IPM component 3

Term 1, week 8

On critique,

with a comparison to summary

and paraphrase

Example 1

- Consider the text shown on p1 of the main notes.

Here we describe the mean and median as ways of finding averages in data. The mean is a way of calculating the average value of data using simple arithmetic, whereas the median does not rely on arithmetic. Instead, the median relies of ordering the data from smallest to largest and then identifying the middle value. This middle value is a form of average because it represents the most common value among the data.

Focusing more closely on the nature of data itself, we find that there are data values called outliers. Outliers can be defined as data values which lie significantly outside the main trend of the data. A single outlier in a data set can significantly change the value of the mean compared to the mean calculated without the outlier. On the other hand, the median is not affected by outliers. When data is arranged in order the middle data values remains in the middle, irrespective of how large or small the outlier is.

Example 1

Now consider its summary and paraphrase:

Summary: The text above mentions two ways in which we can find the average of a data set, namely the mean and the median. It also describes how outliers affect the result of the mean and median.

Paraphrase: Two standard measures of central tendencies are the mean and median. The mean is found by summing the data and then dividing by the number of data. In other words, it is the usually understood way of finding an average. On the other hand, the median relies on the data being put into ascending order, from which we locate the middle value. Because the value is in the middle of the ordered data set it is considered the most common value.

In terms of the data values themselves we find that there are such things as outliers. Outliers are values which are considered unusual because instead of following the main trend of the data they lie at an abnormal distance from all other values. They are considered extreme values since they stand out greatly from the overall pattern of the data set. Outliers can significantly affect the value of the mean but not the value of the median since the ordering of data is not affected by the size of outlying values.

Example 1

- All three images above are of the same scale.

- Look at the most obvious differences between the summary and the paraphrase:
  - How long is the summary compared to the original text?
  - How long is the paraphrase compared to the original text?

Example 1

- **Other questions**
  - What makes a summary?
  - How much detail can we have in a summary?
  - Can we give more detail to the summary above and it still be a summary?

Example 1

- **Other questions**
  - What makes a paraphrase?
  - How much detail can we have in a paraphrase?
  - Is it possible to shorten the paraphrase above and it still be a paraphrase?
- See main notes for example 2.

The language of summary

- Reference-type language:
  - "Prior work by … reveals that …".

Phrasing …

The language of summary

- Reference-type language:
  - "Prior work by Smith (2000) on the mean of random samples taken from a single population reveals that these means have a natural variation".

Phrasing + lack of detail.

The language of summary

- Missing detail could be related to
  - the distribution of the population: is it normally distributed? Is it skewed?
  - the size of the samples taken: too small a sample size adversely affects the sample means.

The language of summary

- Reference-type language:
  - "It is generally accepted that …";

Phrasing …

The language of summary

- Reference-type language:
  - "It is generally accepted that the mean is susceptible to outliers whereas the median is not".

Phrasing + lack of detail.

The language of summary

- Missing detail could be related to
  - how extreme the outliers are: the more extreme the outlier, the greater its effect on the mean;
  - how the median is unaffected by extreme values because the data is arranged in numerical order.
- See main notes, table titled "Two examples of suitable language for writing summaries" for more.

The language of paraphrase

- Paraphrasing is about
  - writing the topic of the text in your own words.

or, more explicitly,

  - using alternative phrases, and construction of sentences or paragraphs, compared to the original text, whilst keeping the same meaning as the original text.

The language of paraphrase

Warning

- The above can be reduced to a mere technical exercise of using synonyms, as well as swapping around phrases and sentences.
- This is not the true essence of a paraphrase, although a paraphrase has these features.

The language of paraphrase

Warning

- A paraphrase is not about treating a text as a puzzle whose words, phrases, sentences, paragraphs are to be reordered.

The language of paraphrase

Warning

- The true essence of a paraphrase is to use language in order to *express your own understanding.*
- This means you need sufficient language and writing abilities to do so.
- This is partly what the IPM is all about.

The language of paraphrase

Example:

- See p7 of main notes for an example involving a primary text and two paraphrased versions.

What is a summary and paraphrase?

- **Summaries**
  - report briefly yet accurately;
  - focus on the central theme or idea of the text;
  - can be used for sections as well as for the whole paper/essay;
  - does not offer an opinion nor a critique.

