



The characteristics of fatal road accidents during the end of year festive period

1994-2003 |

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EXECUTIVE SUMMARY

OBJECTIVE

In Mauritius, and in other countries as well, the Christmas/New year festive period is associated with a public perception of increased danger on the roads. This usually resonates with greater police enforcement and more aggressive road safety campaigns during this particular period than during the rest of the year.

This report is an attempt to understand what really differentiates the Christmas/New year festive period from the rest of the year, as far as fatal accidents are concerned. A comparison is thus made between fatal accident data relating to the two periods. The data investigation covers a ten-year period, from January 1994 up to December 2003.

FINDINGS

Over the past 10 years the month of December indeed recorded the highest number of fatal accidents. This occurred in spite of the road safety efforts being traditionally more forceful during that particular month than during the other months. But this fatal accident toll is nearly similar to that recorded in the month of July. It can therefore be argued that additional road safety measures during the end of year festive period might have contributed to make the situation less critical than it could have been.

For the 2003/2004 Christmas/New Year festive period, 8 persons were killed on the roads, up from 6 for the 2002/2003 period. For the past ten years the record high is 14 fatalities and this happened during the 1998/1999 festive period.

The average number of fatalities per day for the festive period was erratic throughout the 10-year period. This contrasts with the relatively stable average for the rest of the year. Notwithstanding the effect of statistical random fluctuation, which is inherent in the low numbers of crashes recorded, the variable average daily fatality rates noted during the Christmas/New year periods could hint at the efficacy of additional police enforcement and road safety education campaigns that were in place during the festive periods.

Beyond the relative number of fatalities, some slight differences have been noted between the characteristics of fatal accidents occurring during the festive period and the remainder of the year. The

only marked difference between the two sets of data is about the age groups of the victims. During the festive period compared with the rest of the year (1994-2003):

- there were an almost 20 percent rise in the number of fatalities in the age group 21-50 years; and
- those in the age band 51-60+ were significantly less represented in the accident death toll.

On the face of it, the almost similar characteristics between the two sets of data could suggest that factors that have influenced the number of fatalities throughout the festive period might be the same to those for the rest of the year, too. Besides the most obvious factors which are inappropriate speed and drink driving, other factors might include adverse or defective road environment aspects, poor vehicle's occupant protection and change in travel patterns.

RECOMMENDATION

An assessment of all the accident causation factors for the festive period and the rest of the year has not been possible during this study. This was because of lack of relevant recorded information in the available database. That said, the existing data does provide some support for heightened police enforcement and high profile public awareness campaigns, not only during the Christmas/New year festive period, but throughout the year.

Definition

The Christmas/New year festive period (or simply festive period) referred in this report is defined as a period lasting 20 days, starting from 00:01 am on the 20th December (one week before the 25th December) and ending at 11:59 pm on the 8th January (one week after the 1st January). The period has been chosen to reflect the mores of the Mauritian society; the end of year salary is paid around the 20th December and resumption of school and most businesses is on or just after the 8th January.

The non-festive period is defined as the part of the calendar year falling outside these dates.

Data issues

Data compiled in this report have been extracted from the accident database developed and maintained by the Central Statistics Office. The database contains basic crash statistics on all accidents reported to the Police since 1993 to date. And yet, this database is limited because information on vital crash factors, such as driver/rider alcohol intoxication, occupant protection (eg. seat belts wearing) and precise location of crashes, are not present.

