Tables and Figures in Research Report Part - II

Pre - Ph.D. Course Work
Paper I

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Figures in Research Report

▸ **Once your statistical analysis are complete, you will need to summarize data and results for presentation to your readers**

▸ **Data summarization may take one of 3 forms: text, tables and figures**

- Text – Not all analysis or results warrant a table or figure, some simple results are best stated in a single sentence, with data summarized parenthetically

- Tables – Table in its broadest sense is an orderly arrangement of data in columns and rows

- Figures – Figures are visual representation of results, including graphs, diagrams, photos, drawing, schematics, maps etc.

Figures

- Figures include any illustration or image other than table

- Figures come in two types:
  - Graphs: typically used to present data in a form that is easy for the readers to understand
  - Images and Diagrams: more likely to be used to help explain concepts and theories

- Figures provide great deal of visual appeal

- They allow users to quickly spot trends, examine pronounced data, and see an actual picture. This power and appeal makes 'a picture worth a thousand words'
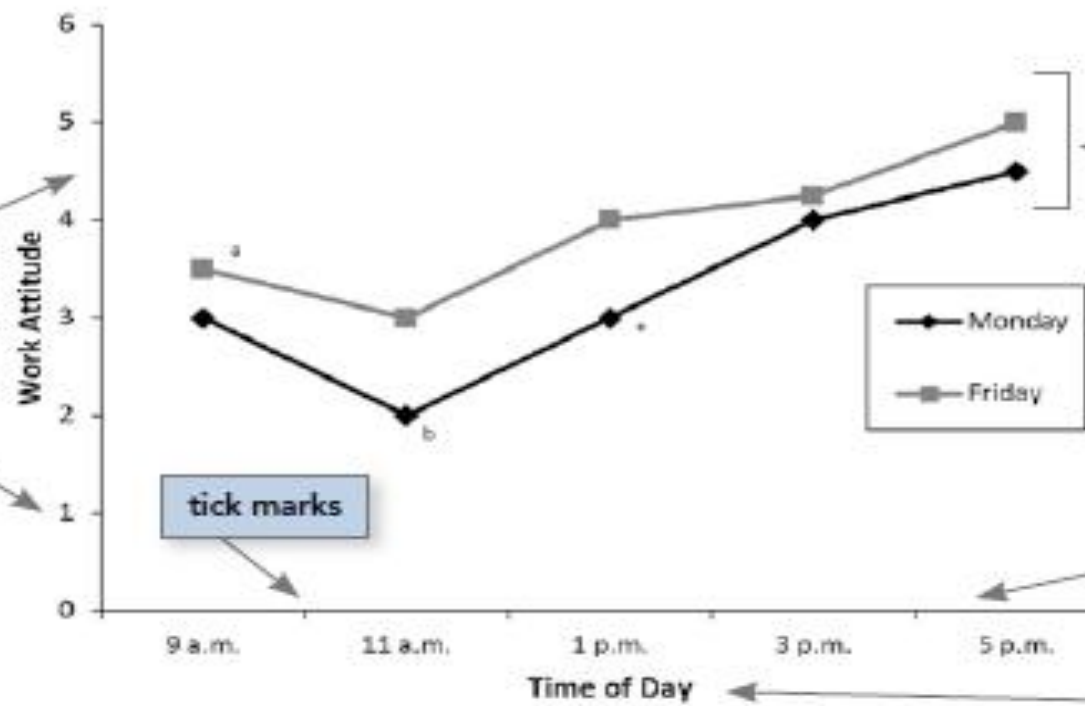
figure number

figure title

image: graph, chart, drawing, map, plot, or photograph itself

y-axis

y-axis title

y-axis labels

tick marks

figure notes: explanations to supplement or clarify information in the image

Figure 1

Changes in Work Attitude as a Function of Day and Time

Work Attitude

6
5
4
3
2
1
0

a

b

Monday

Friday

9 a.m.   11 a.m.   1 p.m.   3 p.m.   5 p.m.

Time of Day

data points

legend or key: explanation of symbols used in the image

x-axis

x-axis labels

x-axis title

Note. This figure demonstrates the elements of a prototypical figure. A *general note* to a figure appears first and contains information needed to understand the figure, including definitions of abbreviations (see Sections 7.15 and 7.28) and the copyright attribution for a reprinted or adapted figure (see Section 7.7).

[a] A *specific note* explains a particular element of the figure and appears in a separate paragraph below any general notes. [b] Subsequent specific notes follow in the same paragraph (see Section 7.28).
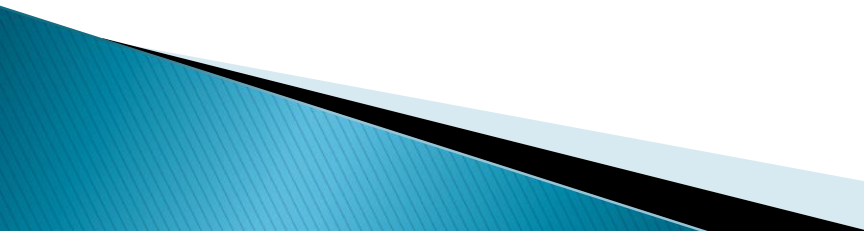
[*] A *probability note* (for *p* values) appears as a separate paragraph below any specific notes; subsequent probability notes follow in the same paragraph (see Section 7.28).

