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Deliverable I

Exploring influenza cases in New York State with an interactive dashboard

Related Work and Literature Review

There are various data dashboards that visualize flu data [1-3] as well as the spread of other viruses [4]. From these dashboards, I learned about what makes a dashboard intuitive, visually appealing, and easy to navigate. The importance of properly disseminating surveillance data is of greater focus in literature. This results in the optimization of a dashboard's impact on health officials' and policy makers' decisions and actions [5-6]. For example, Cheng et al. developed and implemented an influenza surveillance dashboard that displayed intuitive figures from multiple surveillance data streams per panel [5]. Their dashboard was applied to the influenza surveillance data in Hong Kong, while the proposed dashboard in this project will be data from New York State. The current New York State Flu Tracker Dashboard [1] only displays cases and trends in the more recent seasons (2016 - 2020). My dashboard will include all seasons (2010 - 2020). I will also attempt to implement supplemental data in the dashboard, such as the vaccination rate of healthcare workers with patient contact [7], or overall vaccine effectiveness per year [8]. Because the developers of the NYS Flu Tracker dashboard do not provide their methods, the main challenge will be developing a dashboard that works as seamlessly as theirs. I will provide the methods and code for creating the dashboard, allowing others to replicate my work and make improvements. Additionally, providing methodology will provide transparency for users who seek a deeper understanding of the data and dashboard.

Preliminary Exploratory Data Analysis

The preliminary exploratory data analysis revealed that the sum of all confirmed influenza cases (influenza type A, B, and unspecified) were highest in the 2017-2018 flu season (128,247 cases). The 2018-2019 season had the second highest number of cases (107,805 cases). Previous flu seasons (2009-2010 to 2016-2017) had a lower number of cases, with the highest being 64,765 cases in the 2016-2017 season. There are a variety of factors that may contribute to this difference. Factors include (but are not limited to) virulence, vaccine effectiveness, and vaccination rates. Another important factor to consider is the number (or availability) of laboratory tests for the flu. It is often the case that the flu is diagnosed based on symptoms alone, meaning there are more flu cases than those reported in this dataset. Regardless, this preliminary exploration revealed one insight that will be represented in my interactive dashboard.

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Presentation Link