INTRODUCTION

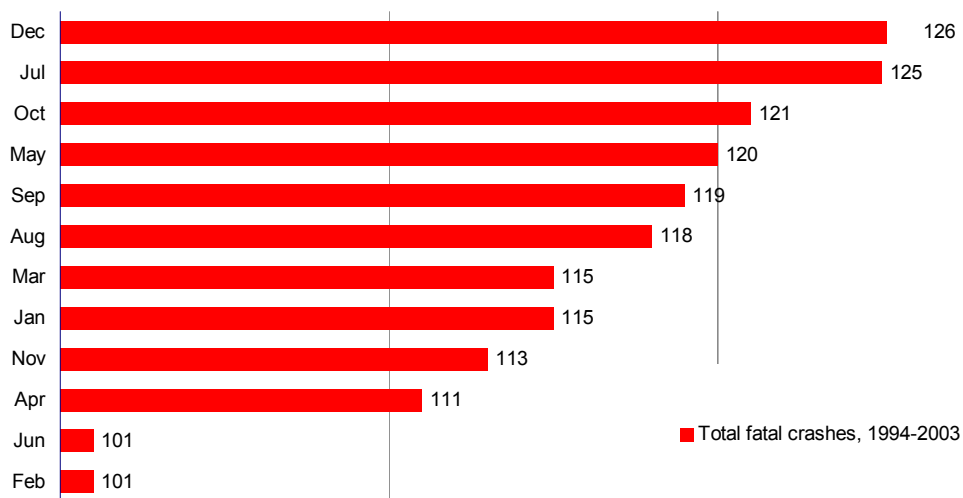
In many countries there is a widely held belief that the Christmas/New year festive period is characterized with increased danger on the roads; a greater number of motorists are believed to be more reckless and unmindful of traffic laws and very many of them tend to drive while under the influence of alcohol. Mauritius is no exception. Here and elsewhere this is also the period when police enforcement is noticeably heightened and when road safety publicity campaigns become more aggressive. Fatal road crashes are given increased media attention and this provides a stark and surreal contrast against the normally festive mood.

This report begins with an assessment of the relative 'insecurity' of the months of the year by looking at the frequency of injury accidents recorded during the past 10 years. Then, it compares fatal accident data relating to the Christmas/New year period and that for the remaining period of the year. To enable a statistically meaningful comparison between the two sets of data, the *festive* crashes have been aggregated over a period of 10 years (1994-2003).

Relative safety

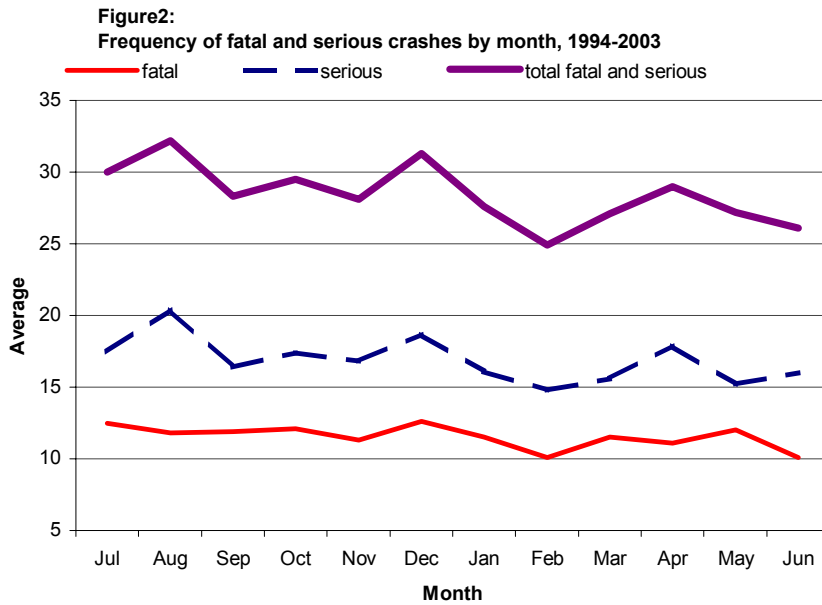
As a guide to measure the relative safety of the months of the year, injury accident data for the past 10 years have been aggregated by month. The results are shown in Figures 1, 2 and 3.

Figure 1:
Frequency of fatal crashes by month, 1994-2003



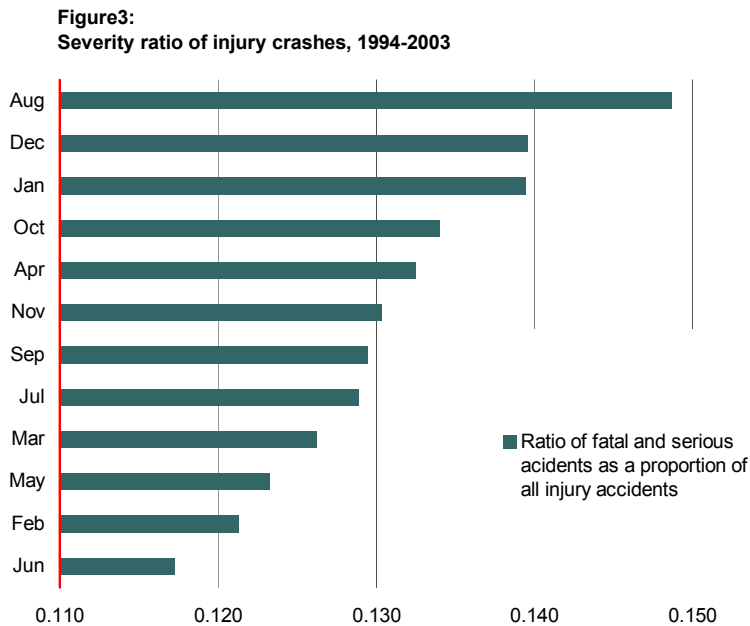
A fatal crash is one in which at least one person has been fatally injured or has died within 7 days as a result of injuries sustained from the road accident. As from 2002, to be in line with international practice, the 7-day period has been replaced by a 30-day period in 2002. To suit the purpose of this report, though, the figures for the years 2002 and 2003 have not been revised; they are according to the '7-day period' definition.

