

# COS30045 Data Visualisation



## Assignment

<b>ILO</b>	<p>Critically evaluate data visualisations and propose improvements based on an understanding of human perception and cognition and data visualisation design principles.</p> <p>Generic skills</p> <ul style="list-style-type: none"><li>■ Communication skills</li><li>■ Ability to tackle unfamiliar problems</li><li>■ Ability to work independently</li></ul>
<b>Purpose:</b>	<p>The ability to analyse existing visualisations and provide suggestions for improvement is a valuable skill. It will help you develop an understanding of the principles of good design.</p> <p>In this assessment your task is to find and critique visualisations related to assignment topic (see below). Do not choose a visualisation that has been discussed in a blog or text book etc. Try looking in newspapers, information style websites and scientific papers.</p>
<b>Individual Assessment</b>	<p>This assessment is worth 20% of the unit.</p> <p>It is graded out 20 marks.</p> <p>Submit via Canvas.</p> <p>No resubmissions are allowed for this task.</p>
<b>Resources:</b>	<p>Monash Universities <a href="#">Learning Support website</a> for more assistance with academic writing.</p> <p><a href="#">Swinburne Library guide on how to reference</a></p>
<b>Deliverables</b>	<p>Completion of FSET Academic Integrity Unit</p> <p>Report on visualisations used in specific domain</p>
<b>Marking Criteria</b>	<p>Report must demonstrate an understanding of:</p> <ul style="list-style-type: none"><li>■ the context of the current semester's Topic</li><li>■ data encoding guidelines (ie what marks and channels are suitable for particular types of data)</li><li>■ data visualisation guidelines</li></ul> <p>Use in-text referencing and reference section according to Harvard style where appropriate</p> <p><b>See the end of this document for a comprehensive marking guide for this assessment.</b></p>
<b>Additional Criteria</b>	<p>Visual presentation, English expression and academic integrity</p>
<b>Due</b>	<p>Monday Week 6</p>
<b>Word Limit</b>	<p>1,500 (min) to 2,500 (max) words</p>
<b>Late Penalty</b>	<p>10% of achieved mark per day</p>

# Assignment Topic S1 2023

## ***Cost of Living***

As the world deals with ongoing climate, financial and political instability, increases in the cost of living are causing hardships for many people. In this assignment your task is to find and critique 2-3 visualisations related to the cost of living. Try to avoid visualisations that only chart changes in cost of living over time. Instead look for visualisations that attempt to contextualise cost of living. For example:

- Causes of changes to cost of living
- Measuring cost of living and explaining it to non-experts
- Impact of changes to cost of living
- Cost of living in different locations

Try to find visualisations that demonstrate a range of different chart types (i.e., not just line charts (unless there are some very interesting differences in the way they are displayed)).

To prepare for this report:

- Do the FSET Academic Integrity Unit (see your Canvas Dashboard)
- Review how to cite and reference web pages and research articles (see [Swin Library guide to Harvard style referencing](#))
- To find academic or government publications try searching on [Google Scholar](#).

# Suggested Assignment Structure

## ***Title Page***

- Unit and student details
- Descriptive title for critique
- Word count

## ***Executive Summary***

Overview of report and key recommendations (less than 200 words)

**Hint 1:** Write this last!

**Hint 2:** Make sure you include findings/recommendations, not just an overview of report contents.

## ***Table of Contents***

Make sure you use heading styles and use your word processor to autogenerate your table of contents.

## ***1 Introduction***

*In this section include:*

Background information including purpose of this report and definition of key terms and concepts. What is the purpose of each visualisation? What questions does it purport to answer? Who is the intended audience?

## ***2 Body (Note: Choose informative sub-section headings)***

*Suggested topics:* What kind of data is used in the visualisations? How is the data visually encoded? Is the visual encoding appropriate for the data type? Any other issues with the use of data types and visual presentation?

Is the visualisation effective? Does the visualisation answer the users questions? Can it the data be read precisely? Does the visualisation mislead the user? Does it follow good design principles? Can you suggest any improvements?