  Abstracts at the start of a paper are examples of summaries.

What is a summary and paraphrase?

- **Paraphrases**
  - demonstrate one's understanding of a text;
  - are rewritings of a text in one's own words;
    - However, not just one's on words but also one's own phrasing, and sentence construction/structure.
  - have approximately the same degree of detail or depth as the original text.

Critique

- Consider the following example text:

  In statistics using the mean as an average has the advantage that all data values are used. The advantage of taking all data values when calculating an average is that the mean is similar between different samples.

Critique

- A possible critique could focus on
  - The use of the mean as an average: means are very sensitive to outliers. In that case the mean will not necessarily represent the most common value.
  - The use of other averages such as the median or the mode, but these also have their problems.

Critique

- Consider the following example text:

  In statistics using the median as an average has the advantage that it always represents the "middle" data value because it is not affected by outliers.

Critique

- A possible critique could focus on
  - The sensitivity of the median: The median is very sensitive to the sample used. Different samples from the same population can give widely different medians.

Critiquing

- The examples above illustrate a basic form of critique, namely that it contains a description of
  - problems encountered by the methods used,
  - other methods that could be used.

Example 3

- Continuing our critique we could then focus on
  - comparing both methods: Instead of using either the mean or the median we could possibly use both (if this is appropriate) and compare their results and effectiveness.
- See example 1, p9 of the "Critiquing" section of the notes for the full text and critique.

