Which San Diego zip code sends out the most pothole repair requests?

Driving around in San Diego, our group members often encounter potholes seemingly everywhere. We wondered if these potholes were prevalent all around San Diego or if it was just our imagination. To investigate this, we looked at the pothole repair requests sent in around San Diego and noticed there were specific areas that had an extremely high density of potholes. To visualize this our design presents a choropleth map of San Diego, delineated by zip codes, with each region shaded to indicate the density of potholes reported in that area. The objective of this visualization is to compare the number of pothole repair requests between various regions in the San Diego area.

In opting for a choropleth map, we recognized its effectiveness in conveying spatial distributions and facilitating comparisons across different geographic areas. Choropleth maps excel in visually representing variations in data across regions, providing an intuitive understanding of patterns and trends. Moreover, they offer a clear visual hierarchy, allowing viewers to quickly discern areas with higher or lower pothole frequencies.

While considering alternative visualizations such as bar plots, which are more straightforward to implement and adept at comparing frequency data, we ultimately favored the choropleth map for two primary reasons. Firstly, the geographical context provided by the map offers valuable insights into the spatial distribution of potholes, enabling stakeholders to identify localized issues and prioritize interventions effectively. Secondly, the map allows for a holistic view of the entire region, facilitating a comprehensive understanding of the relationship between the various regions, locations and pothole frequency.

In terms of visual encodings and interaction techniques, we employed contrasting colors to emphasize variations in pothole frequencies across different regions. Hovering the mouse pointer over a specific area reveals the corresponding zip code, providing users with contextual information. It also provides the raw number of potholes in the area, to help increase insight at a glance. Additionally, clicking on a region offers more detailed insights, opening up an expanded view of the region with the exact location of potholes clearly visible, enhancing user engagement and understanding.

Our development process spanned approximately 10 hours, during which we encountered several challenges that required substantial effort to overcome. Initially, we decided to use Svelte to create the various components within our visualization, such as the map and the legend. However, difficulties arose with data display due to CSV formatting issues and data loading methods. The most time-consuming aspect was

ensuring the dynamic functionality of the map, requiring meticulous coding and troubleshooting to achieve seamless interactivity. We also had some difficulty and spent a majority of our time attempting to deploy our visualization onto Github pages using Svelte, so we decided to switch our code to a javascript file and solely use D3. This ultimately proved successful and we were able to host our visualization.

The development was split between the three group members, where Daniel primarily coded the functionality of the map display and the search bar. Vishwak worked on displaying information and metrics about the pothole count when the mouse hovers over a region and the CSS styling. Manav assisted in developing the code for the HTML file, deploying our visualization to Github pages, and completing the project writeup.

In conclusion, our data visualization project effectively illustrated which zip codes in San Diego have the most potholes and the most repair requests. Through the choropleth map, we discerned that areas with higher numbers of reported potholes tended to coincide with regions with a higher population. This insight underscores the potential relationship between infrastructure maintenance and overall population density, demonstrating how maintenance of infrastructure may need to be more focused in certain areas of interest.