

Presenting statistical information – Tables

Introduction

A well-presented table can greatly enhance the readability of a research report. Tables display figures in an accessible form, and assist the reader to see patterns and trends in the data.

This document provides guidelines on how to create meaningful, easy to read and well-formatted tables for use in statistical reporting. Generally speaking, a table is an effective way to:

- present large amounts of data efficiently
- provide access to all values (for use in other calculations and comparisons), and
- indicate multiple units of measure.

Key terms

The following statistical terms have been used in this paper and a brief definition is given for each. For a fuller definition about these and other such terms please see *Assessing survey data*, available on the Queensland Government Statistician's Office (QGSO) website.

Term	Brief definition
Confidence interval	provides a range of values around the estimate, within which the true value can be expected to fall with a certain probability (e.g. 95%).
Relative standard error (RSE)	a measure of accuracy of a survey estimate — calculated by dividing the standard error by the estimate obtained — often expressed as a percentage.
Standard error	standard error is a statistical term for measuring the accuracy with which a statistic taken from a sample represents an entire population.
Statistical significance	a statement about the likelihood of findings being due to chance.

Table formatting

The layout and content of tables influences how easy or difficult they are to interpret. A table should contain enough information to stand alone and be able to be understood correctly, whether within or outside its original context.

As a general rule, tables should include:

- an **identification** number — to allow for easy referencing in a summary list or in the appendices of the report or document, e.g. Table 1, Figure 1, etc
- a concise and meaningful **title** that describes the content of the table — usually placed above the table
- **full descriptive headings** not abbreviations
- brief, informative column and row **labels**
- **evenly spaced columns** — to help readers compare figures across columns
- column and row **shading or lines** — to encourage users to read horizontally or vertically
- consistent **fonts**
- **numbers or data**
- **footnotes** as required:
 - **source of the data** presented in a table
 - **additional information** needed to understand and use the data correctly — e.g. definitions, explanations of any symbols used in the table etc.
 - **information about the sample** that is being represented in the table, and the number of respondents in the sample (n)
 - Including an appropriate base on the table allows the reader to see how many people answered the question, and make a quick assessment of the likely accuracy of the results based on the sample size in question. For example, if preparing a table showing the percentage of people who have a solar panel on their roof, and 1,000 people were interviewed in total, an appropriate footer would be “Base: all respondents (n=1,000)”. If 30% of respondents reported having a solar panel, and they were asked the whether they had paid more or less than \$10,000 for their solar panels, an appropriate footer for this second table would be “Base: respondents who have a solar panel on their roof (n=300).”
- **information to assist the reader to determine the usefulness and accuracy of the data.** This could be in the form of information about the standard error, relative standard error, or confidence intervals for the data.

For numbers in the table:

- keep the number of **decimal places** consistent
- use **thousand separators** for numbers over 1,000
- **align to the right** so their relative value is clear, or align to the decimal point if decimal points are present
- **round** as appropriate so that the level of accuracy of the data is correctly represented
 - The significant figures of a number are those digits that carry meaning contributing to its precision. For example, if the standard error on a population estimate of 55,412 is 8,400 then there are two significant figures in the error, and the last significant figure is in the 100s place. Therefore, population values should be rounded to the 100s place. In this instance, the figure quoted in the table should be 55,400, rather than 55,412.
- **order categories** so as to maximise the informational message of the table. For example, from most frequently chosen response (or highest score) to least frequently chosen response (or lowest score); or use an inherent order (e.g. age ranges, income groups etc.). If there is an ‘Other’ category, this should always be placed at the end

- **no empty cells** — use 'not available' or 'not applicable' for missing values. The abbreviation 'n.a.' can apply to either, so must be defined in footnotes
- **convert counts into percentages** where appropriate — to assist readers conceptualise magnitude
 - For example, it is easier for most readers to understand that 81% of respondents agreed with a statement and 19% disagreed, than 324 respondents agreed and 76 disagreed.
- if a table is presenting results from two or more different groups, years or survey cycles, include a column that indicates either the **percentage point change** or the statistical significance of differences observed.

An example of a problematic table and a well presented table are shown below.

Please note: the data contained within the example tables in this document are entirely fictitious and are intended simply for illustration purposes.

Example 1

Satisfaction Measure	Respondents
Cost of course	873
Course content	2408
Relevance of material	2122
Electronic access to course material	263

This table could not be interpreted correctly without lengthy explanation in the text. It could not stand alone. It is also problematic in regards to formatting and presentation.

Example 2

Improved example — above issues resolved.

Table 1. Most important factor when deciding to enrol in online fire safety course at University of Xyz, June 2014

Most important factor	Students enrolled in online fire safety course			
	Frequency	%	95% LCL	95% UCL
Course content	2,408	42.5%	39.3%	45.7%
Relevance of material	2,122	37.5%	33.7%	41.3%
Cost of course	873	15.4%	9.7%	21.1%
Electronic access to course	263*	4.6%	2.4%	6.6%
Total	5,666	100.0%		

Base: all respondents (n=5,666)

LCL = Lower confidence limit UCL = Upper confidence limit

* Relative standard error is greater than or equal to 25% and less than 50% — use estimate with caution

Source: Queensland Government Statistician's Office, xx University Choices Survey, June 2014

Improvements over Example 1:

- includes a table number, allowing the table to be easily referenced in the text and appendices
- includes a title that describes the content of the table
- provides information on how many responded to the survey

- uses right alignment and comma separators for the numbers, which better displays relative value
- sorts responses from most frequent to least frequent, so the reader can easily see the most pertinent information
- shows both frequency and percentage for responses, to facilitate interpretation
- includes totals
- provides information on the relative standard error, and the upper and lower confidence limits, so the reader can determine the presence or absence of statistically significant differences, and the level of accuracy of the data
- uses bold font and formatting lines, to clearly differentiate headings and totals from data
- is consistent in the type and size of font used in the table.

The aim is to make tables easy to understand, self-explanatory and accurate. The reader should be able to understand a table without needing to reference the text. Conversely, the text should always include mention of the key points in a table. If a table does not warrant discussion, it should not be there.

Summary

Tables are a way to present data in summary form. They are a useful tool for presenting relatively large amounts of data in a compact format, and are particularly useful in instances where exact numbers are required (for the purpose of conducting calculations, for example). To ensure that tables are easy to interpret, they need to be presented in a way that enables them to stand alone. They should be clutter-free and use appropriate titles, formatting and footnotes. An appropriate and properly prepared table can be a powerful way to convey statistical information.

Further information and advice

The Queensland Government Statistician's Office has extensive experience in a broad range of data presentation techniques and is able to provide specialist consultation and advice on request. For more information please see the QGSO website, www.qgso.qld.gov.au, or email govstat@treasury.qld.gov.au.

