Statistically Based Reports

Checklist

Use this alongside our Walkthrough Guides to tick off the concepts you're confident with to plan your study and find areas of improvement!

Sources and Sampling Methods

- ◯ I can define the independent, or **explanatory variable**.
- ◯ I can define the **dependent variable**
- ◯ I can explain the relationship between the independent and dependent variables
- ◯ I can describe an observational study and an experiment.
- ◯ I can identify the independent and dependent variables in a statistical investigation.
- ◯ I can identify whether a statistical investigation is an example of an observational study or an experiment.
- ◯ I can describe the terms: **sample** and **population**
- ◯ I can identify the method of data collection used by a statistical investigation.
- ◯ I can identify and discuss different methods of random sampling, including systematic, stratified and cluster sampling

Sampling Errors

- ◯ I can define **sampling error** and **non-sampling error**
- ◯ I can discuss whether the findings from a statistical investigation are valid, sensible and accurate
- ◯ I can identify errors as either sampling or non-sampling errors and can explain how it could have been avoided
- ◯ I can define **bias**
- ◯ I can discuss the relationship between two variables, including it's direction and strength, relating to the context provided
- ◯ I can discuss the validity of the sample mean
- ◯ I can explain how the accuracy of the sample mean can be increased
- ◯ I can discuss whether a sample is representative of the population in a statistical investigation
- ◯ I can define **confounding variables** and explain their effect on a statistical investigation
- ◯ I can discuss ways in which a statistical investigation could be improved
- ◯ I can discuss the advantages and disadvantages of a method of data collection
- ◯ I can discuss the effect of any outliers in the data, and explain how it may have occurred
- ◯ I can make conclusions from the data presented
- ◯ I can state the difference between the range, upper quartile and lower quartile between two sets of data displayed using box and whisker plots
- ◯ I can describe the relationship between two variables on a scatter graph
- ◯ I can use box and whisker plots to compare two sets of data
- ◯ I can compare the distribution of two sets of data, including the number of peaks, the location of the median and the symmetry of the distribution

Comparing Measures

- ◯ I can construct a confidence interval by adding and subtracting the margin of error from the sample mean
- ◯ I can describe the terms: **sample** and **population**
- ◯ I can state the meaning of the symbols: **p** and **n**
- ◯ I can calculate the margin of error using the formula $\frac{1}{\sqrt{n}}$ when the proportion is between 0.3 and 0.7
- ◯ I can calculate the margin of error using the formula, MOE = z × $\sqrt{\frac{p(1-p)}{n}}$, when the proportion is less than 0.3 or greater than 0.7
- ◯ I can explain how the margin of error can be decreased, by describing its relationship to the sample size
- ◯ I can calculate the 95% confidence interval for the difference in proportions between two different samples using $(p_1 - p_2) \pm 1.96 \sqrt{\frac{p_1(1-p_1)}{n_1} + \frac{p_1(1-p_2)}{n_2}}$, when the proportion is less than 0.3 or greater than 0.7
- ◯ I can calculate the margin of error from a confidence interval
- ◯ I can discuss whether the difference between sample means is statistically significant or not
- ◯ I can calculate the sample size using the margin of error

