

Coursework Description Sheet

Name: Jiaying Hong

Student ID: 230152858

Please fill in the boxes to describe how you completed the task. The filled in table should be no more than three pages long. Add screenshots of your Power BI reports and references after the table.

Part One	Description of how your submission achieved this
How does the visualization allow decision makers to understand the overall situation?	The end user of this visualization mainly focus on deploying limited tactical resources. Considering the urgency of the end user and the need to obtain key information in a short time, such as the population and the number of infected people, it is necessary to contain summary information on airborne diseases in the dashboard. This kind of information needs to be obtained quickly, so I directly displayed the data by applying it to the card through calculation. Secondly, due to the characteristics of data dissemination, I used maps to display the distribution of diseases, which can enable decision makers to quickly grasp the general situation of disease distribution. At the same time, I also applied the form of scatter plot, so that users can quickly grasp the relevant distribution of data.
How does the visualization allow decision makers to decide which areas of the city to target first?	For the variables, I focus more on the mean of the four outcomes (u), the population, the coefficient of variation (CoV) and the infection rate which I calculated by myself. To decide which areas to target the first means that to figure out the urgency of different areas. We cannot just simply consider that it is more urgent with higher infection rate or higher number of infected person. We should take the population into consideration. Therefore, these factors will serve as the basis for judgment. According to that, applying the interactions in the visualization is significant. I used the slicer to change the range of different variables to change the distribution of infections on the map. What is more, I used color to distinguish the severity of infection in different areas. Different colors can quickly be identified according to the human perception. In this case, decision makers may figure out which areas to target first easily.
Use of visual channels consistent with data variables	<ol style="list-style-type: none"> 1. The size. I used the bubble size on the map to illustrate the population in the cell. 2. The color. I used the different color saturation to distinguish the infection rate. With the color getting darker, the infection rate gets higher. What is more, I used different colors to identify the different variables on the card. 3. The position. The infected cell on the map with longitude and latitude can easily be observed the disease distribution. According to the map, the disease spread in roughly one direction and spread out in all directions.
Use of graphic design principles	My graphic design principles are based on Gestalt principles. "The Gestalt principles of perceptual learning elucidate how the human brain categorizes and

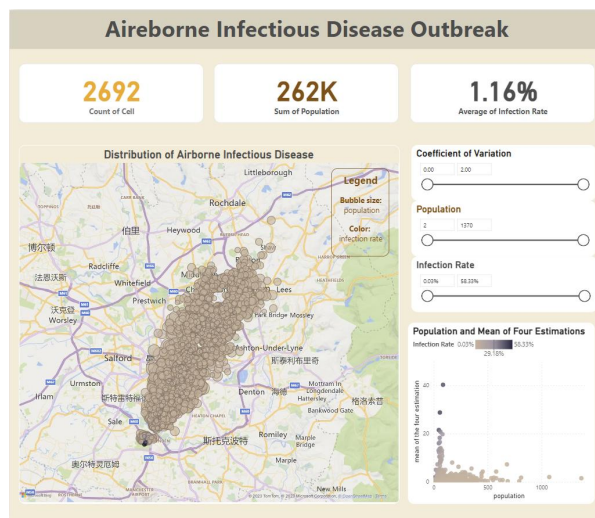
	<p>comprehends a set of visual elements grouped together. " (Poddar, Swapnadeep , 2022)</p> <ol style="list-style-type: none"> 1. Law of similarity. I used the same shape of the cards to show the statistical data, like the count of cell, the sum of population and the average rate of infection rate. Apart from the shape, I also used the identical font 2. Law of proximity. I divided the dashboard into several modules, which are the card for shown the statistical data, map, slicers and the scatter plot. These can be easily identified the function and targets on the dashboard. 3. Law of symmetry. The position of the card in my visualization is applied in the symmetry principles.
Use of colour	<p>"Five percent of the human population, 8% to 10% of men, have some sort of color blindness; the most common is red-green color blindness (Neitz & Neitz, 2011)." (Herman E, Xie SY, 2021) We also need to consider the problem that our visual materials need to be able to communicate effectively when printed in gray. In this case, I used the color mainly in yellow, gray, brown and white. What is more, I used colors to distinguish between different categories of data within a module.</p>
Use of interaction	<ol style="list-style-type: none"> 1. The slider of the slicer. The end user can move the slider to change the conditions in order to see more clearly on the map. 2. Clicking specific point to see more details about it. With choosing the specific point on the scatter plot, the user can see the relevant details changing on the card, for example, the population from the whole city to the chosen one.
Use of language and text	<ol style="list-style-type: none"> 1. Font color. For the different modules, I used different font colors to identify. 2. Font size. For the entire page, the title font is the largest compared to the other parts. The second is the font on some conspicuous cards. For the chart title font, it is larger than the text and other annotation content. 3. Font-weight. For conspicuous fonts such as title classes, I made them bold to make it more obvious.
Reliability of operation, fit on desktop screen.	<p>I used a custom pattern for canvas size. In order to adapt to different screen sizes, users can zoom in and out to adapt the panel to the screen size.</p>
Part Two	
Does the visualization allow an understandable overview of the situation?	<p>Yes. In the second part, I showed four pieces of data and I used Python to combine the four pieces of data into a table and clean it. The visual interface is switched between buttons, one of which displays the results of comprehensive data, including maps. The other diagram shows each of the four pieces of data on the map and some basic information. As a result, the distribution of four infection data affected by environmental factors can be compared with each other, and a single comprehensive map can clearly show the combined distribution of the four data sets.</p>
Effective visual representation of the data variations over multiple runs	<p>The visual data analysis dashboard framework that I used will not change, but will observe the disease distribution by changing multiple variables. At the same time, we should also consider the infection rate and other factors. In addition, the panel will have the basic information</p>