The highest number of fatal crashes over the past 10 years has been recorded during the months of December and July. These sharp increases are statistically significant (confidence level > 85% with a long-term mean = 115).



A serious accident is one in which nobody is killed, but at least one person suffered from fractures, severe cuts or an injury for which he or she has been detained in hospital as an 'in patient'

From Figure 2, the peaks in the total number of fatal and serious crashes were recorded in April, August and December. These months are those with the school holiday period.



All injury accidents refer to the total of fatal, serious and slight accidents. A slight injury accident is one in which at least one person has sustained injuries of minor nature such as sprains and bruises.

Figures 1, 2 and 3 show that the perception of increased danger on the roads in December is echoed in the road accident figures. On the other hand, the months of February and June had the highest safety record, in term of injury accidents, over the period 1994-2003.

Driver and rider alcohol intoxication

Combating drink-driving is most often the main objective of those responsible for road safety during the Christmas /New Year festive period.

Although there is a marked increase in the sale of alcoholic drinks during the last month of the year, available breathalyser results show that the number of positively tested motorists in December 2003 was the second lowest in the series compiled in Table 1. (Note: tougher fines for drink driving offences were in force as from the 1st September 2003).

Table 1: Breathalyser tests, island wide (source: Police Road Safety Unit)

<u>2003</u>	<i>Breathalyser results</i>		
	<u>positive</u>	<u>negative</u>	<u>Total</u>
September	93	98	191
October	79	126	205
November	101	117	218
December	86	132	218
January 2004	122	226	348

Trends in Christmas/New Year road traffic fatalities

Table 2:

Fatalities recorded during the Christmas/New Year period and the remainder of the year, 1994-2003

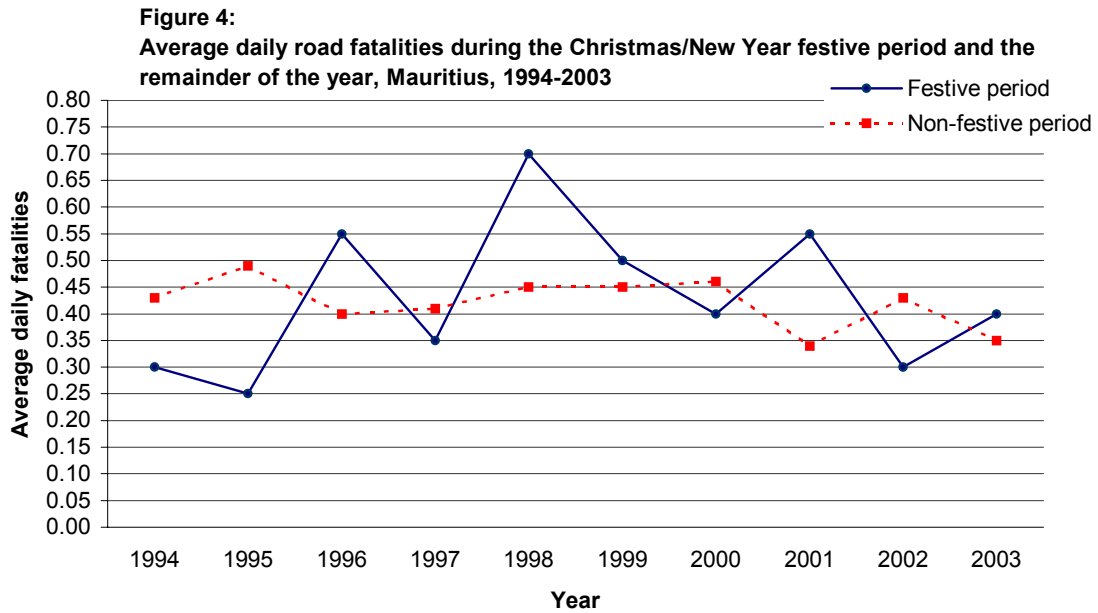
	<i>Fatalities</i>		
	<u>Festive period*</u>	<u>Non-festive period**</u>	<u>Total for the year</u>
1994	6	150	154
1995	5	169	173
1996	11	139	153
1997	7	141	146
1998	14	154	162
1999	10	154	170
2000	8	157	163
2001	11	118	126
2002	6	149	158
2003	8	121	131

