Coursework Report

Name: Vaishnavi Shrinivas Jeurkar

Student ID: 230595217

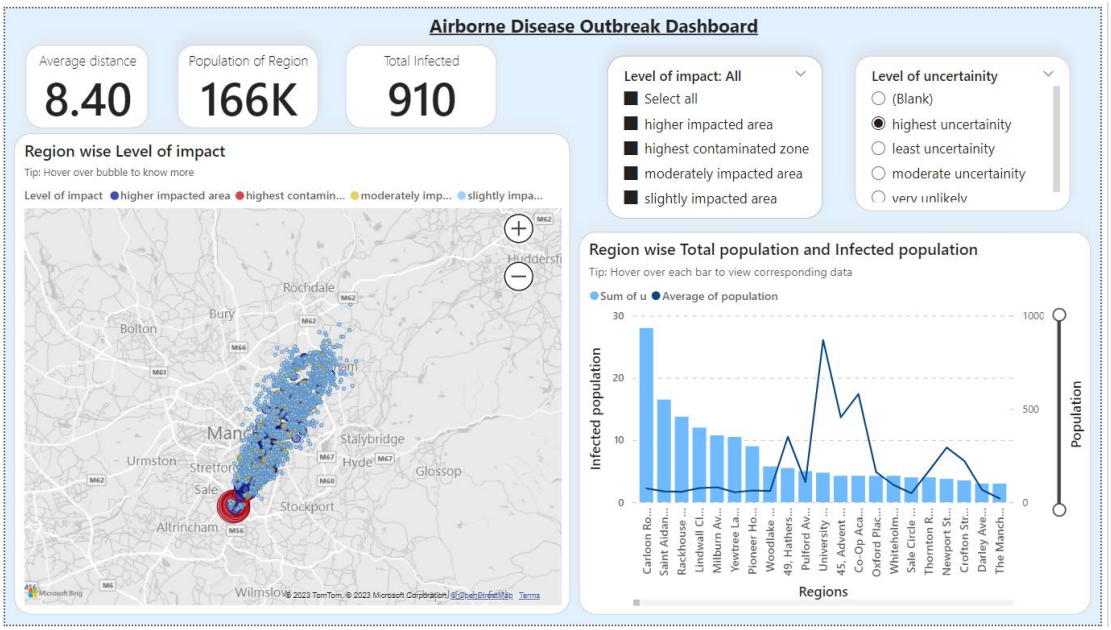
Part One	Description of how your submission achieved this
How does the visualization allow decision makers to understand the overall situation?	In a time-critical situation, this dashboard empowers decision makers to assess the current status of the airborne disease at a glance. The dashboard uses a map with variable-sized bubbles to show airborne disease impact. Slicers allow users to filter by uncertainty and impact levels. Cards provide population and infection summaries; they display the average distance of infected region from the origin of epidemic. A chart compares population and infections in different regions.
How does the visualization allow decision makers to decide which areas of the city to target first?	The decision makers can swiftly identify regions with severe outbreaks using the filtering options, adjust their focus based on uncertainty and impact levels. It is crucial to target highly populated and infected areas first therefore the bar and line chart compares population and infection data to inform their immediate response and resource allocation strategies. It contains detailed address data for quick deployment.
Use of visual channels consistent with data variables	The dashboard effectively employs visual elements that align with the nature of the data variables. This ensures that the chosen visual channels, such as bubble size, colour, and chart types, accurately represent the underlying data, enhancing the viewer's understanding of the information.
Use of graphic design principles	The dashboard makes appropriate use of Gestalt's principles while displaying the data. The first thing noticed when looking at the visualization is that bubbles stand out against the backdrop of map. This is a classic example of the Gestalt principle of Figure and ground. The users understand that there is deeper information embedded inside the bubbles that is meant to be explored. The bubbles are of different colours based on level of impact. This similarity brings out the grouping even more clearly. The cards are placed closer to the map. The use of proximity principle in placing the cards helps user connect data quickly. Line chart and Bar graphs leverage the fact that humans perceive 2D data preattentively and process information much faster. In line charts and bar graphs, the smooth and continuous lines or bars help users follow trends and patterns more easily. The layout and alignment of elements, such as cards and charts, adhere to a sense of balance and symmetry, making the dashboard aesthetically pleasing and easy to navigate.
Use of colour	Using blue, yellow, and red for bubbles and blue for bar and line charts is a sound choice due to their high visibility, broad range of hues, and good saturation. While red can pose challenges for some with colour blindness, its combination with blue and yellow minimizes this issue. This colour scheme effectively communicates varying levels of impact, with red indicating high impact, yellow for moderate, and blue for low, enhancing data clarity and accessibility.
Use of interaction	Hovering: User can hover over a bubble on map or bar on the line and bar chart to view additional information. Zoom: Enabled zooming in on the map. User can zoom on the population data on the bar chart to decide which size of population to target first. Sliding: users can slide to see the data for different regions on bar and line chart. Filtering: To enable quick decision making, user can filter the data according to the 4 levels of impact and 4 levels of uncertainty.

