

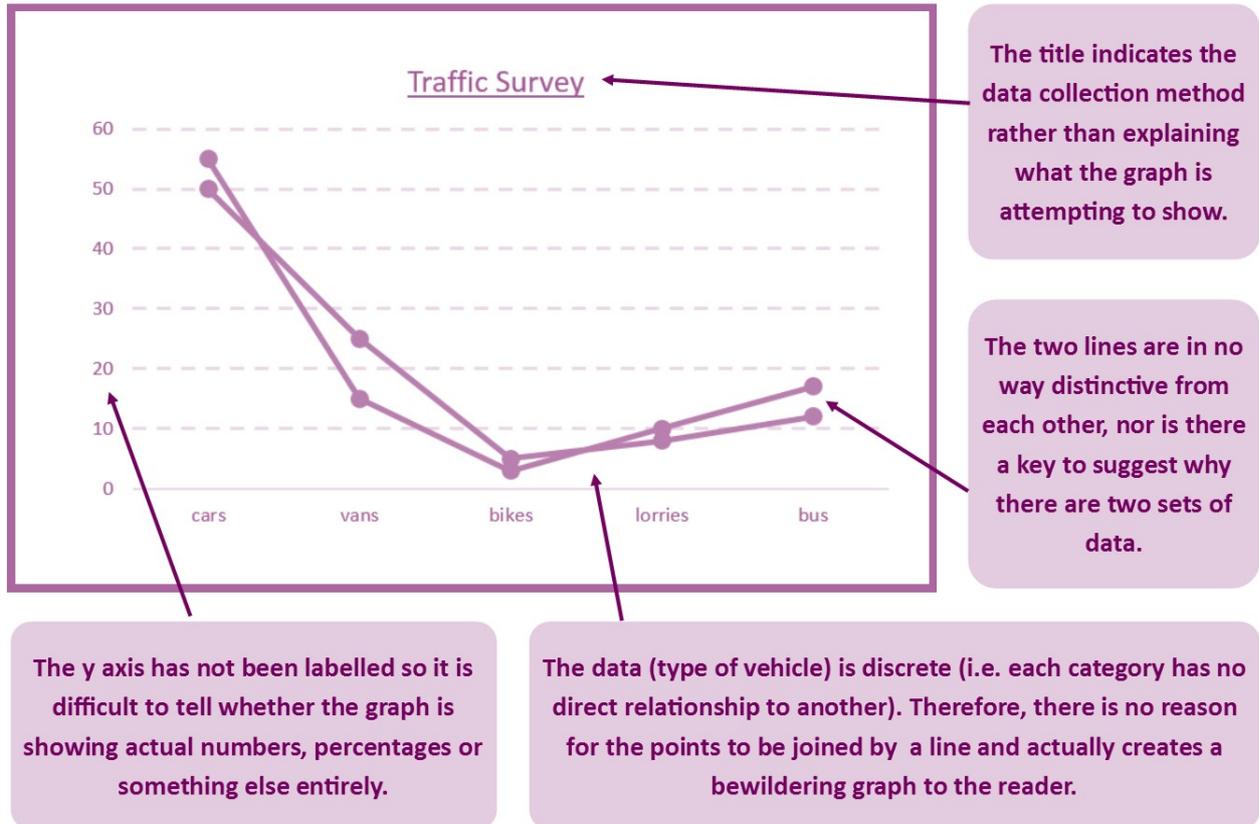
Section 3 – Data Presentation

Once the researcher returns from their data collection in the field they are ready to address their **research questions** and hypotheses through a presentation of relevant data. Presenting data involves the use of a variety of different graphical techniques to visually show the reader the relationship between different data sets, to emphasise the nature of a particular aspect of the data or to geographically 'place' data appropriately on a map. The data presentation section is commonly written up at the same time, and alongside, the performance of **data analysis** (Section 4 of this guide). It is highly likely that it will make sense to analyse some data before it is presented graphically and vice versa.

