New Zealand POLICE
Nga Pirihimana O Aotearoa

Christmas/New Year 2013/14 National Crash Risk

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Key Findings

The official Christmas holiday period starts at 1600 hours on Tuesday 24 December 2013 and ends at 0600 hours Friday 3 January 2014.

Analysis indicates that the following trends occur over the Christmas holiday period:

- The national crash risk for injury crashes is likely to be lower during the Christmas holiday period than year round; however, the crash risk for fatal/serious crashes is likely to be higher. This indicates that while in comparison to year round there may be fewer crashes over the Christmas holiday period, the crashes that may occur are likely to be more serious.
- Crash risk is likely to shift away from major metropolitan areas such as Waitematā, Auckland City, Counties Manukau, Wellington and Canterbury Districts, towards traditional summer holiday destinations such as Northland, Bay of Plenty, Eastern and Tasman Districts.
- All districts, except Auckland City District, are likely to experience an increase in the percentage of injury crashes occurring on the open road.
- In the absence of the usual commuter rush hour, traffic is likely to peak between 1100 and 1300 hours. Consequently, the associated crash risk is likely to centre around the middle of the day (1100 to 1700 hours).
- There is likely to be little or no increase in late night crash risk, compared to year round, with the exception of Christmas Day, Boxing Day and late night New Year's Eve/early morning New Year's Day.
- The percentage of crashes relating to poor handling, speed and alcohol are likely to increase for both injury and fatal/serious crashes, compared to year round. Additionally, the percentage of crashes with fatigue as a contributing factor is likely to significantly increase. The three highest vehicle movement types likely to result in crashes are cornering, lost control or off road – straight road, and head on.

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Introduction

Background and scope

1. This report aims to assess the traffic crash risk over the Christmas/New Year holiday period (henceforth referred to as the Christmas holiday period) 2013/14.
2. The official holiday period starts at 1600 hours on Tuesday 24 December 2013 and ends at 0600 hours Friday 3 January 2014. The Christmas holiday period is different from other holiday periods because the day of week that a key date occurs on differs each year i.e. 24 December may fall on a Thursday one year and a Friday the following year. Additionally, the length of the official holiday period varies depending on where the statutory holidays fall in relation to the weekend. The official length of the 2013/14 holiday period is 9.6 days.
3. Last Christmas holiday period (2012/13) had the lowest Christmas holiday period road toll on record with six deaths (as a result of six fatal crashes). The deaths included three drivers, two passengers and one pedestrian and all were from crashes that occurred on the open road.
4. The total social cost during the 2012/13 Christmas holiday period was over $87 million; open road crashes accounted for just over three quarters of this cost.

Methodology

5. The analysis in this report compares data from previous Christmas holiday periods against year round results based on a daily average, using the full days around the holiday period.[1] The date range is primarily from 2008/09 to 2012/13 financial years.
6. Crashes are grouped into four categories (fatal, serious, minor and non injury) based on the severity of the worst injury. 'Injury' crashes, when referred to in this report, include all fatal, serious and minor crashes. Analysis of all fatal and serious crashes combined was also undertaken, however due to the small dataset, statistical analysis was unable to be undertaken on fatal crashes alone.

Analysis

Risk and location

7. Traditionally, the average number of injury crashes per day decreases slightly over the Christmas holiday period compared to year round, however the average number of fatal/serious crashes per day slightly increases. This indicates that while in comparison to year round there may be fewer crashes over the Christmas holiday period, the crashes that do occur are more serious.
8. Table 1 presents the average injury crashes and average fatal/serious crashes per day by district, year round and during the Christmas holiday period. Crash risk differs between districts, as well as between severity types within a district (for example between injury and fatal/serious crashes).

[1] The full days around the holiday period were used rather than from 1600 hours onwards on the first day of the period and before 0600 hours on the last day of the period, which allows an average per day figure to be obtained. Analysis was done on an average per day basis because the length of the official holiday period varies depending on where the statutory holidays fall in relation to the weekend.