related to the data, such as the number of people, so that the end user can quickly obtain information. In addition to the comparison of multiple map data, there can be multiple data integrated display panels to cope with data changes.

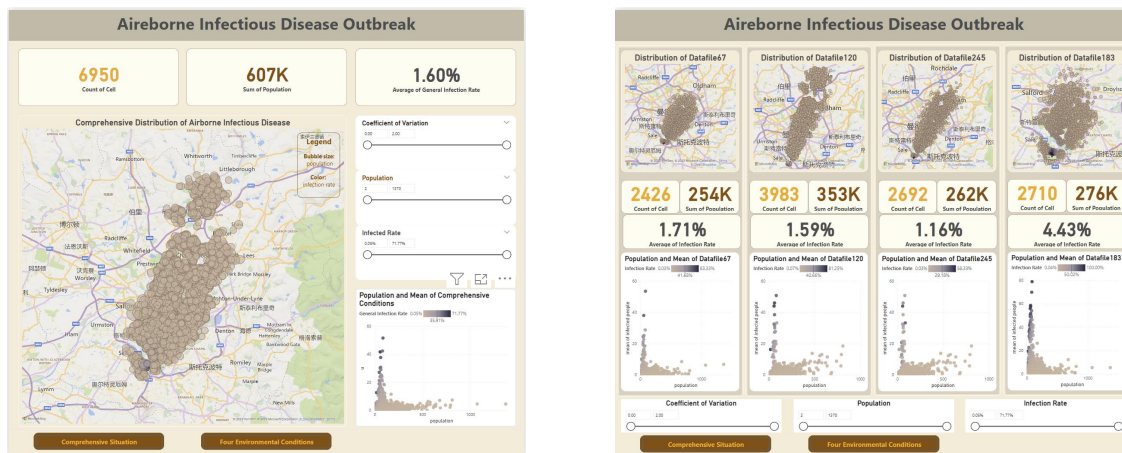
Screenshots

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

Part 1:



Part 2:



References

Add your references here.

Poddar, S., Chen, Z., Ma, Z., Zhang, Y., Chan, C.L.J., Ren, B., Zhang, Q., Zhang, D., Shen, G., Zeng, H. & Fan, Z. (2022) 'Robust Lead-Free Perovskite Nanowire Array-Based Artificial Synapses Exemplifying Gestalt Principle of Closure via a Letter Recognition Scheme', *Advanced intelligent systems*, 4(7), p. n/a-n/a.

Helman E, Xie SY. Doing Better Data Visualization. *Advances in Methods and Practices in Psychological Science*. 2021;4(4). doi:10.1177/25152459211045334