Figure Components

Number

- Figure number appears above the figure title and image in bold font
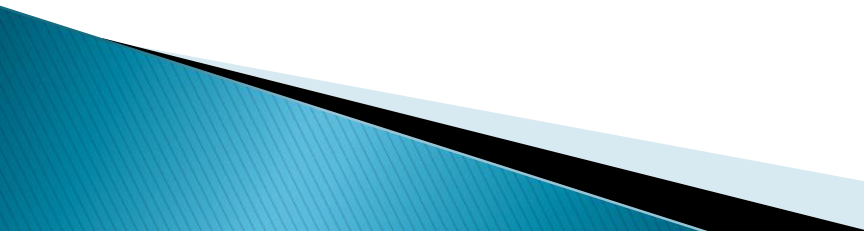- Number the figures in the order they are mentioned in your paper

Title

- Figure title appears one double-spaced line below the figure number
- Give each figure a brief but descriptive title
- Capitalize the figure title in italic title case

Image

Image of the figure is the body and it is positioned underneath the number and title. The image should be:

- Legible in size and resolution.

- Font should be Sans Serif

- Consistently sized and between 8-14 point

- Base should be used for axis label and other headings

- Description within figures should be in sentence case

- Shading and color should be limited for clarity

Legends

- Legends or key contain symbols, styles, pattern, shading or colors in the image
- Words in the legend should be in title case
- Legends should go within or underneath the image rather than on sides
- Not all figures require a legend

Note

A note can appear below the figure to describe contents of the figure that cannot be understood from the figure title, image, and/or legend alone

- **Notes can be:**

  - **General - explains units of measurements, symbols, and abbreviations or provide citation**

  - **Specific – identify specific elements using superscripts**

  - **Probability – explain statistical significance of certain values**

- **Include figure notes only as needed**

- **Notes are double-spaced and flush-left**

Colors

▶ **Color is a powerful tool in graphic design. It can be used to attract attention, organize content, emphasize elements, evoke emotions and help a design a look that is aesthetically pleasing**

▶ **Most often black and white are preferred. The rationale is that if you need to photocopy or fax your paper, any information conveyed by colors will not be lost**

▶ **However, colors will be helpful in distinguishing different data sets**

▶ **Every aspect of your figure should convey information**

▶ **Never use colors simply because it is pretty**

Placement

- ► Option 1 – place all figures on separate page after the reference list

- ► Option 2 – embed each figure within the text

Font

Font options include the following:

- ► Sans Serif fonts such as 11-point Calibri, 11-point Ariel, or 10-point Lucida Sans Unicode

- ► Serif font such as 12-point Times New Roman, 11-point Georgia

- ► Use the same font throughout your paper with the following exceptions:

  -within a figure images, use a Sans Serif font with a type size between 8-14 points

Principles of Figure Construction

1. The most important principle to follow when creating a figure is to present the information in a way that is easy for reader to understand

2. Provide sufficient information in the figure itself, so that readers do not need to read the text to understand it

3. Don't just plunk a figure into your writing. You need to refer its relevance to your argument in the preceding text

4. Use software to create figures in APA style using built in graphic features of your word processing program (e.g., – Microsoft Word or Excel) or dedicated programs such as Photoshop or Inkscape

5. **When creating a figure, ensure you meet the following standards:**
   - Images are clear
   - Lines are smooth and sharp
   - Font is legible and simple
   - Units of measurement are provided
   - Axes are clearly labeled
   - Elements within the figure are clearly labeled or explained

6. **When referring to figures within the text, you can use**
   - Clauses beginning with "As": "As shown in Figure 1, …"
   - Passive voice: "Results are shown in Figure 1"
   - Active voice (if appropriate for your discipline): "Figure 1 shows   that …"
   - Parentheses: " Each sample tested positive for three nutrients (Table 1)"

7. Don't give extensive description while writing the contents of a diagram. The information in a diagram tells its own story – your job is to point out its significance to your argument

8. Don't restructure data from an information source into another format (graph, charts) without referencing the author of your information. You may restructure the graph, but the author still 'owns' the data

9. If you reprint or adopt a figure from another source in your paper (e.g., – an image you found on the internet), you must write a copyright attribution in the figure note indicating the origin of the reprinted material

Figure 2

*Factors Influencing the Formation of Tourists' Needs*

Note. This figure was produced by Ipatov in 2012, and it summarized five groups of factors that influence the formation of tourist needs (as reprinted in Jahan & Rahman, 2016). From "Factors that Obstruct Tourism Development in Bangladesh", by N. Jahan and S. Rahman, 2016, *CLEAR International Journal of Research in Commerce & Management*, 7 (9), p.53. Copyright 2016 by

Example of an APA Style Bar Graph in Completion

Figure 1.

