

Data Visualization 2 Project Write Up Report

Our data visualization project focused on answering the question “How do chronic disease indicators vary across states?” Abigail and Dalal took on this additional project to grow their technical skills and better understand the data visualization tool Tableau. Our original data set contained over 1.19 million rows of data which was provided to us from the U.S. Chronic Disease Indicators (CDI). In observing such a large data source, we decided to focus on the respiratory related chronic diseases; chronic obstructive pulmonary disease (COPD). The timeline we chose was the pre- and early pandemic time period from 2019 to 2020. Deciding the states posed a challenge. At first, we were looking at all 50 states in the US which was particularly difficult to visualize. This led us to scope out the correlation between chronic disease indicators with life expectancy in which we observed the ten highest and ten lowest life expectancy states. To find the correct sequence of the states, the Centers for Disease Control and Prevention (CDC) was used as a source.

Initially, we had difficulty understanding what these indicators were and how to answer the question. What we found was that the indicators were originally labeled as “questions.” With this realization, we observed all COPD indicators, and chose to focus on mortality and hospitalizations. The chosen indicators were mortality for COPD for those greater than or equal to the age 45, as well as hospitalization for COPD for those greater than or equal to 65 years. With our known indicators, we were able to formulate a hypothesis.

As time progressed, we got more comfortable using Tableau and better aware of how to create sheets that presented graphs. We were able to create several different types of visualization sheets, including geographical representation in the form of a map, as well as bar graphs, pie charts, horizontal bars, and stacked bars. We learned how to change titles and axes, rows and columns, and how to adequately filter data in order to visually present it. A lot of filtering was done for dates, states, chronic diseases, and indicators.

We both gained valuable experience and skills working on this project. Abby learned how to refine very large data sources by filtering and attempting different graphical representations. It was her first time completing a project of this nature and through doing so she was able to improve receiving feedback, ask more questions, think outside of the box and continuously expand her knowledge. Finally, she learnt that it was not something that could be completed in a few weeks, but rather it required patience, and a lot of focus management.

Dalal also learned to filter and manage a large data source in order to produce visual representations to answer the question. There were several times where Dalal lost her progress and had to reupload the data source. This was frustrating but she learned the importance of saving her work and how to recreate the charts. These mistakes allowed her to create new charts and get new perspectives on the data. Most importantly, she also learnt how to think outside of the box and ask questions that either lead to answers or more questions which lead to more curiosity.

Together, Abby and Dalal learned to collaborate, communicate with each other and their coach, and initiated meetings and conversations to further progress in their project. They constantly brainstormed ideas, asked questions, and tried new things to look for new answers. From their coach Lynn, they learned to use the scientific method when analyzing data, use

proper scientific terminology when creating a scientific write up, and to use sources to back up findings. A lot of charts were made, most of which weren't used as we are required to present three charts per dashboard. From this, Lynn helped the girls learn to decide what was important to keep and what best presented an answer to the question.

As a team, working together was something we improved overtime. There was some difficulty regarding communication and clarity amongst Abby, Dalal, and Lynn as it was a new project that wasn't initially understood. Overtime we were better able to collaborate and progress each week as everyone shared their thoughts and worked together to create charts. Abby and Dalal met over zoom a few times to do research, figure out Tableau, create sheets, and put together dashboards. They also remained in communication so the project was consistently updated, and had weekly meetings with their coach Lynn. They took on an extra, optional assignment from Lynn to do a scientific write up on the project and discuss the hypothesis, methods, figures, summary, and conclusion of the project.

Overall, it was an exceptional experience which we would not have been the same without our coach Lynn. We are better STEM students because of it and we will continue to apply the skills we learnt in future Nvolve projects, school, and as we embark on our professional journeys.