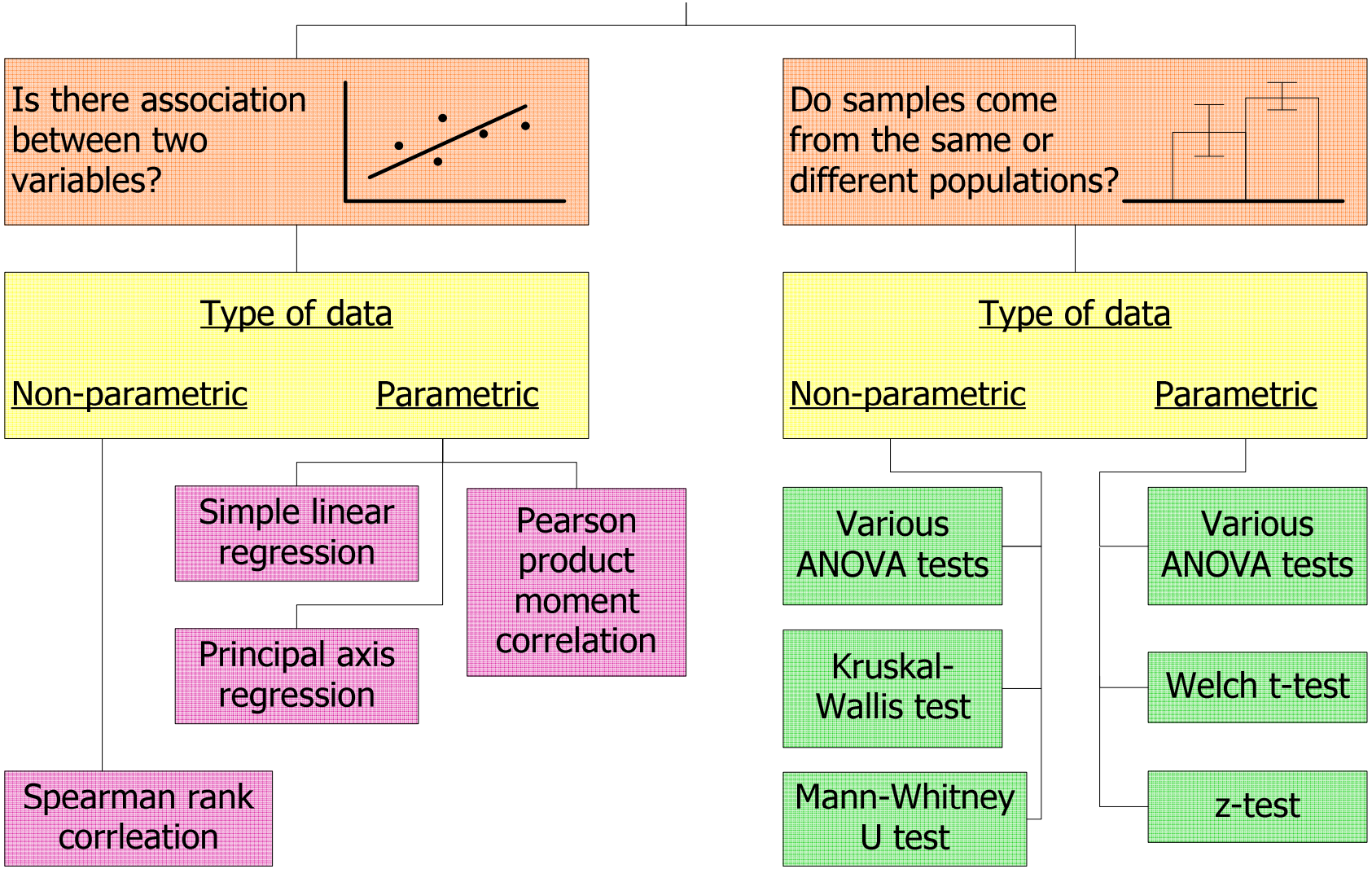
The language of critique

- Here we look at example 2 of the “Critiquing” section of the notes.

Critique the technicalities of a discipline

- **What can we critique?**
  - *Statistics:* data collection methods, sampling techniques (random, stratified, every n^{th} person), probability distribution (continuous of discrete), use of p-values, assumptions, etc.,
  - Is the analysis appropriate? Are results correctly interpreted? Is the result significant in reality even if the stats say it is?!

Critique the technicalities of a discipline



Critique the technicalities of a discipline

- See the notes for examples of other technical aspects of statistics for which a critique could be provided.

Critique the technicalities of a discipline

- **What can we critique?**
  - *Mathematics:* Various methods of multiplying two numbers.

The usual way

$$\begin{array}{r} 325 \\ \times \quad 12 \\ \hline 650 \\ 3250 \\ \hline 3900 \end{array}$$

Critique the technicalities of a discipline

- **What can we critique?**
  - *Mathematics:* Various methods of multiplying two numbers.

    Repeated addition

$$325 + 325 + 325 + 325 + 325 + 325 + 325 + 325 + 325 + 325 + 325 + 325 = 3900$$

Critique the technicalities of a discipline

- **What can we critique?**
  - *Mathematics:* Various methods of multiplying two numbers.

Split the multiplier into two terms and expand:

$$
\begin{aligned}
325 \times 12 &= 325 \times (8 + 4) \\
&= 325 \times 8 + 325 \times 4 \\
&= 2600 + 1300 \\
&= 3900
\end{aligned}
$$

Critique the technicalities of a discipline

- **What can we critique?**
  - *Exercise:* See notes for the other methods, then critique these methods.

Critique the technicalities of a discipline

- **What can we critique?**
  - *Engineering:*
    - - - - -
  - *C.S.:*
    - - - - -
  - *Data analytics/security*
    - - - - -

Critique the technicalities of a discipline

What can we critique?

- It is possible to critique (to a certain degree) a subject you know nothing about.

- Although we may not know the topic there are key things we always bear in mind when critiquing.

Critique the technicalities of a discipline

What can we critique?

- We then read the language of the critique in order to see if such things have been addressed.

- See notes for an example.

What is a critique?

- A critique
  - contains a paraphrase of the main text in order to act as a reference to what we are critiquing;
  - uses argumentation in order to evaluate
    - the pros and cons,
    - significances or not,
    - advantages and/or disadvantages,
    - strengths and/or weaknesses,
    - proposed solutions.

Comparing summaries, paraphrases and critiques.

Descriptive writing	Critical analytical writing
States what happened	Identifies the significance of something that happened
States what something is like	Evaluates its strengths and weaknesses
States the order in which things happened	Structures information in order of importance
Explains what a theory says	Discusses the importance/failings/relevance of a theory in relation to a topic/idea
Explains how something works	Indicates why something will work (best)
Notes the methods used	Evaluates whether the extent to which the methods used were fit for purpose
Says when something occurred	Identifies why timing is of importance
States the different components	Weighs up the importance of component parts
States links between items	Shows the relevance of links between pieces of information
Gives information	Draws conclusions

Adapted from: Cottrell, S., (2008) *The Study Skills Handbook*, Hampshire: Palgrave Macmillan, p286.