District	Average injury crashes per day			Average fatal/serious crashes per day		
	Year Round	Christmas		Year Round	Christmas	
Northland	1.2	1.8	↑	0.3	0.5	↑
Waitematā	2.9	2.1	↓	0.4	0.3	↓
Auckland City	2.9	1.8	↓	0.3	0.3	↔
Counties Manukau	3.0	2.3	↓	0.4	0.4	↔
Waikato	2.5	2.7	↑	0.6	0.6	↔
Bay Of Plenty	2.1	3.1	↑	0.6	0.8	↑
Eastern	1.4	1.8	↑	0.3	0.6	↑
Central	2.5	2.7	↑	0.6	0.9	↑
Wellington	2.5	2.0	↓	0.5	0.3	↓
Tasman	1.2	1.9	↑	0.3	0.5	↑
Canterbury	3.6	2.6	↓	0.9	0.5	↓
Southern	2.8	2.7	↓	0.6	0.7	↑

Table 1 – Average injury crashes and average fatal/serious crashes per day by district for year round and the Christmas holiday period (red arrows show an increase over the Christmas holiday period, green arrows show a decrease).

9. Table 1 shows that historically there is an increased crash risk in traditional summer holiday destinations such as Northland, Bay of Plenty, Eastern and Tasman Districts, along with a decreased crash risk in major metropolitan areas such as Waitematā, Auckland City, Counties Manukau, Wellington and Canterbury Districts. Central District sees an increased crash risk likely due to its location as a central transit route for holiday traffic moving north from Wellington. Waikato District also sees a slight increase in injury crashes, likely due to being both a holiday destination (e.g. Coromandel and Raglan) and a major transit district. It is likely that the trends shown in previous years will continue during the upcoming holiday period.

10. It is important to note that the majority of increases or decreases are less than one crash per day. Comparing the average number of crashes per day in Table 1 on a district-to-district basis puts the level of risk into perspective.

11. Nationally, year round 39 percent of injury crashes occur on the open road. This increases to 54 percent over the Christmas holiday period. For fatal/serious crashes 51 percent occur on the open road, increasing to 66 percent over the Christmas holiday period.

12. Table 2 presents the percentage of injury crashes and fatal/serious crashes which occur on the **open** road[2], year round and over the Christmas holiday period.

[2] Roads are classified as either urban or open.

District	Open Road Injury Crashes			Open Road Fatal/Serious Crashes		
	Year Round	Christmas		Year Round	Christmas	
Northland	67%	83%	↑	76%	93%	↑
Waitemata	30%	51%	↑	38%	71%	↑
Auckland City	18%	16%	↓	12%	6%	↓
Counties Manukau	32%	37%	↑	38%	26%	↓
Waikato	53%	66%	↑	65%	80%	↑
Bay Of Plenty	50%	58%	↑	61%	63%	↑
Eastern	43%	52%	↑	62%	71%	↑
Central	50%	67%	↑	65%	78%	↑
Wellington	25%	35%	↑	31%	32%	↑
Tasman	57%	66%	↑	71%	63%	↓
Canterbury	31%	44%	↑	42%	53%	↑
Southern	46%	65%	↑	56%	83%	↑

Table 2 - Percentage of injury crashes and fatal/serious crashes occurring on open roads by district for year round and the Christmas holiday period (red arrows show an increase over the Christmas holiday period, green arrows show a decrease).

13. All districts, except Auckland City District, show an increase in the percentage of injury crashes occurring on the open road. The trend is similar for fatal/serious crashes, except Counties Manukau and Tasman Districts that show a decrease (along with Auckland City District). It is assessed as likely that the trends relating to open road crashes will again be seen during the upcoming holiday period.