* For any year, the festive period represents the dates in December of that year and the dates in January of the following year. For example, '1998 festive period' is the period beginning on 20 December 1998 and ending on 8 January 1999.

** For any year, the non-festive period represents the period excluding the festive dates in January and December of that year.

There were 8 persons who lost their lives in road accidents during the 2003/04 festive period. This represents about 6 percent of the total killed in that year and is about 45 percent of the total fatalities recorded in the month of December 2003.

The highest number of killed on the roads during the festive period was in 1998/99 with 14 fatalities. This peak was found to be statistically significant (confidence level = 97%, with a long-term mean = 8.6).



The average daily fatality during the 2003/2004 festive period was 0.4 while the corresponding figure for the rest of the year was 0.35.

The average number of fatalities per day for the festive periods shows large variations compared with that for the rest of the year. This could be due to the relatively low numbers of crashes during the festive period. Otherwise, these fluctuations could hint at the effectiveness of additional police enforcement and road safety education campaigns that were in place during the Christmas/New year periods over the years 1994-2003.

Crash characteristics

Crash type

Table 3: Fatal accidents (by crash type) recorded during the Christmas/New Year period and the remainder of the year, 1994-2003

	<i>Number of fatal accidents</i>		
	<u>festive period</u>	<u>non-festive period</u>	<u>Total</u>
single vehicle crash	18	253	271
multiple vehicle crash	34	548	582
pedestrian crash	27	505	532

Figure 5:

Percentage of fatal crashes by crash type, combined 1994/95, 1995/96, 1996/97, 1997/98, 1998/99, 1999/00, 2000/01, 2001/02, 2002/2003, 2003/04 Christmas/New Year holiday periods and remainder of the 1994-2003 calendar years

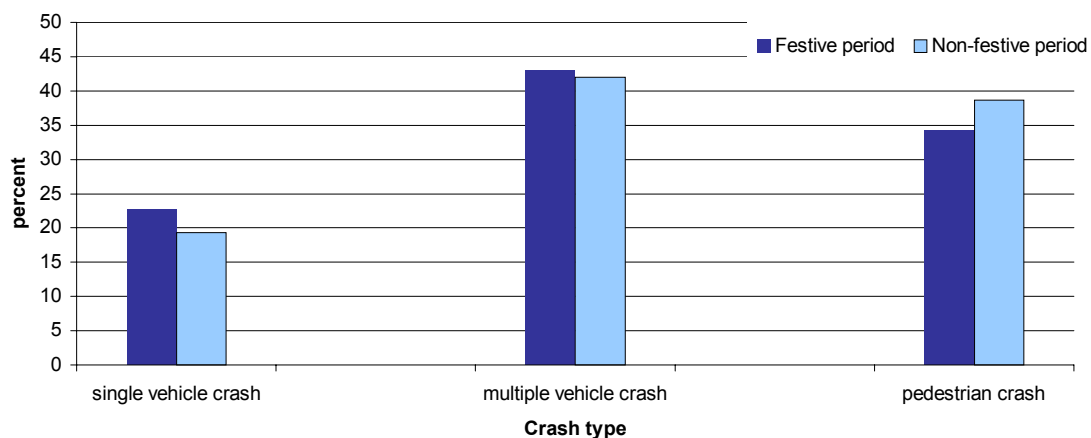


Figure 5 shows that during the festive period compared with the non-festive period:

