

# Influenza Analysis



## Introduction:

The United States has an influenza season where more people than usual suffer from the flu. Some people, particularly those in vulnerable populations, develop serious complications and end up in the hospital. Hospitals and clinics need additional staff to adequately treat these extra patients. The medical staffing agency provides this temporary staff. The purpose of this analysis was to determine when to send staff, and how many, to each states. The agency covers all hospitals in each of the 50 states of the United States, and the project will plan for the upcoming influenza season.

## Hypothesis:

If a person is 65+ years old, then they are more likely to die by flu

## Goal:

To help medical staffing agency that provides temporary workers to clinics and hospitals on an as-needed basis. The analysis will help plan for influenza season, a time when additional staff are in high demand. The final results will examine trends in influenza and how they can be used to proactively plan for staffing needs across the country.

## Steps and Skills:

- Data Cleaning
- Statistical hypothesis
- Hypothesis testing (t-testing)
- Temporal & Statistical Visualizations in Tableau (bar chart, scatter plot, choropleth map, line graph)
- Interpret Results and Summarize findings/insights.
- Presenting results

## Link for Project Presentation:

[https://public.tableau.com/views/PreparingforInfluenzaSeason\\_17109791937900/Story1?language=en-US&publish=yes&sid=&display\\_count=n&origin=viz\\_share\\_link](https://public.tableau.com/views/PreparingforInfluenzaSeason_17109791937900/Story1?language=en-US&publish=yes&sid=&display_count=n&origin=viz_share_link)

## Tools Used:

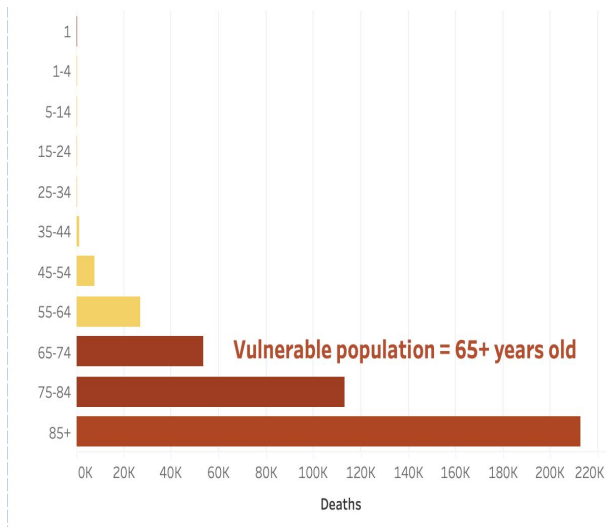


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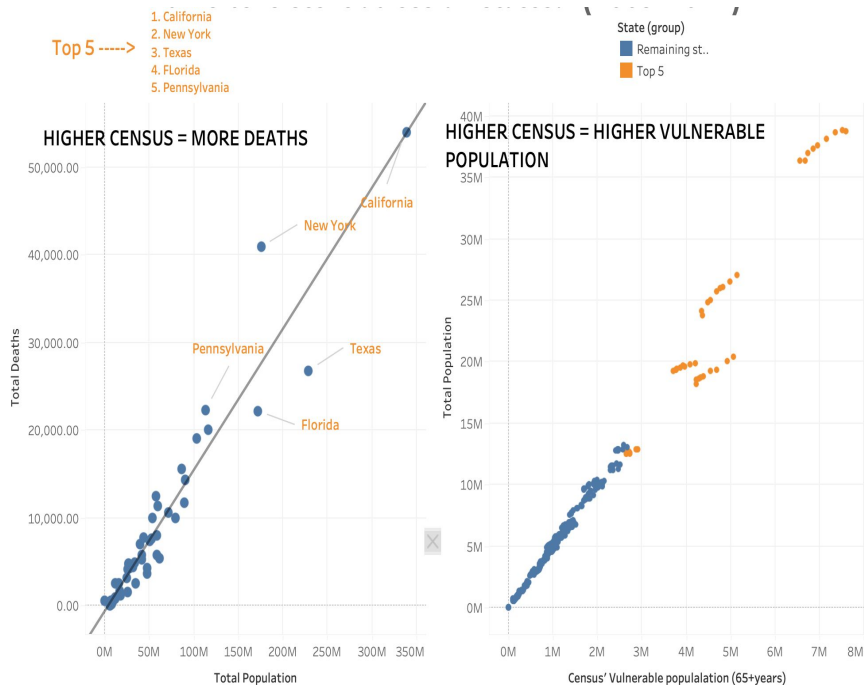


## Population/Age groups

By grouping into 10-year age range, it was easier to see that the vulnerable population makes up more of deaths