Temporal

14. Analysis of temporal data indicates that the following trends occur over the Christmas holiday period:

- Throughout the Christmas holiday period there is traditionally a lack of commuter rush hour traffic peaks, with Average Daily Traffic (ADT) instead peaking between 1100 and 1300 hours. Consequently, there is an absence of the crash risk peaks usually associated with commuter rush hours, and the crash risk instead centres around the middle of the day (in general 1100 to 1700 hours). It is assessed that this is reflective of normal holiday travel patterns (i.e. many businesses are closed over this period removing morning and evening peak hour traffic).
- There is little or no increase in late night crash risk, compared to year round, with the exception of Christmas Day, Boxing Day and late night New Year's Eve/early morning New Year's Day (comprising three of the four statutory holidays in the period). It is assessed that most people are likely to be in 'holiday mode' and therefore less likely to be travelling late at night. However, the increase in late night crash risk on Christmas Day, Boxing Day and late night New Year's Eve/early morning New Year's Day is likely due to people travelling to and from locations where they will spend the day.
- Christmas Eve has the highest crash risk of the holiday period, with a peak from 1200 to 1700 hours. It is assessed that the increase in crash risk during this period is likely to be due to an increase in last minute travel as people move to Christmas Day locations and Christmas Eve social events.
- As the official holiday period starts at 1600 hours on Tuesday 24 December 2013 it is assessed that some holiday makers may take Tuesday and Monday (23 December) as annual leave and travel to their holiday destinations in the weekend of 21/22 December, prior to the start of the official holiday period. If this were to be the case, then it would possibly lead to increased traffic on the roads during the 21/22 December weekend. It is likely that the Safer Summer campaign (see Safer Summer section) would target these travellers.

- The official holiday period ends at 0600 hours Friday 3 January 2014, however, return travel at the end of the holiday period is usually staggered. It is assessed that regular traffic patterns, including commuter rush hour peaks, will likely return from Monday 6 January 2014.

Crash causes

15. Table 3 presents the percentage of injury crashes and fatal/serious crashes by the top five crash causes for year round and the Christmas holiday period.

16. Analysis highlights that the crash causes contributing to the highest percentage of crashes for both year round and during the Christmas holiday period are: poor observation, poor handling, failed giveway/stop, speed (including too fast for conditions), and alcohol.

Crash Cause	Percent of injury crashes			Percent of fatal/serious crashes		
	Year Round	Christmas		Year Round	Christmas	
Poor observation	40%	32%	↓	32%	26%	↓
Poor handling	24%	32%	↑	31%	36%	↑
Failed giveway/stop	24%	16%	↓	20%	14%	↓
Speed	15%	19%	↑	20%	24%	↑
Alcohol	15%	19%	↑	24%	27%	↑

Table 3 - Percentage of injury crashes and fatal/serious crashes by the top five causes for year round and the Christmas holiday period. Note: it is possible to have more than one cause for each crash (red arrows show an increase over the Christmas holiday period, green arrows show a decrease).

17. Historically, during the Christmas holiday period the percentage of crashes relating to poor handling, speed and alcohol increase for both injury and fatal/serious crashes. Additionally, the percentage of crashes with fatigue as a contributing factor almost double over the holiday period to make up 10 percent of injury crashes and 12 percent of fatal/serious crashes. It is assessed that similar crash causes will likely be seen during the upcoming Christmas holiday period.

18. The percentage of crashes relating to poor observation and failed giveway/stop decrease over the Christmas holiday period. It is assessed that the decrease in poor observation crashes may be due to people travelling on unfamiliar roads, which therefore causes drivers to pay more attention while driving, resulting in fewer crashes of this type compared with year round. It is further assessed that as people move away from metropolitan areas for the holidays, fewer numbers of drivers may be present in city centres, therefore lessening traffic volumes at intersections.

19. Table 4 presents the percentage of injury crashes and fatal/serious crashes by the top three[3] vehicle movement types for year round and the Christmas holiday period.

Vehicle Movement Type	Percent of injury crashes			Percent of fatal/serious crashes		
	Year Round	Christmas		Year Round	Christmas	
Cornering	23%	32%	↑	27%	37%	↑
Lost control or off road - straight road	11%	16%	↑	12%	12%	↔
Head on	6%	9%	↑	12%	15%	↑

Table 4 – Percentage of injury crashes and fatal/serious crashes by the top three vehicle movement types for year round and the Christmas holiday period. Note: there is only one movement type for each crash (red arrows show an increase over the Christmas holiday period).

20. Nationally, over the Christmas holiday period the three highest vehicle movement types resulting in crashes are cornering, lost control or off road – straight road, and head on. The percentage of cornering and head on crashes experience an increase from year round for both injury crashes and fatal/serious crashes. The percentage of lost control or off road – straight road crashes increase for injury crashes, but stay the same for fatal/serious

[3] Based on the top vehicle movement types during the Christmas holiday period.

crashes. It is assessed that these vehicle movement types are likely to be seen again during the upcoming Christmas holiday period.

