DSI: Data Visualization

Assignment 2
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Figure 1.
Reference: *Bar Chart (Vertical)*. Data Viz Project. (2022, November 1). Retrieved March 23, 2023, from https://datavizproject.com/data-type/bar-chart/

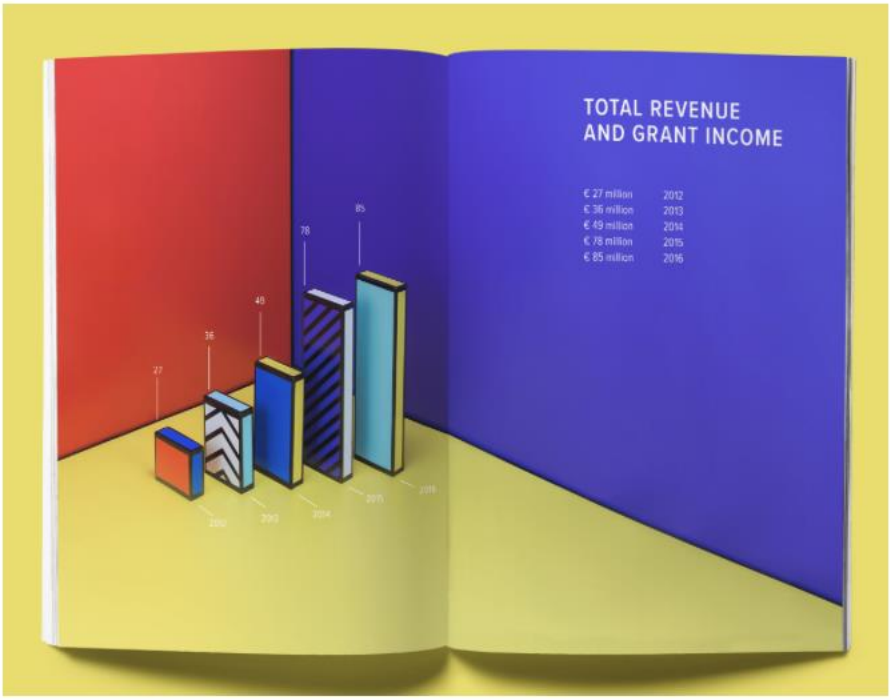

Figure 1 is an example of a bad data visualization. I classified this data visualization as a bad visualization for 3 reasons. First, as discussed by Healy (2018) a good visualization needs to be aesthetically pleasing. I would argue that this visualization is not aesthetically pleasing because it needlessly has duplicate labels which are redundant and distracting. Furthermore, it unnecessarily plots the graph on the backdrop of a magazine which doesn't add any value to the plot and makes it more challenging to read the plot since it is forced onto one single "page". The second reason I think this is a bad visualization is because it is depicted as a 3-dimensional plot for no reason. The perceived factual basis is improved if we restrict our visualizations to 2-dimensions (Kennedy et al., 2016), so therefore the perceived factual basis of this visualization is lessened. Finally, I think this is a bad visualization because we are not told explicitly what we are being shown. As described by Healy (2018), a good visualization is easily perceived – that is, the audience can easily interpret the message being conveyed by the creator (Zogheib, 2023). However, in this visualization it is not clear what message is trying to be portrayed – is each column the sum of revenue and grant income? Even more importantly, what revenue and grant income are we discussing? There is no indication which company this is related to. Based on these

critiques, there are two simple improvements I could suggest to this visualization. First, I think that a more descriptive title could help the audience better perceive this visualization (Kennedy et al., 2016; Zogheib, 2023). Specifically, the title could mention the company from which these values are coming from. Second, I think the backdrop of a magazine could be removed. I think its aesthetically unpleasant and distracts from the data – we know from Healy (2018) the importance of aesthetic appearance. The backdrop also makes the visualization unnecessarily busy and more detailed in composition, which we know adds to the cognitive load (Sibinga & Waldron, 2021). If we remove the backdrop we will make the visualization more concise, which puts less cognitive load on the audience (Sibinga & Waldron, 2021).

