Using Tables, Figures and Diagrams Effectively in Your Writing

A picture is worth a thousand words.

For this reason, writers often include graphic elements, such as charts, graphs, diagrams and tables, in their writing. However, this is often done ineffectively, so the purpose of this information sheet is to identify the commonly made mistakes and the ways these can be rectified.

Mistake 1: Not integrating the figure or diagram into the text of the writing

While a figure or diagram might be “worth a thousand words”, it is important to recognise that readers don’t read them like they are another paragraph of text. Consequently, just placing them in your text without any introduction, explanation, or verbal analysis, is a bit like a prosecutor holding up a piece of evidence in a courtroom and saying nothing, thus leaving it for the jury to figure out what the evidence is all about and what the significance or implications of the evidence are. Like a prosecutor with criminal evidence, a writer uses figures and diagrams to support their argument. As such, they need to tell the reader explicitly how they do so. In addition, so that they can refer to a figure or table easily in their argument, it helps to number figures and tables.

Example 1

One measure of social disadvantage is relative access to primary health care. As Table 1 [or Fig. 1] shows, in comparison to capital city residents, Woop Woop’s residents have significantly lower per capita access to both GPs and pharmacists. This suggests that governments should look at ways of encouraging more doctors and pharmacists to move to rural areas.

Comments

Note the use of a topic sentence to orientate the reader to the topic being addressed in the paragraph. The reader is then informed as to what Table 1 is about and the important feature for the argument is pointed out in qualitative terms. Finally, a conclusion is drawn form the evidence so the reason for presenting the table is clear.

| Table 1: Comparison of access to primary health care providers.* |
|---|---|---|
| | Woop Woop | Capital City Average |
| GPs per 100,000 | 75.6 | 103.4 |
| Pharmacists per 100,000 | 52.0 | 62.5 |


Mistake 2: Including irrelevant or unnecessary figures or tables

Before including a figure or table in their document, a writer should ask themselves:

- **What am I trying to help the reader understand?**
- **Why does the reader need to understand this?** (If there is not a compelling answer to this question, do not include the figure or table.)
- and finally, **What is the most effective way of achieving that understanding?**

For example, if the writer decides that their purpose is to demonstrate that the market for a certain product has grown rapidly over the last decade, do they need a table with market size for each year over the decade to do this? Or would it be enough to simply say, “The market size for product X has grown markedly over the last decade, from $x million dollars in 1995 to $y billion in 2005 (ref.)”?  

Also, if a picture is added without any comment or analysis, then it is questionable in general whether the picture is of any use to the reader. (One exception would be a schematic of an experimental set up. Such schematics are important in helping the reader understand what was done and how it was done, but usually one sees little more than, “Figure 1 is a schematic of the test rig we used to measure ….”.)

Another issue that might arise is how many graphs of experimental results you should include if you have a large number of them. One possibility in such a case is to include one or two representative examples with a verbal or numerical summary of the rest. For example, “Figures 1 and 2 are representative plots of gene expression in the experiments. These plots were used to determine X, which is labelled with an arrow in the two figures. A summary of the values of X obtained from all experiments is given in Table 2, which shows that …”
Putting extra data in an appendix

In a thesis or large report, writers sometimes include extra data in appendices. This is done when this extra data would just “get in the way” if put in the main body of the text, but someone might want to look at it and so it should be included somewhere. If however the data is something most readers would want to look at as they are reading the main text, then that data should not be put in an appendix as it is very annoying for readers to have to flick back and forth between pages which are many pages apart.

Mistake 3: Repeating (excessively) in the text, statistics that can be found in a table

The reason for organising data into a table, chart or graph, is to make it easier for the reader to see the relevant patterns in the data and because lots of numbers scattered throughout a paragraph quickly become overwhelming for the reader. Since the data is in the table, chart or graph, there is no point in repeating them in the text. Example 2 below shows how Example 1 should not be done.

Example 2

One measure of social disadvantage is relative access to primary health care. As Table 1 shows, Woop Woop’s residents have only 75.6 GPs and 52.0 pharmacists per 100,000 of population compared to a capital city average of 103.4 GPs and 62.5 pharmacists per 100,000. This significantly lower per capita access to both GPs and pharmacists suggests that governments should look at ways of encouraging more doctors and pharmacists to move to rural areas.

Other Points

- A question writers might have to address is whether to present their data in a table or as a figure. For example, the data in Table 1 above could have been put in a bar chart as shown in Fig. 1. Observe the relative advantages and disadvantages of tables versus charts. Tables are precise, but trends/patterns aren’t necessarily as immediately obvious as they are in charts. In this case, given the nature of the conclusion, the writer might think that the bar chart might have greater impact and so be the best choice. However, charts are usually less precise, and sometimes that may be an issue.
- Explanatory notes for complex figures are generally put in the figure caption rather than the main text as Fig. 2 shows.

Checklist

- Is each figure and table numbered so that they are easy to refer to and easy for the reader to identify?
- Does each have a descriptive title or caption so that the reader can understand what they are about without having to read the text if they need to when revisiting your work?
- Is each table or figure integrated into your argument or presentation so that why they are there and what they are meant to show is clear to the reader?
- Do you point out the important feature(s) for your argument to the reader so that they can quickly identify these?

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