This pattern is repeated for non-fleet car crashes and all crashes overall, but is less clear for fleet car crashes.

Table 6 Numbers of taxis, fleet cars and non-fleet cars in crashes by location.

Area	Taxis		Fleet cars		Non-fleet cars		Total	
	No.	%	No.	%	No.	%	No.	%
Sydney	6,872	91%	40,393	76%	188191	69%	235,456	71%
Outside Sydney	677	9%	13,083	24%	83680	31%	97,440	29%
Total	7,549	100%	53,476	100%	271871	100%	332,896	100%

Table7 Numbers of taxis, fleet cars and non-fleet cars in crashes by crash severity and location.

Crash severity	Taxis		Fleet cars		Non-fleet cars		Total	
	No.	%	No.	%	No.	%	No.	%
				Sydney				
Fatal	16	0.2%	132	0.3%	829	0.4%	977	0.4%
Injury	2,463	35.8%	12,150	30.1%	59,254	31.5%	73,867	31.4%
Towaway	4,393	63.9%	28,111	69.6%	128,108	68.1%	160,612	68.2%
Total	6,872	100.0%	40,393	100.0%	188,191	100.0%	235,456	100.0%
				Outside Sydney				
Fatal	5	0.7%	136	1.0%	964	1.2%	1,105	1.1%
Injury	330	48.7%	4,704	36.0%	31,794	38.0%	36,828	37.8%
Towaway	342	50.5%	8,243	63.0%	50,922	60.9%	59,507	61.1%
Total	677	100.0%	13,083	100.0%	83,680	100.0%	97,440	100.0%

Taxi crashes were more evenly spread across the day with relatively more crashes at night and fewer during the day than fleet or non-fleet car crashes (see Figure 1). Taxis were also more likely to crash on weekends than either fleet or non-fleet cars (see Figure 2).

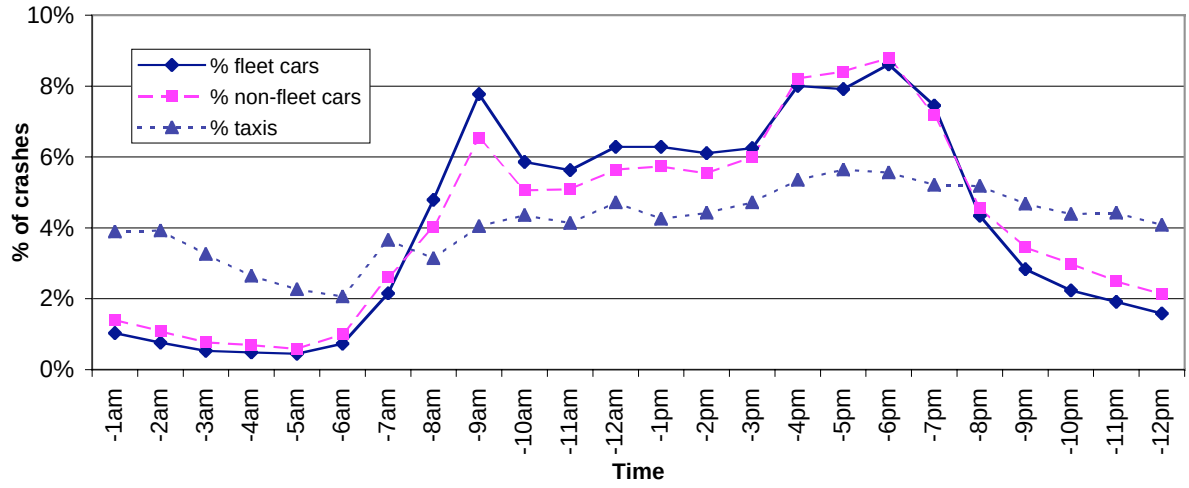

Figure 1 *Percent of taxis, fleet cars and non-fleet cars in crashes by time of day.*