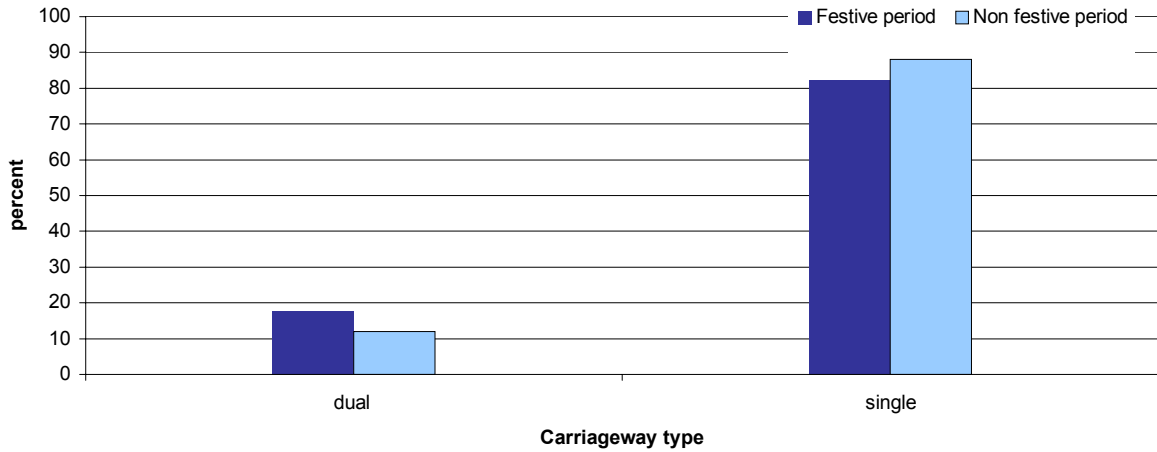
- there was a higher proportion of single vehicle crashes (23 per cent compared with 19 per cent);
- there was a similar proportion of multiple vehicle crashes (41 per cent); and
- there was a lower proportion of pedestrian crashes (34 per cent compared with 39 per cent).

Crash location

Table 4: Fatal accidents (by location) recorded during the Christmas/New Year period and the remainder of the year, 1994-2003

	<i>Number of fatal accidents</i>		
	<u>festive period</u>	<u>non-festive period</u>	<u>Total</u>
dual carriageway	14	156	170
single carriageway	65	1150	1215

Figure 6:
Percentage of fatal crashes (by road type), combined 1994/95, 1995/96, 1996/97, 1997/98, 1998/99, 1999/00, 2000/01, 2001/02, 2002/2003, 2003/04 Christmas/New Year holiday periods and remainder of the 1994-2003 calendar years



A dual carriageway is a road where the opposing flows are separated by a physical feature (eg. a central reservation)

Figure 6 shows that during both periods under study, single carriageways recorded the highest number of fatal accidents. In terms of fatal accidents per kilometre of road, though, the dual carriageways were comparatively more fatal accident prone than single carriageways.

Figure 6 also shows that during the festive period compared with the non-festive period:

- a higher proportion of crashes was recorded on the dual carriageways (18 per cent compared with 12 per cent); and
- fewer crashes occurred along the single carriageways (82 per cent compared with 88 per cent).

Time of crash

Table 5: Fatal accidents (by light conditions) recorded during the Christmas/New Year period and the remainder of the year, 1994-2003

	<i>Number of fatal accidents</i>		
	<u>festive period</u>	<u>non-festive period</u>	<u>Total</u>
darkness	36	580	616
daylight	43	726	769

Darkness relates to the period between 7.00pm on any day to 6.00am on the following day. Daylight refers to the period of time excluding the hours considered as those of darkness.

Figure 7:
Percentage of fatal crashes (by light conditions), combined 1994/95, 1995/96, 1996/97, 1997/98, 1998/99, 1999/00, 2000/01, 2001/02, 2002/2003, 2003/04 Christmas/New Year festive periods and remainder of the 1994-2003 calendar years