Data presentation is not just used to make your Independent Investigation look more aesthetically pleasing – though good data presentation will also make the reading of the results more interesting to the reader. Instead, the primary reason for extracting the relevant data from your results and presenting it is to demonstrate to the reader and marker of your study that you can select the data most appropriate for answering your research questions and graphically work with the data to allow it to highlight its own inherent correlations and relationships. While a comprehensive data table that stretches for many pages may technically do the same thing, leaving the reader to try to 'find' the relevant data amongst a jumble of numbers is a sign of poor research practice. It is a good idea instead to structure your data presentation with your research questions in mind. Each one can be addressed in turn, with the appropriate data extracted and presented.

Readers and markers of your study will expect to see the use of a **variety** of data presentation techniques which are being used appropriately – not just for the sake of adding different ways of looking at the data. Putting every piece of data you have into a pie chart, histogram or scatter graph is not only boring for the reader and demonstrates a lack of imagination in the researcher and an inappropriate use of techniques, but also shows a lack of understanding of the benefits of using one data presentation technique over another. Bar charts for example may not be appropriate for showing a particular type of data. Simply typing the data into a spreadsheet package such as Microsoft Excel and selecting one of their generic data presentation techniques may illustrate that the researcher has not thought about the unique nature of the data and the research questions they are trying to answer.

A poor example of data presentation



It is important to ensure that the technique used to present the data is **appropriate** for the data in question. For example, if the researcher is trying to show the spatial relationship between a series of sites and correlating numerical data, they may wish to explore the use of GIS in their presentation. Equally if two sets of data are collected in such a way that the researcher is trying to show a correlation between them, it may be advisable to draw this as a scatter graph, so that a line of best fit may be drawn, allowing the researcher to comment on the strength of the correlation. If the data collected is able to be converted into a percentage of a whole, a bar chart may not be the best way to show the data. Instead, a pie chart or a percentage bar may more easily show the relative size of each of the categories compared to each other. It is important to consider the type of data you are dealing with: continuous and discrete data lend themselves more easily to some data presentation techniques than others.

More **sophisticated techniques** are likely to place your Independent Investigation in a higher marks level and the use of **original data presentation**, designed by you, is also encouraged. However, it is also important to remember that sophisticated techniques do not necessarily have to be complicated: the key to a good data presentation technique is that it is easily readable by the person marking your report. The use of GIS in your data presentation is also strongly encouraged if any type of spatial data is needed to answer the research questions.

Good data presentation can easily be let down by the inaccurate **execution** of the technique itself. Not giving a scale, or not labelling an axis can mean that the reader is not able to actually understand what the data is showing. Allowing someone not familiar with the data in question to 'read' the data presentation critically may help the researcher to avoid these types of errors before the report is submitted.

Common Pitfalls:

- **Presenting data that has nothing to do with a research question.** If the data does not have a role in the answering of the main aims of the study then it should be ignored, even if a lot of time was spent collecting that particular set of data.
 - **Presenting only some of data.** If you think you will want to draw conclusions from it or refer to the data in some supportive way, it must be presented.
 - **Using inappropriate and generic data presentation techniques.** Selecting a data presentation technique simply from a drop down menu in a computer-based spreadsheet shows a lack of imagination and there is a danger that a poor selection will result in demonstrating a lack of understanding of the complexity of the data in question.
 - **Using a data presentation technique which is inappropriate for the data itself.** Think carefully about the type of data (continuous or discrete) and whether the technique you have chosen is appropriate for that type of data.
 - **Using the same data presentation technique more than once.** Show some imagination and try to come up with an original data presentation technique, unique to your particular data.
 - **Combining more than one data presentation together.** Remember, the ultimate aim is to make the data, patterns and relationships easy to see, not to create confusion for the reader.
 - **Presenting the same piece of data more than once.** This can waste time and effort – choose the most appropriate technique only. If that technique does not show everything you want it to, it is not the right technique to use.
 - **Using techniques in an inaccurate fashion.** Spend time checking that you have labelled keys and axes appropriately – marks can be easily lost without these checks.
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