

## ASSESSMENT 2 – TEMPLATE AND HELPFUL HINTS

### **Title Page**

Make sure that the examiner has all of your important information and that you can be clearly identified. If you do not include the following information, your submission will be returned to you, without a grade.

#### **Required Information:**

- Student name
- Student number
- Course code and title
- Your individual dataset number/identifier (e.g framingham\_0\_43\_76.csv)
- Title of assessment
- Word Count (broken down for each question)

## **Contents Page**

### **Required Information:**

- Include page references for each major component of the assignment

You may choose to have a contents page at the start of the submitted document which covers all questions, or, you may choose to have a separate contents page at the start of each research question.

## Question and Analytical Plan

### Question

#### Required information:

- Clearly state the research question as it is written in the assessment document.

### Analytical plan

#### Required information:

- Outline an analytical plan. A generic layout of the analytical plan is outlined in the Module 2 workbook – we expect you to use it as a guide and you will not be deducted marks for using the headings directly from the workbook – the headings are given below. Example analytical plans for particular types of analysis relating to the use of different types of variables are outlined in each of the tutorial exercises for Modules 3 and 4.

### Study design

- Explain what type of study design has been used to collect the data for your report.

### Variables

- Identify the dependent and independent variables
- What is the scale of measurement for each variable? (i.e. what type of variable is it).
- Provide details – if your variable is categorical, what kind of categorical variable (dichotomous, interval, ordinal etc.)? If the variable is continuous, present the range of expected values associated with that variable
- If you have made changes to a variable, clearly explain what you have done (e.g. you may be required to recode, compute a new variable or assign names to numbers for a categorical variable – explain how you achieved this using the software program). This includes if you needed to relabel some of the variables to refer to the correct scale/measurement type. There are marks allocated to this step, as outlined in the marking criteria. Provide these details in a few sentences rather than using screenshots of the process.

### Hypotheses

- Report the null ( $H_0$ ) and the alternate ( $H_1$ ) hypotheses

### Univariate analysis

- Explain to the reader how you will present the summary for EACH variable (univariate analysis)
  - Provide details of numerical summary
  - Provide details of graphical summary

### Bivariate analysis

- Explain to the reader how you will present the summary of BOTH variables together (bivariate analysis)
  - Provide details of numerical summary
  - Provide details of graphical summary

### **Statistical test and assumptions**

- Provide details of which statistical test you will run to enable you to answer the research question. What are the assumptions for this test? Note: for some tests there may be a few assumptions.

### **Significance level**

- Provide a statement on the threshold for statistical significance that you will be using.

## Analysis

Time to implement the plan ...

### 1. Univariate Analysis

Present the results of the univariate analysis in this section

#### Required information:

- Describe each variable in a clear and concise manner
- For categorical variables, provide details of how many subjects are in each group (and the percentages across groups)
- For continuous variables provide details about the mean or median and sd or IQR of the values for that particular variable (as appropriate according to its distribution)
- Present the results for the variable graphically (following what you said you'd do in the analytical plan)
- Ensure that you label all tables and graphs in a clear and logical manner.
- Make sure to write a sentence or two to explain/interpret the results presented in any tables or graphs

An example univariate numerical summary for one variable (in this case, age) may look something like this:

*Data relating to age was collected from 98 of the 100 enrolled participants (2 missing). The lowest age in the cohort was 21 years and the highest age was 104 years. The mean age for the sample was 61.6 years (SD = 14.3).*

### 2. Bivariate Analysis

Present the results of the bivariate analysis in this section

#### Required information:

- Describe the variables in a clear and concise manner – include important information about the distribution of the variables
- Present the variables in an appropriate graphical summary (following what you said you'd do in the analytical plan)
- Ensure that you label all tables and graphs in a clear and logical manner.
- Make sure to write a sentence or two or three to explain/interpret the results presented in any tables or graphs

An example bivariate numerical summary may look something like this:

*Data relating to age was analysed according to the two gender groups in the study (male/female). Of the 98 participants who provided information about their age, 34 of them were male (34.7%) and 64 (65.3%) were female. Age data was not normally distributed in either gender group because the skewness coefficient for both was outside the allowed threshold (-2 to +2). The median age for females in the study is 71.4 years (IQR = 26.7) and the median age for males in the study is 64.3 years (IQR = 21.4). On average, the female participants in the study*

*appear to be older than their male counterparts but an appropriate statistical test is needed to determine if this difference is statistically significant.*

### **3. Statistical test and assumptions**

Present the results of the statistical test in this section

#### **Required information:**

- Explain in a clear and thorough manner how you have checked the assumption(s) that relate to this test have been met. Note: a number of marks are allocated to this so provide specific details in more than one sentence.
- Present the test statistic and the p-value associated with the test you have run
- Present other important information as appropriate, such as degrees of freedom, 95% confidence intervals and parameter estimates. Remember that not all tests will produce the same output
- Explain and provide an interpretation of the results from the statistical test. Note: a number of marks are awarded for this so provide as much details as possible.

### **4. Summary [200 to 500 words]**

Summarise all of the information that you have collected and draw your answer to a close. Note: you will repeat some of the main information/results presented previously (but do so in a concise manner (there is a skill in doing this which takes practice ...)) [There are some example papers in learning resources which will be helpful]

#### **Required information:**

- Provide details about the study design and the number of participants
- Summarise the results from the univariate and bivariate analysis (graphs are not needed)
- Explain the test that was undertaken, including information about why it is appropriate.
- Interpret the results from a statistical perspective – this includes interpretation of the p-value and other relevant aspects of the results (e.g 95% confidence interval). What are the main differences or associations which have been found?
- Write a few sentences at the end which interprets the results and discusses the relevance of the results in relation to the clinical problem that is being addressed in the question (clinical implications). Think critically about the results and discuss how the results may be important from a clinical perspective (Is there a strong association or are there large differences between groups? Are the results to be expected? If not, why not?).