Optimizing resource allocation based on demand forecasting

Project Objectives

- Examine trends in influenza and how they can be used to proactively plan for medical staffing needs across the country

- Distill business requirements and requests into questions that can be answered with an analysis

- Source and curate the data to address these questions

- Analyze the data, draw conclusions, and formulate recommendations

- Present findings in an easily consumable format

Data Overview

- US influenza deaths by geography from 2009 to 2017

- Sourced from the CDC

- US population data from 2009 to 2017

- Sourced from US Census Bureau

Techniques Applied

- Sourcing and describing datasets

- Profiling data, address data integrity issues, and implement data quality measures

- Calculating variance and standard deviation and testing for correlation between variables

- Performing statistical hypothesis testing

- Creating temporal, statistical, and spatial visualizations

- Forecasting a time series

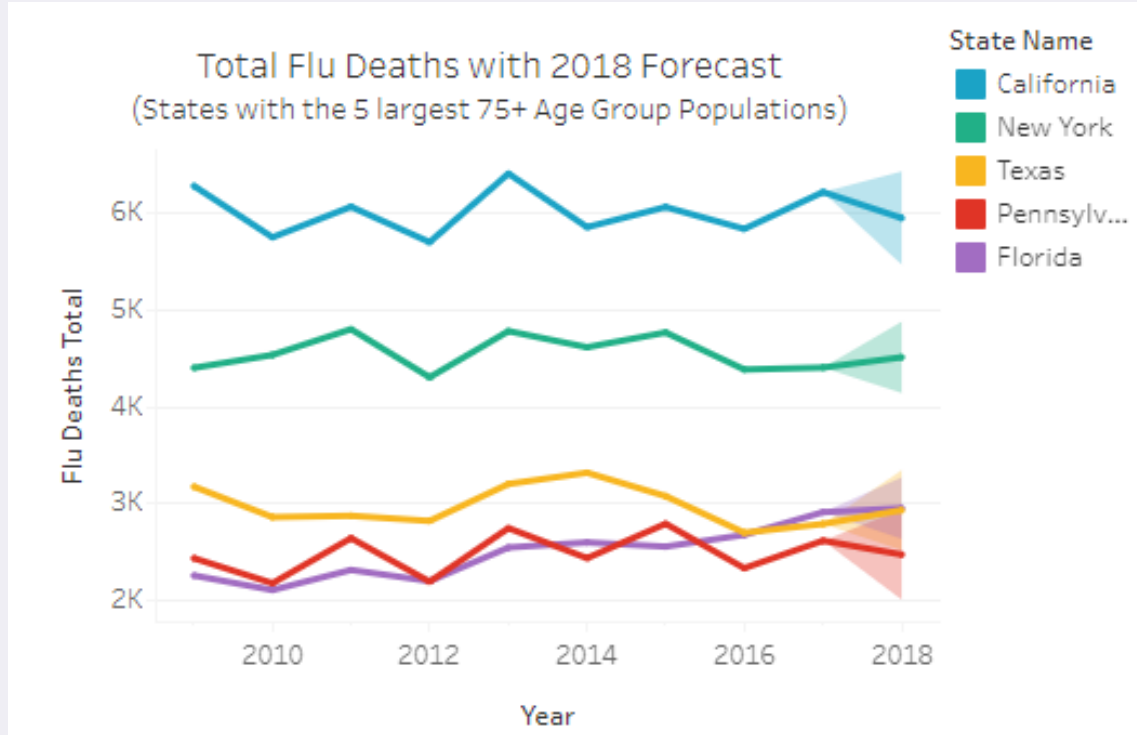- Narrating a cohesive presentation of findings and recommendations

Tools Used

- Microsoft Excel
  - Data transformation and integration
  - Hypothesis testing
- Tableau
  - Visualizations
  - Forecasting
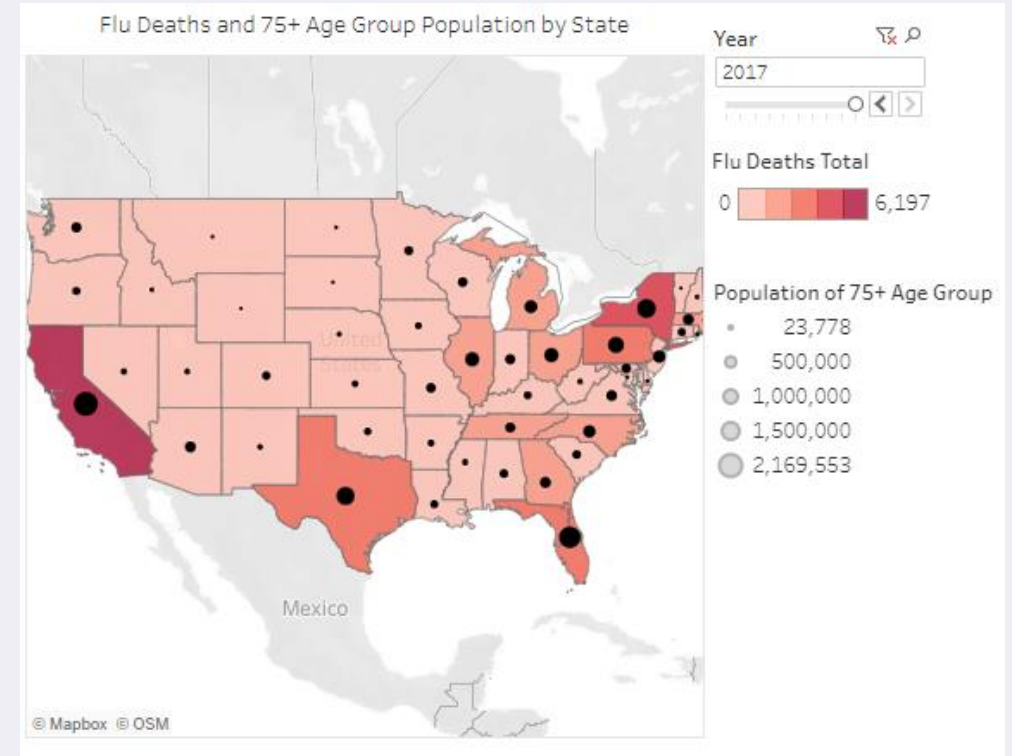 - Dashboards
  - Storyboards

Visual Highlights

Total Flu Deaths with 2018 Forecast
(States with the 5 largest 75+ Age Group Populations)

Medical staffing should prepare for thousands of flu victims in states with high populations of the 75+ age group

This map displays a connection between states with high counts of flu deaths and large 75 and older populations

Key Recommendations for Medical Staffing

- Data should be collected throughout the 2018 flu season so that an assessment can be made on the effectiveness of sending additional medical staffing to the states with the largest populations of the 75 and older age group.

- The medical staffing agency should consider providing info on the number of staff available in order to prioritize the CDC's recommendation of a 1-to-5 nurse to patient ratio.

Actionable Insights

- Data can be found from multiple sources, transformed, and integrated to create more comprehensive datasets.

- Correlation and statistical hypothesis testing are useful tools in measuring the strength of a relationship between variables

[Link to Tableau Storyboard](#)

[Link to Video Presentation](#)