

91584R



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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Level 3 Mathematics and Statistics (Statistics), 2016

91584 Evaluate statistically based reports

2.00 p.m. Thursday 24 November 2016
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

New Zealand study proves benefit of price discounts on healthy foods

Price discounts are more effective than nutrition education in encouraging people to buy healthier foods, according to New Zealand research that is the first of its kind internationally.

Lead researcher Dr Cliona Ni Mhurchu from The University of Auckland said “Our study was the first of its kind to test the effects of price reduction on healthier foods in a real-life setting. The results highlight the importance of considering pricing interventions rather than relying exclusively on personal responsibility to improve the diets of New Zealanders.”

The Supermarket Health Options Project (SHOP) study ran from 2008 to 2009, and tracked the food purchases of 1104 shoppers at eight PAK’nSAVE supermarkets in the lower North Island. A selection of foods and non-alcoholic beverages available at the supermarket were classified as “healthier”, using a modification of the National Heart Foundation’s ‘Tick’ criteria. Purchase information was collected using electronic scanner sales data.

Shoppers in the study were randomly allocated to either price discounts of 12.5 per cent on healthier foods for six months, or to receive intensive, personalised nutrition education over the same time period. After six months, the amount of “healthier” food purchased by each shopper (in kg per week) was compared to the amount purchased at the beginning of the study, to measure the change in the amount of “healthier” food purchased.

The mean increase in the amount of “healthier” food purchased by the shoppers who received price discounts was approximately 0.28 kg, while the mean increase in the amount of “healthier” food purchased by the shoppers who received nutrition education was approximately –0.51 kg.

Adapted from: C. N. Mhurchu, *New Zealand study proves benefit of price discounts on healthy food* (HRC154), (Auckland: Health Research Council of New Zealand, 2010).

REPORT 2a

Most back controls on sugar use

A majority of Kiwi adults have shown some support in a survey for controls on how much sugar can be fed to us by the soft-drink industry. Forty-six per cent said there should “definitely” be limits on sugar in drinks and a further 32 per cent said there should “possibly” be such limits – more than 75 per cent in total.

In contrast, far fewer people supported a tax on the sugar content of drinks, with 18 per cent saying “definitely” and 26 per cent “possibly” – 44 per cent combined. Forty per cent said the sugar content of takeaways should definitely or possibly be taxed, and 59 per cent definitely or possibly favoured a reduction in the serving sizes of sugar drinks.

The survey was commissioned and conducted by Horizon Research between 24 January and 14 February 2014 and involved 3451 respondents. The margin of error was 1.7 per cent. The final day of the three-week survey period, last Friday, coincided with the release of the first study assessing the New Zealand mortality impact of a 20 per cent tax on fizzy drinks. It found such a tax could avert or postpone 67 deaths a year, which is 0.2 per cent of all deaths.

Adapted from: M. Johnston, ‘Most back curbs on sugar use’, *New Zealand Herald*, 18 February 2014.

REPORT 2b

Horizon Research – Perceived Harm from Sugar Use and Policy Options Questions and top line results