Average preference ratings for different technology types.
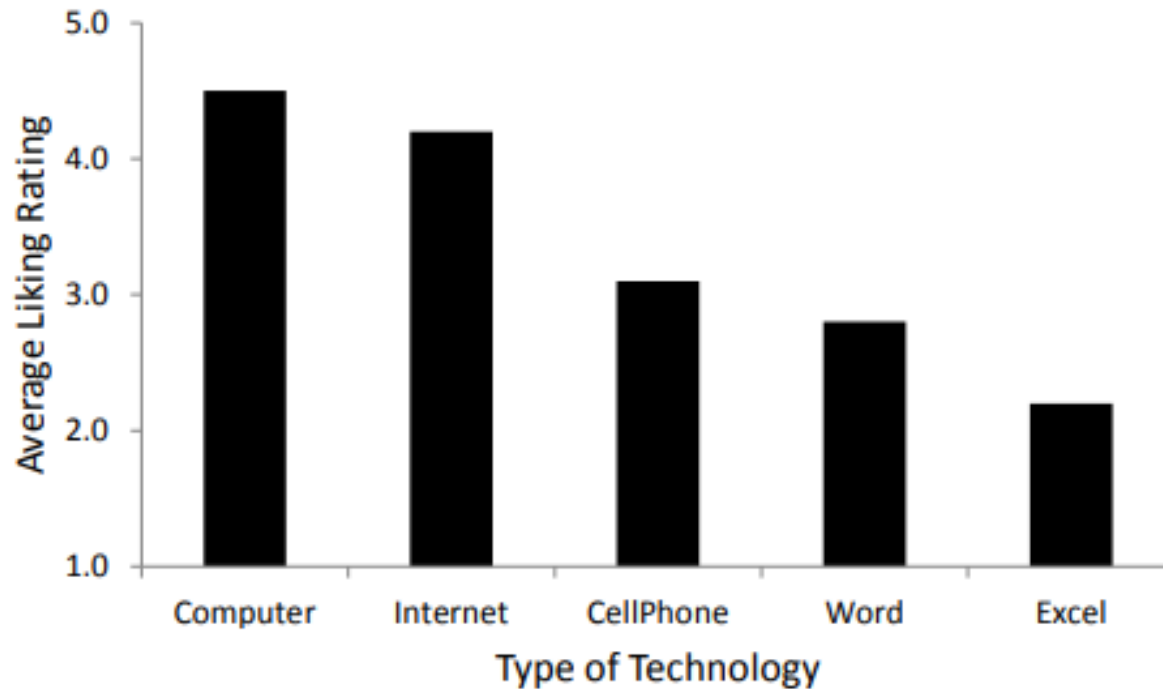
Figure Checklist

- Is the figure necessary?

- Does the figure belong in the print and electronic versions of the article, or is it supplemental?

- Is the figure simple, clean, and free of extraneous detail?

- Is the figure title descriptive of the content of the figure? Is it written in italic title case and left aligned?

- Are all elements of the figure clearly labeled?

- Are the magnitude, scale, and direction of grid elements clearly labeled?

- Are parallel figures or equally important figures prepared according to the same scale?

- Are the figures numbered consecutively with Arabic numerals? Is the figure number bold and left aligned?

- Has the figure been formatted properly? Is the font sans serif in the image portion of the figure and between sizes 8 and 14?

- Are all abbreviations and special symbols explained?

- If the figure has a legend, does it appear within or below the image? Are the legend's words written in title case?

- Are the figure notes in general, specific, and probability order? Are they double-spaced, left aligned, and in the same font as the paper?

- Are all figures mentioned in the text?

- Has written permission for print and electronic reuse been obtained? Is proper credit given in the figure caption?

- Have all substantive modifications to photographic images been disclosed?

- Are the figures being submitted in a file format acceptable to the publisher?

- Have the files been produced at a sufficiently high resolution to allow for accurate reproduction?

A good rule of thumb is to produce figure and text that can both stand alone: the text should be readable without figure, and vice versa.

References

▶ https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/apa_tables_and_figures.html

▶ https://apastyle.apa.org/style-grammar-guidelines/tables-figures/figures

▶ https://www.editage.com/insights/tips-on-effective-use-of-tables-and-figures-in-research-papers

▶ https://academicguides.waldenu.edu/writingcenter/apa/tablesandfigures/figures

▶ https://guides.westcoastuniversity.edu/c.php?g=977679&p=7069351

▶ https://www.coloradocollege.edu/dotAsset/6e61fc39-6bb1-4db9-b022-2df52e8a24ae.pdf