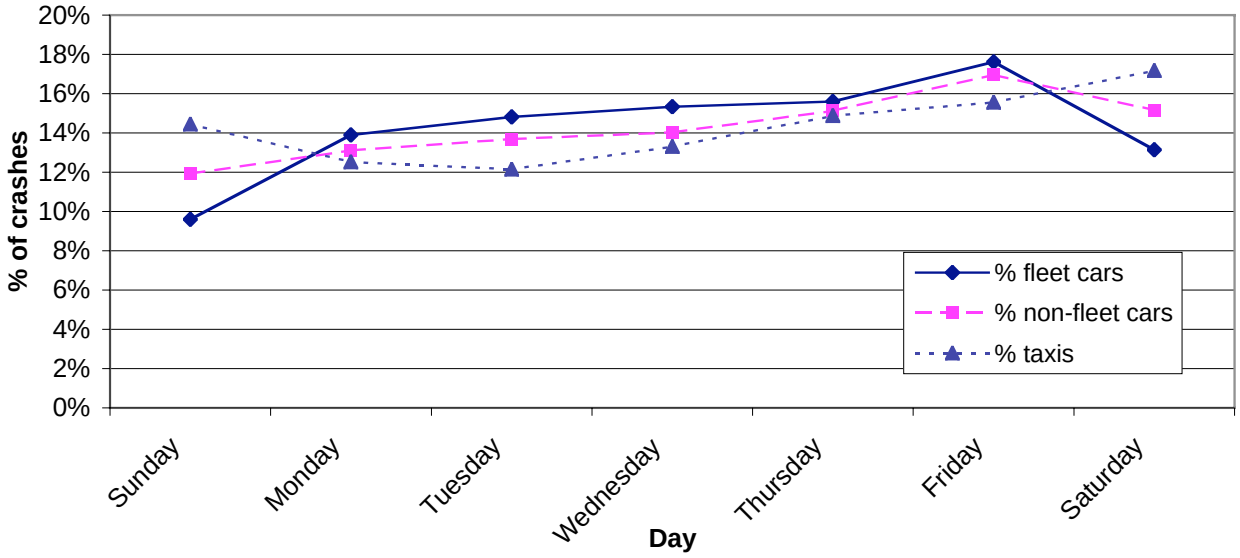

Figure 2 *Percent of taxis, fleet cars and non-fleet cars in crashes by day of the week.*

Driver characteristics

Taxi drivers in crashes were older than crashed fleet or non-fleet car drivers. On average, crashed taxi drivers were 46 years old (*SD*=20), while drivers of crashed fleet cars were 42 years old (*SD*=20), and drivers of crashed non-fleet cars were 40 years old (*SD*=22). A one-way ANOVA revealed that this difference was significant ($F(2, 332{,}740)=460$; $p<0.0001$). Post-hoc analyses indicated that each group was significantly different from each other group in terms of age. About 57% of taxi drivers were aged between 30 and 49, compared with only 45% of fleet car drivers and 32% of non-fleet car drivers (see Table 8). Only about 6% of crashed taxi drivers were aged 25 years or less, compared with 21% of fleet car drivers and 33% of non-fleet drivers. Almost all drivers of taxis were male (96%), while two-thirds of fleet car drivers and just under 60% of non-fleet car drivers were male (see Table 9).

Table 8 Numbers of taxis, fleet cars and non-fleet cars in crashes by driver age group.

Age group	Taxis		Fleet cars		Non-fleet cars		Total	
	No.	%	No.	%	No.	%	No.	%
25 & under	425	5.6%	11,035	20.6%	89,851	33.1%	101,311	30.4%
26-29	513	6.8%	4,734	8.9%	25,650	9.4%	30,897	9.3%
30-39	2,292	30.4%	12,405	23.2%	49,955	18.4%	64,652	19.4%
40-49	2,019	26.7%	11,433	21.4%	37,118	13.7%	50,570	15.2%
50-59	1,156	15.3%	7,120	13.3%	22,880	8.4%	31,156	9.4%
60+	446	5.9%	3,025	5.6%	28,475	10.4%	31,946	9.6%
unknown	698	9.2%	3,724	7.0%	17,942	6.6%	22,364	6.7%
Total	7,549	100.0%	53,476	100.0%	271,871	100.0%	332,896	100.0%

Table 9 Numbers of taxis, fleet cars and non-fleet cars in crashes by gender.

Gender	Taxis		Fleet cars		Non-fleet cars		Total	
	No.	%	No.	%	No.	%	No.	%
Male	7,254	96.1%	35,523	66.4%	159,656	58.7%	202,433	60.8%
Female	112	1.5%	17,060	31.9%	106,893	39.3%	124,065	37.3%
Unknown	183	2.4%	893	1.7%	5,322	2.0%	6,398	1.9%
Total	7,549	100.0%	53,476	100.0%	271,871	100.0%	332,896	100.0%

Risky driving behaviours

Table 10 shows the comparison between taxis involved in crashes and fleet and non-fleet cars involved in crashes for four separate "risky driving behaviours". These are crashes in which:

- The vehicle was considered to be travelling at an excessive speed for the prevailing conditions
- The driver was considered to be fatigued at the time of the crash
- The driver had an illegal blood alcohol content (BAC) level
- The driver was not wearing a seatbelt at the time of the crash.

Table 10 Numbers of taxis, fleet cars and non-fleet cars in crashes in which speeding, fatigue, and illegal BAC was involved, and in which the driver was not wearing a seatbelt.