## ***3 Conclusion***

Wrap your critique with a summary of your critique and what has been learned from your analysis.

- summarise the main ideas
- do not introduce any new ideas

## 4 References

A list of material cited in the text of the assessment. Do not include references that you have not personally read.

**Hint 1:** Use 'cited in' if you read about a reference in a paper but did not actually read it yourself.

For example: If you had read about Smith's study in a paper by Clark (but didn't have time to read the original Smith paper), then you would reference it as:

"Smith (2009 cited in Clark, 2013) found that..."

***See assessment criteria below...***

## Assignment Assessment Criteria

Criteria	Needs Improvement	Good	Very Good
<b>Presentation (2 pts)</b> Visual presentation is an important part of making your document appear authoritative and have people take what you have to say seriously. Make your document usable by using good visual design principles (or a template available with most modern word processors)!	Poor visual presentation. For example, inconsistent font styles, font changes within format styles.  Poorly formatted heading styles that lack contrast.  No title page or title page missing information.  No table of contents or table of contents missing page numbers.  No page numbers.	Good visual presentation. Consistent font styles. Appropriate use of style to indicate heading levels.  Title page with required information including word count.  Page numbers.  Readable font and at least 1.3 line spacing.	Very professional visual presentation. Appropriate use of visual design principles to indicate heading levels.  Title page with required information including word count.  Page numbers.  Readable font and at least 1.3 line spacing.
<b>Visualisation Elements (5 pts)</b> As Data Scientist you will need to become familiar with a variety of ways to display data and the terminology used to describe the different elements of a visualisation.  For example, we will look at how well you; <ul style="list-style-type: none"> <li>- select visualisations that represent a variety of different approaches to visualising similar data</li> <li>- use appropriate terminology to identify and describe different elements of the visualisations (including data types)</li> </ul>	One or more of the following:  No visualisations discussed, or visualisations do not relate to topic specified in the assignment.  Poor or very limited selection of visualisation examples.  Visualisations are supplied without reference (i.e., URL or publication reference).	Good selection of visualisations showing a range of approaches to presenting similar information.  Identifies the data used in the visualisation and the way in which the data is represented (e.g., The rated smelliness of each type of cheese (e.g., Gorgonzola, Emmental, Roquefort, Saint Agur, Feta etc) is represented by different shades of blue).  Describes the type of visualisation (e.g., A sunburst diagram was used to classify the different types of cheeses (e.g., type of milk, hardness, etc).	Well chosen examples showing contrasting approaches to presenting similar information.  Demonstrates an excellent understanding of visualisation elements and visualisation idioms.  Describes in detail the data used in the visualisation and the encoding principles used to represent the data (e.g., The rated smelliness of each type of cheese (e.g., Gorgonzola, Emmental, Roquefort, Saint Agur, Feta etc) is treated as quantitative data and encoded using colour saturation (i.e., different shades of blue). The deeper the shade, the more smelly the cheese.).  Appropriate references are used to define core terms/guidelines and claims of fact (i.e., not lecture notes).