Restraints

21. Restraints are one of the most important vehicle safety features. In a crash, restraints reduce injury severity by preventing occupants from being thrown from a vehicle. Ministry of Transport figures[4] indicate that:
    - 4 percent of adults do not wear a restraint when using the front seat of a vehicle,
    - 10 percent of adults do not wear a restraint when using the rear seat of a vehicle,
    - 3 percent of children under 5 years old were not restrained (although a further 5 percent were only restrained by an adult safety belt),
    - 5 percent of children aged 5 to 9 years were not restrained.
22. At least 26 percent of drivers or passengers who died in a crash over the previous five Christmas holiday periods were not restrained at the time of the crash.

Lower speed tolerance

23. Figure 1 shows the percentage of drivers travelling past a speed camera between 101 and 105 km/hr, between 106 and 110 km/hr, and 111km/hr and above during the 2012/13 financial year.

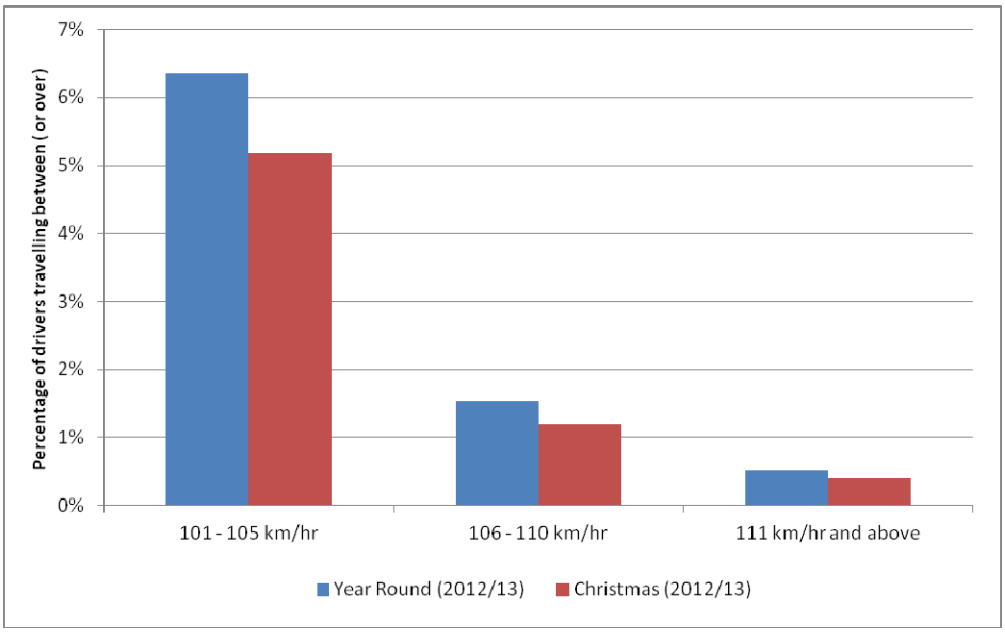

Figure 1 – Percentage of drivers travelling past a fixed or mobile speed camera between 101 and 105 km/hr, between 106 and 110 km/hr, and 111km/hr and above, for year round and the Christmas holiday period for the 2012/13 financial year.

24. The percentage of drivers travelling past a speed camera in all three speed bands were lower during the 2012/13 Christmas holiday period, compared to year round. Additionally, the number of drivers exceeding 101 km/hr has been decreasing each Christmas holiday period with a lowered speed tolerance.
25. It is likely the lowered speed tolerance is having a positive effect on reducing vehicle speeds during the Christmas holiday period. Studies suggest that a 1 km/hr decrease in travelling speed would lead to a 2 to 3 percent reduction in road crashes.[5]

[4] Ministry of Transport (November 2013). *Safety belt and child restraint surveys.* Ministry of Transport.
[5] World Health Organisation. (2004). *World report on road traffic injury prevention.* World Health Organisation.

Safer Summer

26. The Safer Summer campaign will run from 1 December 2013 to 28 February 2014. The campaign will focus on speeding and alcohol, including a lowered speed tolerance between 1 December 2013 and 31 January 2014. The 2013/14 Christmas holiday period will fall within this period and it is likely messages and enforcement activities implemented for Safer Summer will have a positive impact on the reduction of crashes this Christmas holiday period.