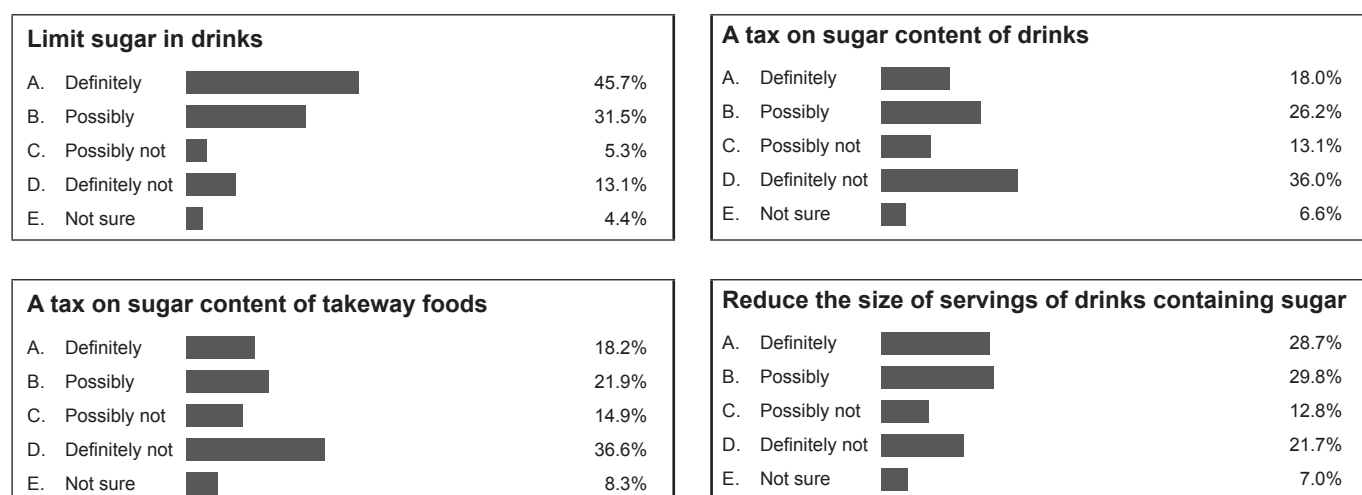
This is a survey of 3 451 respondents of the Horizon Research HorizonPoll national panel representing the New Zealand population aged 18+, conducted between 24 January and 14 February 2014. Results are weighted by age, gender, ethnicity, educational qualifications, employment status, and party voted for at the 2011 general election to provide a representative sample of the adult population. The margin of error is $\pm 1.7\%$.

Respondents were provided with a brief background on “Sugar in our Diet” before being asked the questions for the survey. Below is an extract of this information provided:

New Zealanders are reported to consume an estimated 32 teaspoons of sugar per day. The World Health Organisation recommends 5 teaspoons. The Ministry of Health in New Zealand recommends total sugar intake should not exceed 15% of total energy needs per day. On average, Kiwis eat around the 20 per cent level. But averages mask high intakes by some people and a lower intake by others. Some argue that a diet high in sugar has always been known to cause many health problems, including diabetes, impaired immune system, tooth decay, and deadly diseases like cancer and heart diseases. They say sugar can also be addictive. Others argue sugar can be enjoyed as part of a ‘nutritious, balanced and enjoyable’ diet, that it has no negative influences on any disease – ‘other than a partial contribution’ – that it’s not addictive ...

The four questions about sugar consumption used in the survey are provided below with the survey percentages.

Do you believe New Zealand should impose any of the following in order to reduce sugar consumption?



Adapted from: G. Colman and G. McInman, *Perceived harm from sugar use and policy options* (Questions and top line results), (Auckland, Horizon Research Limited, 2014).

REPORT 3

Higher fines discourage disability parking abuse

Instances of able-bodied people misusing disability parks have dropped, but not enough for CCS Disability Action's liking.

A national study carried out in October last year (2008) showed the number of cars/people using a disability park without displaying a current permit decreased from 40% to 34% compared to a previous study in 2006.

The 2008 survey involved the organisation's 16 branches, about 40 disability parks and the observation of about 500 cars/people, national development manager Peter Wilson said. Disability parks near ATMs, council offices and supermarkets were targeted.

After a similar survey completed in 2006, CCS worked at getting a fine increase from \$40 to \$150 for illegally using a disability park. This came into effect in June last year (2008). Since then, there had been a "measurable drop" in the number of people misusing disability parks, but overall the number was still high, Mr Wilson said.

The 2008 survey found that males were more likely to abuse parks, with 59% of those observed parking in a disability park without a permit being male. Though unsure of why this was, Mr Wilson speculated it might be because women were more considerate than men.

More thought needed to go into the implications of illegally parking in a disability park, he said. It could ruin someone's day – even if a person parked there for just five minutes, it still meant a disabled person could not access the park when they needed to.

The margin of error for the 2006 survey was 3.8%, while the margin of error for the 2008 survey was 4.5%.

Adapted from: E. Constantine, 'Higher fines discourage disability parking abuse', *Otago Daily Times*, 7 February, 2009.