

CBA SCAFFOLD TEMPLATE

1. Pose your Statistical Question

Here you state your statistical question. You should state your question or investigation in a specific and concise way. You don't want to have a broad or vague question as this will be hard to answer. You want to narrow down your question to the exact thing you want to find out. Here you should mention why you chose this problem. Can you predict what the outcome will be?

Max 10 lines



2. Decide on your variables of interest

What are the variables in your question? A variable is a characteristic, number or quantity that can be measured or counted. Examples of variables are height, age, distance, time, number of pets etc. What is the data type of your variables? Are they numerical (discrete or continuous) or categorical (ordinal or nominal)? How will you measure your variables (e.g., height will be measured in cm, time will be measured in minutes, opinions will be measured on a scale from 1-5 with 1 being best and 5 being worst)

Max 10 lines

3. Data Collection Plan

Describe how you will gather your data. State the sample & population of your investigation. How will you select your sample? Is the data representative of your population? Include a copy of your questionnaire, experiment design or survey.



Justify the reason behind each question, i.e., why did you include that question? Make sure your questions are specific, cater for varying responses and that they collect relevant data. Collect your data in a way that produces reliable and valid data

1 page	

4. Organise your Data

After you collect your data, organise it in a way that makes it accessible. This might be in a list, table or spreadsheet. Having your data organised will make it easier and quicker to create graphs and perform calculations. You may need to split your data according to your groups/categories (e.g., male data vs female data or iPhone users vs Android users). Make any initial comments or observations of your data. Are there any extreme values (outliers)?



1 page	

5. Analyse your Data

This is one of the biggest steps in the CBA, the analysis. Basically, in this section, you do the work to try and find the answer to your question in your data. You will do this by analysing the data graphically and numerically. You will then use this analysis to try and build conclusions and findings from your data. Below are prompts on how to analyse data numerically and graphically. Be sure to check out the section on appropriate graphs and calculations to use on different data types on page.



Graphically

Numerically

Create various graphs and/or tables to help visualise your data. You want to try and see what's happening with your data so creating multiple graphs may be necessary to get the full picture.

Say what you see. In every graph explain what you see and say what is happening with the data. Are there any extreme values, is it increasing or decreasing, or does it follow a certain shape or curvature? How are the variables impacting each other? Is something happening in one group and not the other?

Use graphs to compare your categorical groups. For example, if you're comparing iPhone users' screen time against Android users, you might create a histogram for the iPhone users, and then the Android users and use these visuals to directly compare the shape and distribution of the data. You could also make a stacked histogram directly to compare the two.

Make sure you use graphs appropriate to your data. See the table on page 8 for appropriate graphs to use for different types of data. Here you should calculate appropriate measures of centre (mean, mode & median), measures of spread (range) and/or proportions (ratios, percentages) to try and understand your data.

You may do these calculations on the entire data set or perform calculations on various groups/categories. E.g., you may calculate the mean speed for boys and the mean speed for girls and then compare the two to try help find out who is faster.

If you're comparing groups be sure to make direct comparisons between calculations such as the mean, mode or median. For example, you might calculate the mean speed of boys and the mean speed of girls and directly compare the two figures. You should be using these calculations to try to build an answer to your statistical question.

Explain each calculation. Every calculation should come with an explanation of what it represents in terms of the data and the context of your question.



Graphical and numerical summaries should be interwoven and explained together. Identify and comment on how your numerical calculations can be seen in your graphs. Mark off the mean, mode or median on your graphs as these are excellent reference points.

Your calculations and graphs are doing the same thing – telling the story of your data so while they can stand individually, be sure to try connecting the two to help unfold any patterns and trends in your data. When you're working on the analysis always keep in mind that you are working to try and answer your question. Make sure your graphs and numerical calculations are relevant to trying to get an answer for your statistical question.

2 pages for this section	



6. State your conclusions and findings

Here you want to answer your statistical question based on your analysis. From your analysis above, what can you deduce or conclude to answer your question. What is happening in the data? Spell out what the trends or patterns are (if there are none, say this). Do you think there is another variable affecting your conclusion (confounding variable)? Here you need to build your conclusion to answer your question. Link back to the original question when making your conclusions. It might seem like you are repeating yourself at times, but it is important that you spell out exactly how you reach your conclusions



7. Evaluate your investigation

Reflect on what worked well in the statistical investigation and what you would do differently? How could you improve your investigation? Look beyond your data. Can you spot any flaws in your investigation? Does your investigation open the door to



another one? Were there any limitations or restrictions to your data or investigation? Could it be generalised to the population, or would something need to change? Is the outcome what you predicted? Compare your investigation to others – research online for similar studies and see how yours compares. Be sure to include references if you use any statistics from other sources.

1 page	





Best of luck in the exam! You will be great



Page 24