Crash factor	Taxis		Fleet cars		Non-fleet cars		Total	
	No.	%	No.	%	No.	%	No.	%
Speeding	134	1.8%	3,551	6.6%	21,982	8.1%	25,667	7.7%
Fatigue	96	1.3%	1,569	2.9%	11,441	4.2%	13,106	3.9%
Illegal BAC	8	0.1%	824	1.5%	7,314	2.7%	8,146	2.4%
Belt not worn	2,242	29.7%	311	0.6%	1,531	0.6%	4,084	1.2%

Crashed fleet taxi drivers were substantially less likely than fleet or non-feet crashed cars to have excessive speed, fatigue or driving with an illegal BAC noted as a crash factor. For both excessive speed and fatigue, crashed drivers aged 25 years and under were more likely than any other age group to have these crash factors noted for each of the three vehicle categories. Given that taxi crashes were much more likely to occur in the Sydney Metropolitan area than Outside Sydney (see Table 3), compared with fleet and non-fleet car crashes, the involvement of the risky driving behaviours was analysed by location. Both excessive speed and fatigue were less likely to be a factor in taxi crashes than for fleet or non-fleet cars for both the

Sydney Metropolitan area and for areas outside Sydney. The number of taxi drivers with illegal BAC was too small to analyse as a function of driver age group or crash location.

Table 10 shows that taxi drivers were significantly more likely to **not** be wearing a seatbelt at the time of the crash than fleet or non-fleet car drivers. (Taxi drivers were not required to wear a seatbelt in NSW.) The data suggest this behaviour was consistent across age groups, with slightly fewer drivers aged 25 and under not wearing a seat belt than other age groups (see Table 11). Additionally, taxi drivers who crashed outside the Sydney metropolitan area (Table 12) were less likely to have not been wearing a seatbelt at the time of the crash than taxi drivers who crashed in Metropolitan Sydney.

Table 11 Numbers of drivers of taxis, fleet cars and non-fleet cars in crashes who were not wearing seatbelts by age group.

Age group	Taxis		Fleet cars		Non-fleet cars		Total	
	No.	%	No.	%	No.	%	No.	%
25 and under	111	26.1%	51	0.5%	523	0.6%	685	0.7%
26-39	869	31.0%	119	0.7%	491	0.6%	1,479	1.5%
40-59	956	30.1%	108	0.6%	297	0.5%	1,361	1.7%
60+	146	32.7%	21	0.7%	161	0.6%	328	1.0%
unknown	160	22.9%	12	0.3%	59	0.3%	231	1.0%
Total	2,242	29.7%	311	0.6%	1,531	0.6%	4,084	1.2%

Table 12 Numbers of drivers of taxis, fleet cars and non-fleet cars in crashes who were not wearing seatbelts by location.

Location	Taxis		Fleet cars		Non-fleet cars		Total	
	No.	%	No.	%	No.	%	No.	%
Sydney	2,082	30.3%	237	0.6%	905	0.5%	3,224	1.4%
Outside Sydney	160	23.6%	74	0.6%	626	0.7%	860	0.9%
Total	2,242	29.7%	311	0.6%	1,531	0.6%	4,084	1.2%

DISCUSSION

There is considerable anecdotal evidence that taxi drivers around the world drive in a manner the rest of the public considers to be unsafe (e.g., Fisher, 1997; McCarthy, 1999, both cited in Haworth, Tingvall, & Kowadlo, 2000), although a recent survey of users of taxis in Australia found that respondents rated their most recent experience using taxis quite highly, and their perception of the safety of the trip also rated well (Bruce & Jessod, 2003). An examination of the crash data reveals that the overall crash rate for taxis (based on the number of taxis registered at the time of the crash) is more than ten times that for fleet and non-fleet cars. The rates for injury and towaway crashes are about ten times higher for taxis than fleet and non-fleet cars, while the fatal crash rate for taxis is about five times higher. However, if the crash rates are instead based on 100 million vehicle kilometres travelled, then taxis have around half the fatal crash rate compared to all cars in NSW, but again higher rates of injury and towaway crash rates. While both methods for calculating crash rates are accepted in road safety circles, the latter may provide a clearer picture due to the significantly greater number of kilometres travelled by taxis (around 12 times the annual average distance travelled by all cars in NSW). Taken together, these statistics suggest that while taxis may be over-represented in crashes, those crashes are likely to be less severe, probably because a significant amount of their travel is in lower speed zones, such as residential and CBD areas.

Accordingly, these crashes are also more likely to be in areas better serviced by emergency services, with shorter response times.

With time pressure to get to the next job and anxious passengers running late for appointments, it might be expected that taxi drivers be more prone to speeding. The current data, however, indicates that crashed taxis were less likely than other cars (fleet or non-fleet) to have been travelling at an excessive speed at the time of the crash. The majority of taxi crashes reported here occurred in metropolitan Sydney, where there may be a greater proportion of lower speed limit zones. However, the analysis relates to excessive speed for the prevailing conditions rather than exceeding the posted speed limit. A taxi could very easily be classified as travelling too fast in a CBD zone during business hours yet not have exceeded the speed limit.