<p><b>Data Visualisation Analysis (5 pts)</b></p> <p>The same data may be visualised in a number of different ways. However, some ways will be better than others and may depend on the type of data and context.</p> <p>In this part of the assessment we will look at how well you evaluate a visualisation according to visualisation and data encoding guidelines and the context of the visualisation (e.g., the audience and purpose of the vis).</p> <p>For example, we will look at how well you understand;</p> <ul style="list-style-type: none"> <li>- application of data visualisation guidelines</li> <li>- the use of appropriate visual elements depending on data type</li> <li>- the context of the visualisation</li> </ul>	<p>One or more of the following:</p> <p>No, or minimal attempt, to relate or apply visualisation guidelines to an evaluation of specific visualisations. For example, all, or more than 1/3, of the paper covers basic or generic content without relating them in any substantial way to evaluating specific visualisations.</p> <p>Demonstrates poor understanding of:</p> <ul style="list-style-type: none"> <li>- the context, or does not address the context.</li> </ul>	<p>Good understanding of visualisation context (e.g., audience and purpose) and how these relate to the visualisation design choices made by authors.</p> <p>Discusses the appropriateness of using visual elements for different types of data.</p> <p>Good awareness of data visualisation guidelines.</p> <p>Makes some recommendations about how some elements of a visualisation could be improved.</p>	<p>Excellent understanding of visualisation context and insightful analysis of how the author uses (or doesn't use) visualisation design principles to get their message across.</p> <p>Demonstrates the ability to effectively compare and contrast different visualisations based on a range of dimensions (e.g., guidelines, data types, context)</p> <p>Makes well justified recommendations about how some elements of a visualisation could be improved.</p> <p>Creative professional level response to the assignment task.</p>
<p><b>Written Expression (5 pts)</b></p> <p>No matter how good your ideas, if you can not communicate them effectively they are wasted on your audience. In this part of the assessment we are looking at how well you can communicate your ideas and create a piece of writing that convinces your reader that your conclusions and/or recommendations are well founded.</p>	<p>One or more of the following:</p> <p>Difficult to read or follow. Ideas do not link up well within and/or between paragraphs (e.g., swaps topics within or between paragraphs without transitional sentences to guide the reader from one idea to the next).</p> <p>Poor English expression (e.g., lacks proper sentence and/or paragraph construction). Difficult for reader to determine meaning.</p> <p>This level of writing would not be acceptable at a professional level.</p>	<p>Assignment is mostly well organised generally demonstrates a clear flow from one idea to the next. Transitional sentences are used to connect major ideas and guide reader through the paper.</p> <p>Follows basic report structure (e.g., executive summary introduction, body, conclusion etc)</p> <p>Language is mainly fluent. May contain some grammatical and/or spelling errors.</p> <p>This level of writing would be acceptable at a professional level but could do with some improvement.</p>	<p>Assignment is well organised, ideas and arguments flow naturally and logically.</p> <p>Easy to read and follow.</p> <p>Language is fluent. Grammar and spelling accurate.</p> <p>This level of writing would be acceptable at a professional level.</p>

<p><b>Academic Integrity (2 pts)</b></p> <p>Everyone likes to be 'paid' for work they do. In academic and professional environments, payment is not just about money, but also acknowledgment of ideas. If you use ideas or words from other writers or researchers you must 'pay' them by citing their original work. Failing to cite work from other authors will earn you a FAIL in this assignment. You will also FAIL this assignment if you use the words of other students in your assignment, or you give your words to other students to use.</p>	<p>One or more of the following:</p> <p>An effort is made to cite scholarly ideas, but citation style is poor and does not follow appropriate style guidelines (e.g., Harvard).</p> <p>Work that Turnitin detects as the same as other published work or student work will not be graded. Typically this means an overall <b>FAIL grade will be given when Turnitin Report indicates more than 20-30% similarity with:</b></p> <ul style="list-style-type: none"> <li>- other published work and/or</li> <li>- work submitted by other students</li> </ul> <p>You may also be found to have committed Academic Poor Practice or Misconduct. You can be excluded from the university for Academic Misconduct.</p>	<p>Scholarly ideas are mostly cited correctly using appropriate style guide (e.g. Harvard) or, consistent style is used, but not requested style (i.e., Harvard).</p> <p>Work from other sources is appropriately acknowledged.</p> <p>Less than 20-30% similarity with other sources.</p>	<p>Scholarly ideas are cited correctly using appropriate style guide (e.g. Harvard).</p> <p>Work from other sources is appropriately acknowledged.</p> <p>Less than 20-30% similarity with other sources.</p>
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**Note 1:** Similarities with other students will not be detected and reported by Turnitin until AFTER due date. Do not share references, resources or text with other students. Protect your work with adequate computer security. **If you provide work to another student you will be penalised the same as a student who uses your work. You are not being a good friend if you share your work with others. Both of you will FAIL and get an official penalty notice and face possible exclusion from the University.**