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Level 3 Mathematics and Statistics (Statistics), 2015

91584 Evaluate statistically based reports

2.00 p.m. Thursday 19 November 2015
Credits: Four

RESOURCE BOOKLET

Refer to this booklet to answer the questions for Mathematics and Statistics (Statistics) 91584.

Check that this booklet has pages 2–4 in the correct order and that none of these pages is blank.

YOU MAY KEEP THIS BOOKLET AT THE END OF THE EXAMINATION.

REPORT 1

Silver cars are safest

Adapted from: http://www.newswise.com/articles/silver-cars-are-safest

Silver cars are less likely to be involved in a crash resulting in serious injury than cars of other colours, finds a study in this week's Christmas issue of the *BMJ* (*British Medical Journal*).

Researchers in New Zealand examined the effect of car colour on the risk of a serious injury in over 1000 drivers who took part in the Auckland car crash injury study between 1998 and 1999.

Researchers compared the colours of cars involved in crashes during the study (for which one or more of the occupants of the car were admitted to hospital or died) against the colours of cars identified by cluster sampling of all drivers in the study region during the study. This information is summarised in the table.

Car colour	Cars that crashed (n = 567)	Cars from sample (n = 588)
White	25.6%	25.9%
Yellow	5.5%	2.8%
Grey	9.2%	10.0%
Black	6.4%	5.5%
Blue	16.1%	17.4%
Red	15.0%	13.3%
Green	7.4%	7.0%
Brown	9.7%	6.8%
Silver	5.3%	11.3%

Factors that could affect the results were taken into account in the analysis.* Researchers found a significant reduction in the risk of serious injury in silver cars compared with white cars. There was a significantly increased risk of a serious injury in brown vehicles, and the risks for black and green cars were also raised. The risk of a serious injury in yellow, grey, red, and blue cars was not significantly different from that in white cars.

Some limitations mean that the extent to which these results are applicable to other settings is open to question, say the authors. However, increasing the proportion of silver cars could be an effective strategy to reduce the burden of injury from car crashes.

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* Note: This analysis has not been provided with this report.

REPORT 2

Txting a top distraction for young drivers

Adapted from: http://www.stuff.co.nz/motoring/news/63508781/Txting-a-top-distraction-for-young-drivers

Nearly half of young drivers send text messages while driving and talk on a mobile phone without a hands-free kit, a survey has found. Both actions are illegal.

The AA Insurance survey of 1000 New Zealand drivers aged 18 and over also found 25% of men and 11% of women were distracted by attractive pedestrians. “One AA Insurance customer became distracted by an attractive young woman on the footpath, while he was driving to work,” the survey said. “He hit the car that had stopped in front of him, which resulted in a $2300 claim for his car, plus damages to the other vehicle.”

Another customer became distracted when she tried to answer her mobile phone while driving. She accidentally clipped another car, causing her vehicle to flip and roll. “The result was the total loss of her $12 000 car, as well as damage to the other vehicle.” 59% of the survey respondents rated changing the radio / iPod / MP3 player while driving as distracting.

Among all those who answered the survey, 20% sent texts while driving, with the figure rising to nearly 50% for the 18–24 group. 20% of all respondents also admitted talking on a mobile phone without a hands-free kit, with the number rising to 33% in the 25–34 age group and 40% in the 18–24 group. “Distractions are a major cause of accidents, with 10% of drivers surveyed admitting they’d crashed because they were distracted,” AA Insurance customer relations manager Amelia Macandrew said.

REPORT 3

The fact sheet below was prepared by the Health Promotion Agency (HPA), based on results from their 2014 Health and Lifestyles Survey (HLS). The HLS is a nationwide in-home face-to-face survey conducted every two years since 2008. The 2014 HLS adopted a multi-stage sampling method designed to be able to produce nationally representative estimates.

Links between smoking and risky alcohol consumption

Adapted from: Guiney, H., & Li, J. (2014). *Links between smoking and risky alcohol consumption*. [In Fact]. Wellington: Health Promotion Agency Research and Evaluation Unit.

This fact sheet assesses whether the prevalence of risky alcohol consumption among New Zealand adults varied according to smoking status. The analysis was undertaken using the Health Promotion Agency's (HPA's) 2014 Health and Lifestyles Survey (HLS).

About the Health and Lifestyles Survey (HLS)

The 2014 HLS consisted of a sample of 2594 New Zealanders aged 15 years and over, who provided information about their health behaviours and attitudes relating to tobacco, sun safety, healthy eating, gambling, alcohol, exercise, immunisation, mental health, breast feeding, and cancer screening. The response rate was 73.2%. The data have been adjusted (weighted) according to 2013 Census data.

Methodology

Questions in the 2014 HLS relating to alcohol consumption and smoking behaviour were used to determine risky alcohol consumption and smoking status among New Zealand adults aged 15 years and over:

(a) Risky alcohol consumption was determined by asking respondents on how many days in the last four weeks they had an alcoholic drink and, if they had had an alcoholic drink on at least one day, how often in the last four weeks they had consumed more than five (for females) or six (for males) alcoholic drinks on a single occasion. Respondents were considered to have engaged in risky alcohol consumption if they reported consuming more than five (for females) or six (for males) alcoholic drinks on a single occasion at least once in the last four weeks.

(b) Smoking status was determined by asking respondents if they had ever smoked cigarettes or tobacco and, if they had, how often they currently smoke. Respondents were considered never smokers if they had never smoked cigarettes or tobacco; current smokers if they were currently smoking at least once a month; and ex-smokers if they had smoked tobacco in their lifetime but they no longer smoked.

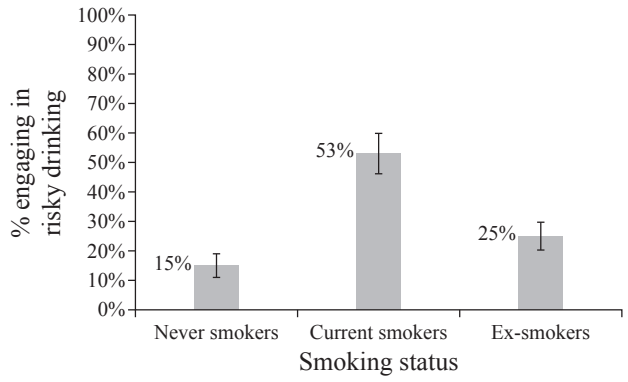

Figure 1. Percentage of respondents engaging in risky alcohol consumption in the last four weeks, by smoking status

Results

The overall rate of risky alcohol consumption was 26%, and this varied by smoking status (see Figure 1).

Whereas one-half of current smokers and one-quarter of ex-smokers had engaged in risky alcohol consumption in the last four weeks, only around one-sixth of never smokers had done so.

Summary

After adjusting for confounding variables, current smokers and ex-smokers were more likely than never smokers to report engaging in risky alcohol consumption in the last four weeks.