Figure 2.
Reference: *Grouped Bar Chart*. Data Viz Project. (2022, November 1). Retrieved March 23, 2023, from https://datavizproject.com/data-type/grouped-bar-chart/

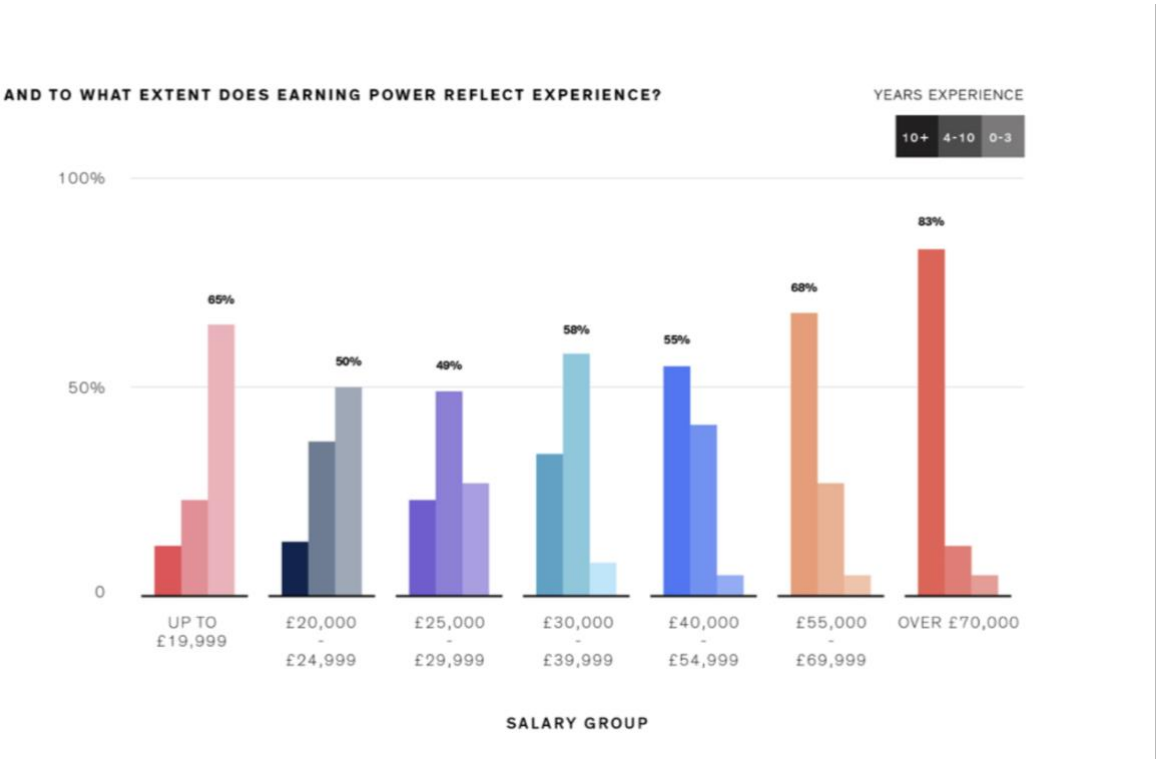

Figure 2 is an example of a good data visualization. I classified this visualization as a good visualization for 3 reasons. First, as discussed by Healy (2018) a good visualization needs to be aesthetically pleasing. I would argue that this visualization is aesthetically pleasing as its quite simple, has a nice colour palette, and does not have any extraneous features. As described by Healy (2018), a good practice is to maximize the “data-to-ink” ratio, which I think this visualization does well. Secondly, this visualization has a low cognitive load because it is both concise and uses absoloute values (Sibinga & Waldron, 2021). As mentioned in my first point, this visualization does not burden itself with extraneous features and has few visual elements which lessen the

cognitive load. Furthermore, it includes absoloute values for the experience level that dominates a given ‘Salary Group’ – use of absoloute values over relative values also decreases the cognitive load (Sibinga & Waldron, 2021). The third reason why I think this is a good data visualization is because it reinforces the perceived factual basis and objectivity of the data through its composition. Specifically, it adheres to 3 of 4 conventions that typically support perceived factual basis – it is a 2-dimensional image, it has a clean layout, and it uses geometric shapes and lines (Kennedy et al., 2016). Despite this image being a good data visualization, there are a couple of ways I think it could be improved. First, I think the perceived factual basis could be improved. As described by Kennedy et al. (2016), the perceived factual basis could be improved by including the data source at the bottom of the image. Including the source of data helps the audience trust the visualization more, which is called provenance rhetoric (Hullman & Diakopoulos, 2011). I think another way this visualization could be improved is by giving more information in the title. Specifically, I think this graphic would benefit greatly if a subtitle described where the data was taken from – which country and is it from a specific sector of occupations? As described by Healy (2018) it is important for visualizations to represent data accurately and honestly – that is, to be substantive. If this data only represents a certain subset of occupations it could be dishonestly displaying trends that may not be universally applicable.

References

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Zogheib, C. (2023). *Data Visualization, Graphing our Data: Choosing the Right Visualization.* [PDF]. https://github.com/UofT-DSI/07-visualization/blob/main/lessons/DSI_DataViz_3.2_ChoosingTheRightVisualization.pdf