There is also some concern about fatigue, with taxi drivers working 10 to 12 hour shifts (Haworth, et al, 2000). Dalziel and Job (1998) reported that Sydney taxi drivers work an average of 58 hours per week, and that accident rate increases as the total average break time per shift decreases. However, the current analyses again found that crashed taxi drivers were less likely to have this factor noted as a contributing factor to the crash compared to crashes involving other cars. Of course this data does not include instances of taxi drivers falling asleep while driving and/or near misses as a consequence of fatigue and lack of attention (as discussed by Dalziel & Job, 1998), unless those instances resulted in a crash and the attending police officer determined that fatigue was a crash factor. Likewise, the data does not include similar instances as they applied to other fleet and non-fleet drivers, so the relative comparisons are still pertinent.

It should be noted that the definitions for speeding-related crashes and fatigue-related crashes used here (and in many other jurisdictions and publications) might be considered somewhat imprecise. In both cases judgements are made based on information such as the location and type of crash, time of day that the crash occurred and eyewitness statements. There is no physical, after-the-fact, quantifiable measure for fatigue or speed as exists for an alcohol-involved crash, where a driver's blood alcohol content can be objectively tested. The lack of such an objective test for mass crash data is reflected in the lack of agreement between various jurisdictions as to the criteria to use to classify a crash as speed- or fatigue-involved. In the analyses presented here, comparisons were made between taxis, all fleet cars and non-fleet cars. Accordingly, a more critical issue is that the *same* definitions for speed-related crashes and for fatigue-related crashes were used for all three groups, rather than the appropriateness of the RTA's determination of the definitions per se.

The non-use of seatbelts by taxi drivers is of particular concern. Haworth et al (2000) noted the lack of a requirement for taxi drivers to wear seatbelts in many jurisdictions and the low compliance rate in jurisdictions where it is mandated. The current study found that 30% of crashed taxi drivers were not wearing a seatbelt at the time of the crash, compared with fewer than 1% of crashed drivers of other cars. This behaviour was more prevalent in older taxi drivers and taxi drivers working in the Sydney Metropolitan area. As an occupational health and safety issue, it is not clear whether there can be any reasonable justification for exempting taxi drivers from the road rules that require all other drivers (including truck drivers) to wear seatbelts. The lack of compliance may be part of the reason as to why taxi injury rates are significantly higher than they are for other cars. Unfortunately, the data was insufficiently reliable to examine the differences in injury severity between taxi drivers and taxi passengers, or to investigate the proportion of taxi crashes where there was a passenger. It might be

expected that passengers are more likely to wear a seatbelt than are the drivers, and the presence of passengers could act to increase crash risk due to possible distraction or decrease it if the driver drives more responsibly or carefully when their behaviour could be reported to their employer.

The linkage between the NSW crash database and the NSW registration database has provided a perhaps unique opportunity to examine crashes as a function of whether a particular vehicle was registered to a fleet owner or privately registered. Fleet registration does not guarantee, however, that a vehicle was being used for work-related purposes at the time of the crash. Additionally, a privately registered vehicle may have been used for work purposes at the time of the crash. Accordingly, the fleet and non-fleet categories use to make comparisons with taxis here are proxies for work-related driving and non-work-related driving respectively. Likewise it is no known whether a taxi at the time of a crash was on- or off-duty, or whether passengers were being transported.

CONCLUSIONS

Taxis in NSW would seem to be involved in relatively more crashes than other cars in NSW, however those crashes are likely to be less severe than they are for other cars. Consistent with this finding, crashed taxis were less likely than either fleet or non-fleet cars to have speeding noted as a factor contributing to the crash. Crashed taxi drivers were also less likely to have had fatigue noted as a crash factor. However, crashed taxi drivers were significantly less likely to have been wearing a seatbelt at the time of the crash than other car drivers. It is likely that a lot of taxi travel occurs in lower speed zones, such as residential and CBD areas. If this were not true, it might be expected that the likelihood of a crashed taxi driver being fatally injured would increase significantly. There can be no reasonable justification for not mandating that taxi drivers wear seatbelts while driving, as they are required to do when driving any other vehicle. This is an occupational health and safety issue as well as a road safety issue and can therefore be targeted using educational and legislative means by organisations in both spheres.

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ACKNOWLEDGMENTS

The data were provided by the Roads and Traffic Authority of New South Wales as part of their support for the MUARC Baseline Project "Safety attitudes and behaviours in work-related driving" which was funded by VicRoads, Transport Accident Commission and Department of Justice. The conclusions are those of the authors and not of any of the organizations listed.