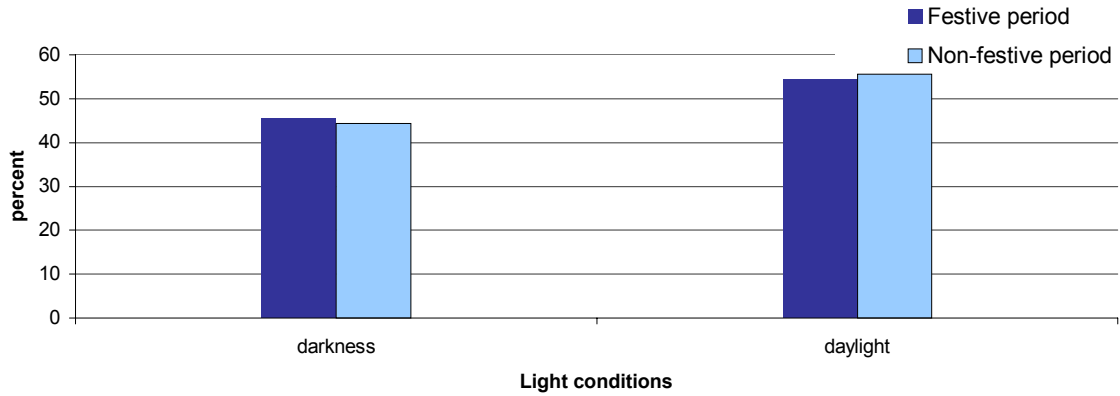


Figure 7 shows that during the festive period compared with the rest of the year:

- a similar, alarmingly high proportion of crashes occurred during the hours of darkness (45 per cent); and
- a similar proportion of crashes were recorded during daylight (55 per cent).

Day of the week

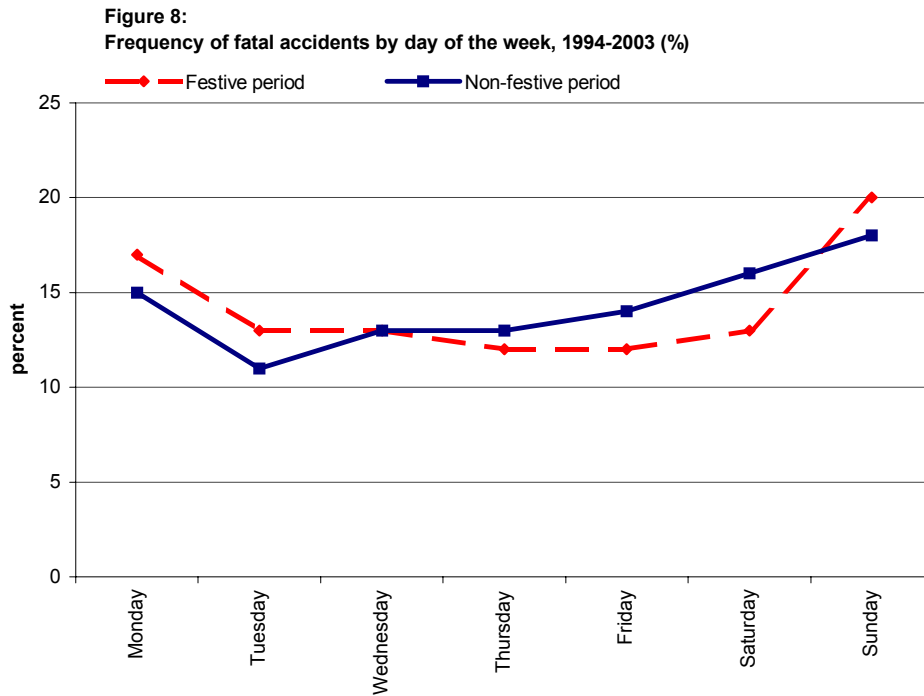


Figure 8 shows that the pattern of change in the frequency of fatal accidents during the days of the week for the festive period and the rest of the year is quite similar. During both periods, the prevalence of fatal crashes on Sunday is higher compared with the other days.

Road user characteristics

Table 6: Fatalities (by road user type) recorded during the Christmas/New Year period and the remainder of the year, 1994-2003

	<i>Number of fatalities</i>		
	<u>festive period</u>	<u>non-festive period</u>	<u>Total</u>
pedestrian	26	508	534
cyclist	2	121	123
rider	25	391	415
driver	14	146	160
passenger	19	286	306

