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CSC3833 Technical Report

House Prices

House Prices – Use of Visual Channels
For the house prices dataset I chose a bar chart, this is because the type of data is nominal and categorical. Furthermore, as the nominal data is being compared across categories, a bar chart is suitable for this representation.

House Prices – Gestalt Design Principles
The sub-title for each bar chart features the region name i.e., 'London' with the same gradient colour as the bars to further highlight the difference in regions. The law of similarity applied to the colour of the region name as the sub-title and bars signifies to the user these similarly coloured bars must indicate the corresponding region.
The figure-ground principle is present as there two bar charts on a single figure, each bar chart has a grey background for the chart area and white for the figure area. This creates contrast highlighting the elements of the bar chart which purposefully directs the user's focus.
Lastly, I implemented the law of good figure as both bar charts y-axis ranges from £0.00 to £1,000,000.00 a form of symmetry, to allow easy visual comparison across both charts.

House Prices – Use of Colour
For the bars I chose pale brown and a dark pale green as colours, I chose to avoid colours such as red and blue, or green and red as these colours are naturally embedded with positive and negative connotations. Such connotations should be avoided in this case as the statistics do not represent positivity or negativity. Furthermore, each bar for each property type becomes progressively darker to further highlight the differences in property type, however the overall colour across a region of bars remains the same to signify the same region.
I chose a black font for the x and y labels, titles, and bar labels, because all positions for text are either white or grey making a dark colour such as black suitably visible as a font colour.

House Prices – Use of Language in the Visual and Narrative in the Caption
Each bar has the exact value it is equal to displayed above it in text, this is so the user does not have to estimate the value of each bar and improves the ability to visually compare the bars.
Each bar represents a property type for it's given region, with its property type labelled underneath on the x-axis. The x-axis labels are rotated to prevent overlapping and create proximity between them however, in case these labels are not clear there is a legend labelling each property and its colour.
Lastly, for all text I chose a medium to large font to improve readability.

Broadband Performance

Broadband Performance – Use of Visual Channels
For the broadband dataset I chose a scatterplot as it is numerical data in which two variables are plotted and compared. I chose to add gridlines that are applied to both the X and Y axis, this is to improve visually pinpointing datapoints.

Broadband Performance – Gestalt Design Principles
Similar to the previous plot I implemented the figure-ground principle by colouring the inner section of each scatter plot with grey to create contrast between the plots and the figure. I also repeated my implementation of the law of similarity by matching the sub-title font colour to the plotted points. Lastly, I implemented the law of proximity by placing both of the scatter plots near each other in an enclosed square to indicate their relevance to each other.

Broadband Performance – Use of Colour
In the first scatter plot which includes outliers, these are highlighted using a vibrant colour as opposed

to the non-outliers using a darker colour, this creates a noticeable contrast between the two types of datapoints. For the regression line in each plot, I chose a vibrant colour in contrast to the darkly coloured datapoints. Furthermore, if grey scale is applied the colours chosen because of their difference in hue, saturation, and luminance will still maintain a visual difference between the datapoints and regression line.

House Prices – Use of Language in the Visual and Narrative in the Caption
The wrangled data provided represents the broadband speeds in Mbit, for the general audience I modified and represented the data in 'megabytes'. This is because megabytes are more widely understood as they're commonly used to represent sizes of digital contents, whereas broadband providers use Mbit to inflate the numbers of their advertised speeds.
For each different type of datapoint on the scatterplots, there is a legend indicating their representation with their symbol and corresponding label, this is to improve overall understanding and minimise any misinterpretations.

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Financial Time Series

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Financial Time Series – Use of Visual Channels
The provided data is a price changing over time, commonly share-price data is represented using a line graph, hence my choice of representation. Commonly the x-axis represents time whilst the y-axis represents the share-price, hence my similar decision.

Financial Time Series – Gestalt Design Principles
A line graph best represents the share-price changing over time as it is a continuous line which adheres to the principle of continuation. The user is able to track the history and any major price changes by simply following the line. The principle of figure/ground is also present as the graph background is slightly lighter than the figure, the elements in the chart are highlighted by contrast. Lastly, share-price data and analysis techniques can be represented in varyingly complex representations however, as a principle of good figure I chose to keep the graph as simple as possible.

Financial Time Series – Use of Colour
I chose to invert the colours of the graph to make the primary colour black and every other element white, or a lighter colour. This is because I found most professional renderings of share-price data to be on black figures. Furthermore, if a user wants to pinpoint a specific datapoint then a dark figure will usually be less taxing on the eyes. Lastly, I chose to highlight the Corona virus period in a red shade the corona virus has negative connotations and the share-price sharply fell.

Financial Time Series – Use of Language in the Visual and Narrative in the Caption
The highlighted period in red is labelled on the legend to prevent misinterpretation and maximise their understanding. The x-axis features the dates rotated, this is to prevent overlapping text. The title of the figure includes the name of the index fund and time period represented, this is to further clarify what is being represented to the users.

What was done
For each dataset I analysed the wrangled data file and researched visualizations corresponding to the type of data provided. Then for each dataset I created a python file in which the data would be pre-processed, then I would create a function that modifies a chart in accordance with representing the dataset. I iteratively developed each plot inline with lecture materials provided and personal research conducted, as well as incorporating Gestalt's design principles. I separated each part into its own python file.