2543852 Jay-Lee Shih

Critical Data Visualization Analysis: The Green Divide

"The Green Divide" is an article published by data journalist Kate Newton in March 2022 on one of New Zealand's leading news platforms, *Stuff*. This article sheds light on the relationship between socioeconomics and environmental living standards in Auckland, New Zealand. The article specifically addresses how socioeconomic status can influence a civilian's protection against extreme heat weather conditions, drawing attention to the disproportionate consequences of climate change across different wealth deciles. A central topic in this discussion is the importance of tree coverage across an area, serving as a key factor for heat mitigation within urban areas. Wealthier areas benefit from having better access to shade and other cooling factors, whereas lower-income neighbourhoods remain more vulnerable to rising temperatures. Although the temperatures in Auckland may not reach the extreme levels of cities like Dubai or other cities located near the equator, the article highlights how wealth currently impacts the living standards in the city and raises concerns about how this disparity may deepen in the future if issues are not adequately addressed.

Data Visualizations

The data-driven article makes primary use of maps to provide readers with a visual understanding of how the data is geographically distributed. These maps serve as an intuitive tool for illustrating the range of disparities, regarding tree coverage and other data related to that matter, across different neighbourhoods. Additionally, the article also includes the use of a scatter plot, offering more detailed and targeted information regarding the correlation between tree coverage and wealth deciles. This further emphasises the socioeconomic divide in climate protection from the heat.

Maps

A green colour palette with progressively deepening saturation is used to represent the percentage of tree coverage in an area of Auckland. The greens are separated into 6 different levels of saturation, with the more saturated greens representing areas with more tree coverage. This allows the reader to intuitively correlate geographical areas with different percentages of tree coverage, making for a clear visual distinction between areas with more or less greenery. By utilizing a limited range of colours, the articles can effectively categorize the areas into different levels of greenery. This encourages readers to form associations between geography and the amount of tree coverage, grouping areas with the same level of greenery into a category.

The article takes the data visualization a step further by adding a second axis on the colour gradient, representing the prosperity of the area, blending the varying saturations of green with different saturations of hot pink. Introducing this extra dimension of data after the initial introduction allows the reader to see the evolution of the data and formulate a narrative. This makes the visualization of the relationship between tree coverage and prosperity more easily understandable for the reader. Had the maps employed a continuous gradient instead of separate colour blocks, the graph would have represented much more precise data. However, this change could potentially dilute the article's goal of making categorical distinctions, leaving the reader to decide where to draw the line instead of drawing the line for them.

Scatter Plot

The scatter plot demonstrates the correlation between tree coverage percentages and wealth deciles across different areas in Auckland, with each point representing a distinct area. A shaded grey area along the y-axis marks the 30% tree coverage threshold, which Professor van der Bosch proposed as a benchmark for adequate tree coverage. Points that fall within the shaded area indicate regions that failed to meet the standard, drawing attention to the need for improvement across all wealth deciles. In contrast, the areas above the threshold are positioned above the shaded area, revealing a stark disparity between the number of regions with adequate tree coverage in areas that are more prosperous compared to those that are not. The concentration and range of points above the standard threshold in lower wealth deciles, compared to the points in the higher deciles, reveal unequal access to areas with sufficient tree coverage. Had the data visualization included a metric that emphasised the population density at each point, the user would have been equipped with more information that could provide valuable insight into the number of citizens being affected by the current issue. This would enhance the relatability of the narrative by offering a clearer understanding of the impact on the community. The only reasons I could think of not including this data are due to a misalignment of evidence or a lack of data. This would skew their intended narrative and potentially work against the goal of the article.

Interactivity and User Engagement

The use of a map provides the user with a compelling visual representation of the data in a socioeconomic context, enabling readers to see data relative to specific locations. However, the article does not fully capitalize on the interactive capabilities made available through web-based media. The visualizations are presented as static images with accompanying HTML elements overlayed to convey extra information. Had the article included an interactive element such as a hover effect, the ability to drag the areas around for side-by-side comparison, or a search bar for specific areas, the map graphs would be a lot more interactive. This would encourage users to engage with the

data and create a deeper understanding of the issue. As a consequence, the article is only able to display a limited amount of data. If they added an on-hover effect that displayed the areas, name, population, and average temperature, this would make for a much more detailed and fruitful experience with strong data evidence.

There was an effort to harness the interactivity enabled by the Internet by incorporating scroll animations, but the integration had no semantic meaning regarding the data that it was related to. The scroll animations bordering the scatter plot seemed more like an attempt to enhance the visual appeal than to improve the functional value of the article.

UI & UX

The selected colour palette complemented the article's narrative, with cool greens and blues evoking a sense of freshness and coolness, reminiscent of nature. The more a hue leaned towards the cool blues and greens, the more admirable that piece of data was. The user is encouraged to strive for a city with more tree coverage through the effective use of colour temperatures and the emotions that these colour evoke.

The typography of the article is upheld by an appropriate standard. The sans-serif font makes it easier to read on a web-based platform and makes the website more accessible to people with dyslexia. The text is consistently in the centre column of the webpage with left-aligned text. This minimises the amount of left-to-right eye movement when reading the article, making for a friendly user experience.

The scroll animations for the trees around the scatter plot were a visually appealing addition, but they broke the immersion of the page. There was no need to add the scroll animations, all it did was make for an extra hassle whilst navigating the website. It prolonged a user's engagement with the scatter plot in an uninviting manner. When the user expects for the page to scroll down, the graph remains immobile and the trees begin to animate. This misalignment of user habits and the scroll animation makes for a slightly inconvenient interaction, causing a break in the immersion of the website.

Emotional Impact

I believe the website effectively communicates its message to its intended audience. However, its primary shortcoming is that the majority of users without a connection to Auckland or New Zealand may struggle to contextualize the data presented. To cover up for this shortcoming, an interactive element could be introduced, offering readers additional insights and information into specific regions. This would allow users to form a more comprehensive understanding of the material. Despite this limitation, the visual presentation of the data was both engaging and aesthetically pleasing. The colour palette, with its greens and blues, created an intuitive link between vegetation and

freshness, reinforcing the environmental themes of the article. This careful design not only highlights the disparities in socioeconomic conditions across the city but also emphasizes the potential for improved living standards for citizens of all backgrounds if these imbalances are addressed.

References

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