

## Achievement Standard 91266 (Mathematics and Statistics 2.11)

### Evaluate a statistically based report

#### Practice assessment

### Solutions

**Problem:** The overall purpose of this report is to inform people that school canteens are still offering unhealthy food choices to students despite the fact that poor diet leads to health problems and poor academic performance. People who would be interested in this are: parents, schools and the government.

**Plan:** The writers of the report researched the foods sold by school canteens, and worked out the percentage of school canteens that sold a range of healthy and unhealthy food choices.

The sampling method is not given. However, it appears to have been convenience sampling as only schools in the Auckland region have been surveyed. It is not clear if these schools were randomly selected.

The survey method is not given but it is likely that either the researchers went to the schools to record what foods were available or the canteens were asked to complete a questionnaire on what types of food were available.

**Data:** There is a sampling error present in this research as the 30 schools surveyed are only from the Auckland region, despite the report stating that the survey was 'nationwide'. We do not know if the 30 schools in Auckland were randomly chosen, so every Auckland school canteen may not have had an equal chance of being selected to participate in the survey. The schools in the survey may even have been the only ones that responded, or the first 30 that responded, there is no way of telling.

Even if the sample were representative, there would be a sampling error present as it is very unlikely this sample would be identical to another sample (sampling variability). Possible non-sampling errors present are: foods may have changed in the canteen since the survey was taken; many healthy foods may also be available at a school canteen alongside the 'unhealthy' foods (it is possible that these healthy food choices are increasingly popular with students); canteens selected for the survey may have refused to participate or may have completed the questionnaire incorrectly.

**Analysis:** The data on the percentages of schools selling products was displayed both in a table and in a bar graph. The table gives an easy-to-read summary of the information but the bar graph is misleading as the vertical axis does not start at zero which exaggerates the increased percentages in unhealthy foods compared with healthy foods. For example, the bars showing the percentage of schools selling biscuits is nine times taller than the bar showing the percentage of schools selling sushi, whereas the table shows that the percentage of schools selling biscuits was three times as large as the percentage of schools selling sushi.

**Conclusion:** The overall purpose of this report was to inform people about the unhealthy foods that are still available in school canteens.

Data was sourced from school canteens at 30 Auckland schools so the findings in the report should not be understood as representing all school canteens in New Zealand.

The headline for the report is short and catchy, but implies that all canteens in New Zealand are at fault, which is not the case. It could also imply that all canteen food is unhealthy and contributes to obesity (not many 'healthy food' alternatives were listed in the study and it could be that high percentages of school canteens include these unlisted healthy foods as well as the unhealthy ones).

The report also stated that: 'it is a well-known fact that poor diet leads to health problems and poor academic performance' and 'that 20% of school students are overweight, 10% being classified as obese'. The source of these 'well-known' facts is Jack Spratt from the Healthy Eating Society. This information may not be correct, and would need to be verified from an independent source, rather than by an interest group which advocates healthy eating.

The report has potential to be useful to parents, schools and the government as it may encourage them to provide only healthy food choices in school canteens which in turn may decrease the obesity rate and increase the health of young New Zealanders. The research does need improvement, however, before the results are able to be widely applied.