**Few points to keep in mind when working with Data Visualizations**:

* Tufte's Principles:

Tufte's integrity principles --> tell truth

Design principle --> with clarity and precision

* Graphical Excellence (gives ideas to viewer in shortest time and with lease ink in smallest space):

Well-designed presentation of interesting data (matter of substance, status)

A graph should have clarity (no ambiguity and confusion), precision (deliver truthful results) and efficiency (minimal amount of chart junk)

* An excellent graph shows the data, makes the viewer think about the subject nor graph, doesn’t distort the data, helps the eye make comparisons, visually efficient.

* Scales --> clear, detailed and thorough labeling should be used.

Missing scales in graphs (baseline)

Scaling distortion (to show trends clearly, mark 500 to 450)

* Lie Factor = size of effect shown in graphic/size of effect in data

* Size of effect = |second value - first value|/first value

0/95 <= lie factor <= 1.05

Lie factor > 1 --> graphic is overstating

Lie factor < 1 --> graphic is understanding.

Apart from this there is a well-defined checklist adapted from <https://stephanieevergreen.com/updated-data-visualization-checklist/>

**Ranking Description**:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Description** | **2** | **1** | **0** | **n/a** |
| **Graph type:**  An appropriate graph type displays data in an clear manner that shows true relationships within the data sets. |  |  |  |  |
| **Colors:**  Appropriate colors should be used in displaying differences in and this should not be distracting. Also use color blind friendly palettes. |  |  |  |  |
| **Chart and elements:**  All elements of the graph like lines, colors, text, etc. should give some idea about the insights from the graph. |  |  |  |  |
| **Data and Graphics:**  Check if data and graphics are proportional or no and if they can be interpreted clearly. |  |  |  |  |
| **Labels:**  Labels used should be informative, complete and legible. They should not be redundant. |  |  |  |  |
| **Chart junk:**  There are no unnecessary labels, graphics, images, numbers, boarders, or animations. Also see that there is no redundancy in labels. |  |  |  |  |
| **Title:**  A short descriptive title in the upper left corner enables readers to comprehend takeaway messages. It should represent the chart accurately. |  |  |  |  |
| **Subtitle and Text size:**  Add subtitles and annotations which help in explaining and interpreting the graph. Also, the text size must be at least 9 - point font size on paper or at least 20 on screen. See that the text is horizontal. |  |  |  |  |
| **Grid lines and Axes:**  Grid lines should be avoided unless it is necessary to interpret the graph. See that they do not include unnecessary tick marks unless needed to bring attention and is needed by graph**.** |  |  |  |  |
| **Precision:**  Chart displays precision based on overall scale, i.e not showing more than two decimals when the chart values are in millions. |  |  |  |  |
| **Data Ink Ratio:**  Chart is readable without unnecessary stuff. |  |  |  |  |

**2** - Illustrates that all components are met;

**1** - Component was partially met;

**0** - The component is not met