**Figure 9:
Vulnerable road user groups, 1994-2003**

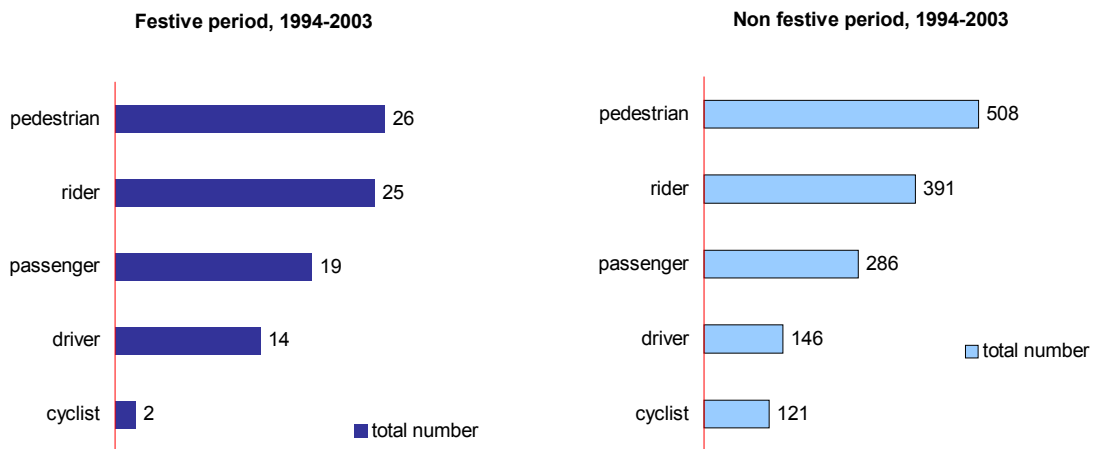


Figure 9 shows that for both the festive and non-festive periods, the most vulnerable road user group was the pedestrian.

Figure 10:
Percentages of fatalities by road user type during the festive period
and the rest of the year, 1994-2003

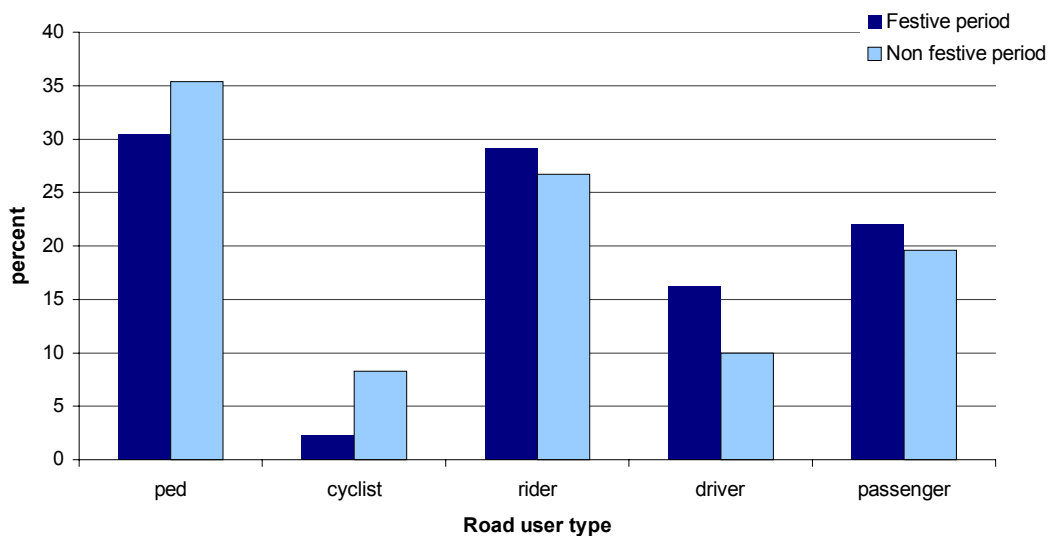


Figure 10 shows that during the festive period compared with the rest of the year:

- pedestrians, though being the most vulnerable, were comparatively less involved in fatal accidents (30% compared with 35%); and
- higher proportions of riders, drivers and passengers were involved.

Table 7: Fatalities (by road user's age band) recorded during the Christmas/New Year period and the remainder of the year, 1994-2003

	<i>Number of fatalities</i>		
	<u>festive period</u>	<u>non-festive period</u>	<u>Total</u>
< 7 years	0	51	51
7-12	3	48	51
13-20	7	128	135
21-40	43	598	641
41-50	24	256	280
51-60	4	172	176
> 60 years	5	199	204

Figure 11:
Percentages of fatalities by age band during the festive period
and the rest of the year, 1994-2003