Use of language and text	Appropriate text and icon cues are given to help users interact with the dashboard. Each graph has proper labels and texts. The font size varies according to the importance of text but the font style is consistent throughout the dashboard. The addresses on X axis of bar chart have been trimmed but the user can view full address by hovering above the bars of each data point.
Reliability of operation, fit on desktop screen.	The dashboard uses 16:9 ratio which is a typical screen size of a desktop. Therefore, the dashboard can easily be operated on desktop. The dashboard is meant for real time data and therefore any new data updated can easily accommodate in the existing dashboard.
Part Two	
Does the visualization allow an understandable overview of the situation?	The second dashboard effectively allows for an understandable overview of the situation. It amalgamates data from six files and plots it across a map, where bubbles represent the infected population. The option to select different levels of uncertainty and impact empowers users to tailor the visualization to their specific needs, aiding in decision-making. Additionally, the card summarizing the population of the chosen area offers a quick demographic context. What sets this dashboard apart is the inclusion of two line and bar charts – one considering wind conditions and the other without. This distinction enables decision-makers to assess the impact and uncertainty with and without the influence of wind, providing a comprehensive understanding of how wind conditions affect the situation. It offers a well-rounded and user-friendly visualization that supports effective decision-making in a complex scenario.
Effective visual representation of the data variations over multiple runs	The second dashboard indeed provides an effective visual representation of data variations over multiple runs. By combining data from six different files and presenting it through a map with bubbles that denote the infected population, it offers a clear and visually engaging overview. The user's ability to select different levels of uncertainty and impact adds a layer of customization, enhancing the effectiveness of data representation. Moreover, the inclusion of line and bar charts that compare the impact and uncertainty with and without wind conditions provides a valuable insight into the variations in the data. This multi-dimensional approach to visual representation ensures that decision-makers can comprehensively analyze the data and its variations across different runs, making it a powerful tool for understanding the evolving situation.

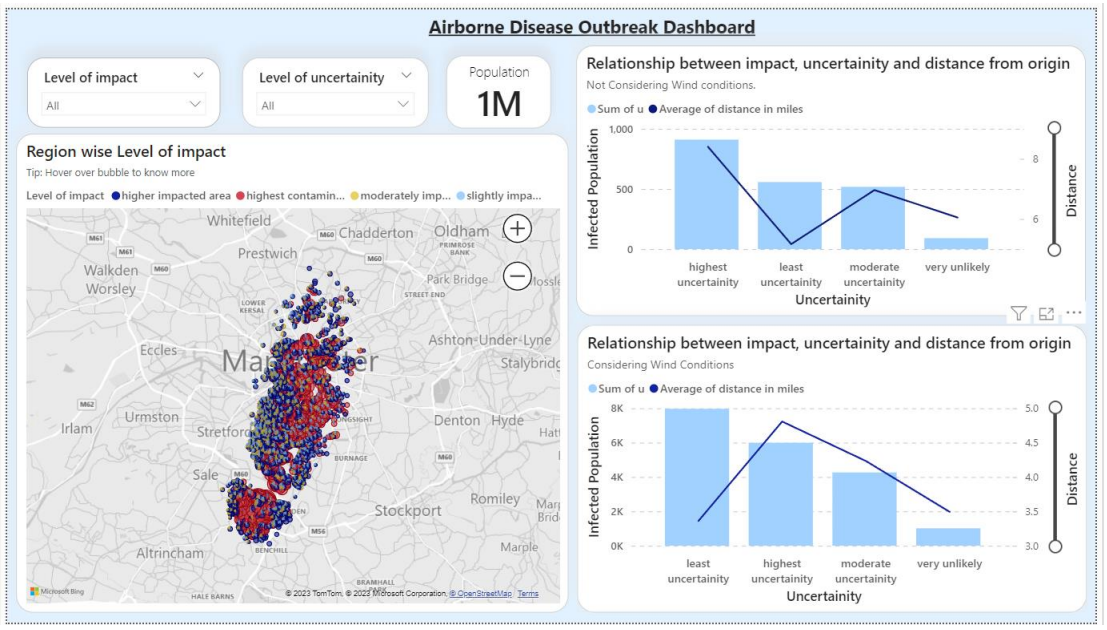
Screenshots

Please add a maximum of 3 screenshots per part displaying your Power BI reports.

Part 1:



Part 2:



References

1. https://www.nngroup.com/articles/dashboards-preattentive/
2. https://www.fusioncharts.com/blog/how-to-use-the-gestalt-principles-for-visual-storytelling-podv/
3. https://www.nngroup.com/articles/designing-effective-infographics/
4. *Gayane Sedrakyan, Erik Mannens, Katrien Verbert, Guiding the choice of learning dashboard visualizations: Linking dashboard design and data visualization concepts, Journal of Computer Languages, Volume 50, 2019.*
5. *Improving the Efficiency and Ease of Healthcare Analysis Through Use of Data Visualization Dashboards, Jennifer G. Stadler, Kipp Donlon, Jordan D. Siewert, Tessa Franken, and Nathaniel E. Lewis Big Data 2016 4:2, 129-135*
6. *PRINCIPLES FOR THE DESIGN AND DEVELOPMENT OF DASHBOARDS: LITERATURE REVIEW, Asmaa Abduldaem1*, Andy Gravell2 1PhD student, Southampton University, United Kingdom, 2Dr., Southampton University, United Kingdom, amg@ecs.soton.ac.uk*