Formatting Tables & Figures

GRS Writing Group – WED 22 MAR

The 1986 space shuttle Challenger tragedy in which seven astronauts died was caused, in part, by bad data graphics. By bad, we mean visuals that did not communicate the intended message. Because NASA officials did not understand vital information, the launch decision was ill- informed and the outcome catastrophic.

From Bigwood & Spores Designing persuasive tables and charts

Discuss the tables and figures provided.

How would you improve them?

If you are struggling with how to present your data you need to first ask yourself if you understand your message. Once you are clear about what you want to tell the reader, you can tehn ask yourself the following questions to help you put your data together in such a way that it makes your message easy for your reader to understand.

1. Will you present your results as text, a table or a figure? Choose only one as data should not appear in multiple forms. Generally, detailed data sets are best represented in a table and graphs & charts are useful for illustrating relationships. Refer to images, flow charts, photographs and line drawings as figures.

   - Use **text** when you can communicate simple results in a few sentences.
   - Use a **table** when readers need to know the numbers (to look at or compare individual values), the numbers need to be precise, your data includes more than one unit of measure, and/ or your data has a wide range.
   - Use a **figure** when you want to show a trend or a relatively simple relationship. See http://www.thinkoutsidetheslide.com/articles/using_graphs_and_tables.htm for a decision tree to help you choose which type of graph to use.

2. What is your disciplinary norm for presenting tables and figures? If you are preparing for a journal publication, read carefully the instructions to authors. You may also find it useful to draft your table or figure based on a similar table or figure that has been published in that journal. The journal may refer you to a style guide such as APA6. Make sure you read the relevant instructions in these style guides.

3. How will you number your tables and figures? Number tables and figures are numbered independently & consecutively in the order they are referred to in the text. When referring to a figure in the text it is usually abbreviated to Fig. X. Table is not abbreviated.

4. Has every table or figure been referred to in the text? Every table or figure included in the paper/thesis must have a link in the text. Usually, tables and figures should be found as close to their reference in the text as possible and always after their in text reference. But placement can be discipline specific, and in journal manuscripts it is common to present tables and figures at the end of the paper on separate pages. Tables with raw data are often presented in appendices. Figure in text is commonly abbreviated to Fig. Table is not abbreviated.

5. Can you understand your table or figure independent of the associated text? Tables and figures should 'stand alone'. Ensure they are sufficiently clear, well-labelled and the legend (also known as caption) is sufficiently detailed. Explain all abbreviations, acronyms, symbols, and/or arrows.

6. Are your tables and figures labelled appropriately? Table titles appear above the table. Legends for figures appear below. Write out Figure in full in the legend. Footnotes always appear below tables and figures.

7. Are your tables and figures formatted appropriately? Centre on the page and provide adequate white space above and below to separate the table/figure from the text.

8. Align columns by common elements (ie decimal point) and evenly space columns if appropriate. Do not include columns that may be easily calculated. If all data in a column is identical, remove the column and add detail into text or table legend. Consider how many decimals you present – how many decimals points can you use given the accuracy of your study / can you round the data to make it easier for the reader to understand / is the number of significant figures provided consistent for the data ? Gridlines, shading and highlighting can create visual barriers that make comparisons difficult. Use space to direct readers. Allow items to be compared in columns rather than rows.

Some useful resources

For some examples of poor use of gridlines in a table see Keeping it simple: Four myths on data presentation

For examples of when to use columns versus rows see When to use numeric tables and why - Guidelines for the brave

For examples of bad tables and how to improve them see Plain Figures - Examples and Tips

Wainer, H. 1984. How to display data badly. The American Statistician.

Elsevier's 5-step guide to data visualization touches on specialized graphs, big data graphs, colour, shape and scale.

UNC Writing Centre's Figures and Charts provides some good general advice about formatting pie charts, bar graphs, line graphs and scatter plots.

Reporting Results Academic Writing Phrasebank

If you have some spare time you may want to have a quick look Bored Panda's 35 Extremely Funny Graphs and Charts.

Further details of the UWA GRS Writing Group, including advice sheets to download, here: www.postgraduate.uwa.edu.au/students/resources/communities#writinggroup