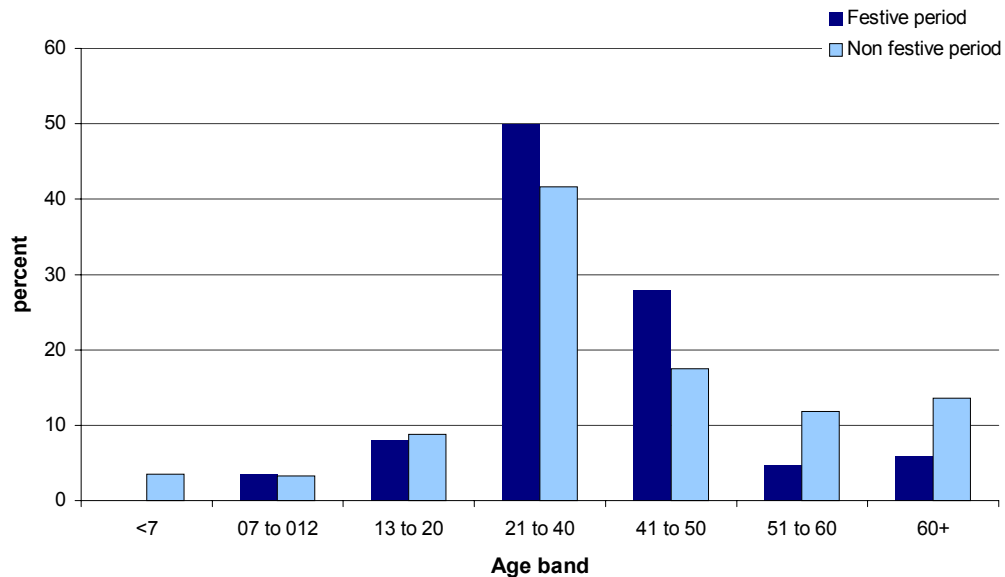


Figure 11 shows that during the festive period compared with the rest of the year:

- the proportion of fatalities of road users in the age band 21-40 and 41-50 showed an almost 10-point increase (up from 42 per cent to 50 per cent and from 18 per cent to 28 per cent respectively); and
- a lower proportion of fatalities was recorded for users in the age bands 51 to 60+ years.

DISCUSSION

The compiled data show that the month of December, while it is not the only one, is indeed associated with a rise in the number of fatal and serious accidents. It is commonly asserted that the Christmas/New Year festive period, with its assumed amplified drink-driving problem, contributes largely to this situation. Yet, for the past 10 years the average number of killed per day during the festive period exceeded that for the rest of the year in only five occasions. What's more, in three out of those five occasions, the difference between the two rates was not significant. There is no one short explanation for this.

One possible explanation could be that the traditionally heightened police enforcement and other high profile safety education campaigns during the festive period are very influential in changing attitudes and promoting positive and responsible behaviour. If the available results of breathalyser tests (shown in Table 1) are any guide, the number of driver/rider intoxicated by alcohol during the month of December

2003 is unexpectedly low compared with the other months. That said, it should nevertheless be stressed that road accidents are multi- factor events and drink driving is only one contributory factor.

The data comparison exercise has also revealed that there is no significant difference between the characteristics of fatal accidents occurring during the holiday period and the remainder of the year. On the face of it, this could suggest that factors that may have influenced the number of fatalities throughout the holiday period might be the same to those for the rest of the year, too. Except for a factor particular to the festive period and that is the change in travel patterns (exposure).

Traditionally, during the end of year festive period there is an increase of private travel to unfamiliar places (visiting families scattered all over the island) and a decrease in commuter travel (trips from home to place of work). Motoring in unfamiliar surrounds certainly involves more risks. This particular risk factor has not been investigated in this study because of absence of relevant information in the database.

CONCLUSION AND RECOMMENDATION

The accident problem during the festive period is not one with a specific, identifiable cause. This problem involves a complex interplay of several factors, the same ones that are present during the rest of the year, too. It is true that the accident problem during the festive period is often compounded primarily by the increased use of alcohol by drivers, riders and pedestrians. Arguably, increased police enforcement and high profile road safety campaigns could have satisfactorily contributed to address that particular issue. So, there is little doubt that similar benefits could be obtained if such measures are effective throughout the year and are used to counteract other risk factors as well.

REFERENCES

1. Australian Transport Safety Bureau, Road Safety Report: *The Characteristics of fatal crashes during the Christmas/New Year holiday period*. Australia, May 2003.
2. Central Statistics Office, *Digests of Road Transport and Road Accident Statistics*. Mauritius, 1994-2003.

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