## Top 5 States with flu-related deaths



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## Seasonality

United States census , vulnerable population death rate, and total death counts (2009-2017)

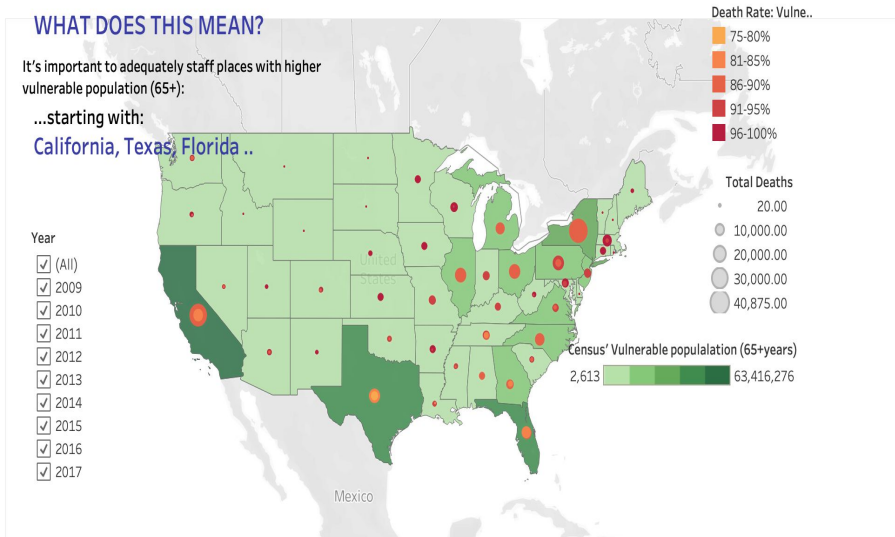
Death rates for vulnerable populations are HIGH for all states! (low of 75-80%)

### WHAT DOES THIS MEAN?

It's important to adequately staff places with higher vulnerable population (65+):

...starting with:

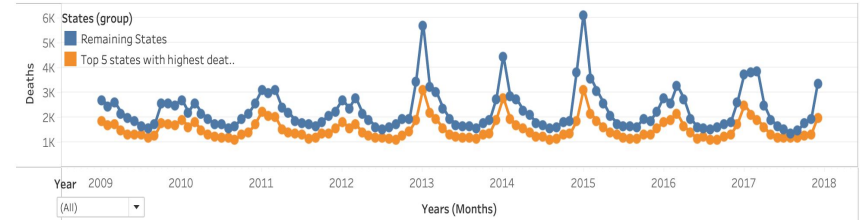
California, Texas, Florida ..



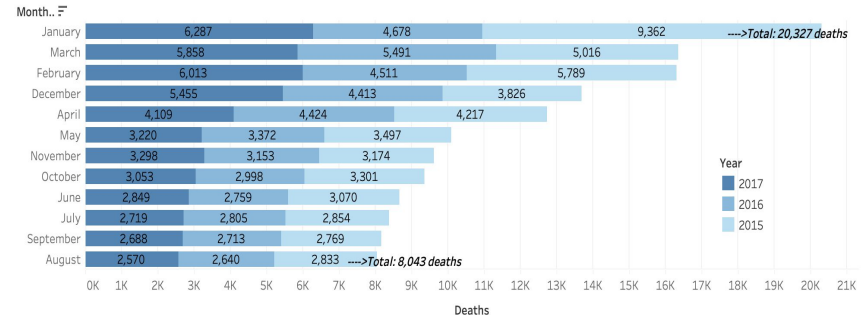
## Seasonality of the flu: Watch out in January!

Winter months with highest death count shown at end of the year:

(December through beginning of the next year, January through March)



### Monthly view of death count per year (last 3 years)



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## Insights:

- Vulnerable populations (65+) make up most influenza deaths
  - 5 states with highest vulnerable population count: California, New York, Texas, Florida, Pennsylvania
- States with higher census bring higher death counts
- More deaths by flu occur in the winter months (December - March). January consistently has highest death counts.

## Recommendations:

- **Top 5 High Risk States to prioritize staffing needs:**
  - California
  - New York
  - Texas
  - Florida
  - Pennsylvania
- **Seasonality**
  - Concentrated staffing needed during January mostly, along with winter months (Dec-March)
- **Further analysis needed on:**
  - Vaccination rates and their impact on death rates on the vulnerable and non-vulnerable populations (65+ vs below 65 years old)
  - Inclusion of other contributors to our vulnerable population, including those who are under 5 years old, are pregnant, or who have other comorbidities.

## Conclusion:

- Based on the analysis of this data, recommendations include supplying the top 5 states with influenza related deaths and population counts with increased staffing of hospitals and agencies during the months of January as priority, along with the winter months of December through March.