



# Preparing for Influenza Season

Influenza Analysis

# Project Summary

## Goal

A medical staffing agency are preparing for the influenza season by sending temporary workers to hospitals across the US.

The objective is perform statistical analysis on influenza death across the US to optimise staff levels across the most vulnerable states.

## Data

“Population data by geography, time, age, and gender” dataset from the US Census

Bureau

“Influenza deaths by geography” dataset from the CDC

## Skills

Data transformation

Data integration.

Data cleaning

Statistical hypothesis testing

Forecasting and spatial analysis

Data visualisation

storytelling

## Tools

Excel

Tableau

# Analysis

## Initial questions to guide analysis

- When is the Flu Season?
- Who is considered a vulnerable individual?
- Which states had the highest death caused by the Flu?
- Is there a relationship between deaths caused by flu and vulnerable individuals?
- Which states have the highest vulnerable population?

# Project Process

#1

Data Integrity

Carried out descriptive statistical analysis to assess data accuracy and detect potential outliers.

#2

Data Cleaning

Identified and addressed missing values and duplicate records. Rectified inconsistencies to ensure data integrity.

#3

Data Integration

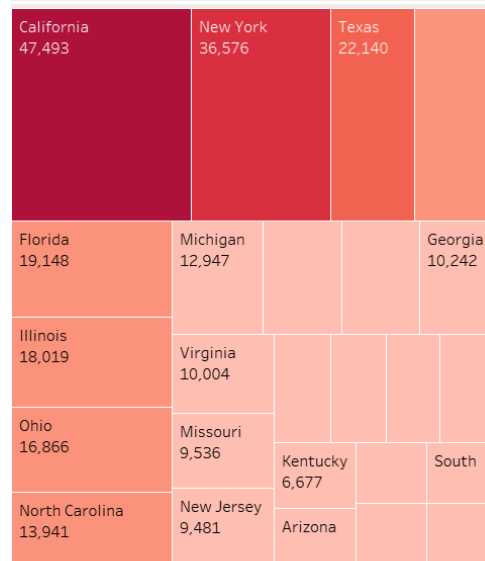
Pivoted both datasets to make formatting consistent. Integrated both datasets with common variables and VLOOKUP..

# Project Process

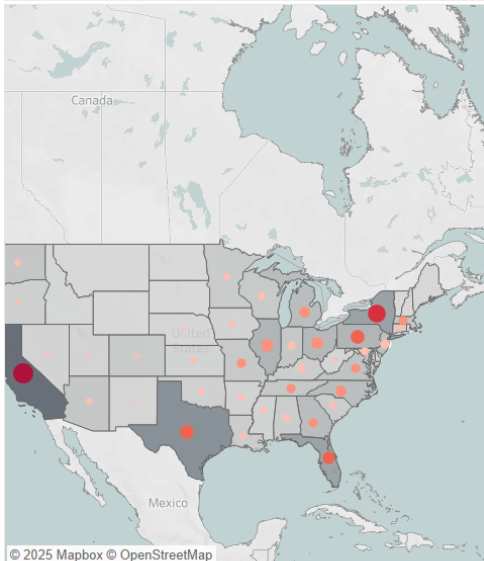
- |    |                      |   |
|----|----------------------|---|
| #4 | Statistical Analysis | Conducted statistical hypothesis testing to uncover insights and either prove or disprove the hypothesis. |
| #5 | Visual Insights      | Utilised Tableau to provide visual validation of the insights identified.                                 |
| #6 | Present Results      | Created a Tableau dashboard and recorded a video presentation.  |

# Results: Vulnerable Mortality

**Vulnerable Influenza Death (Age 0-14 and 65+)**



**Total Population Vs Vulnerable Influenza Death**



nfluenz... 4,724 47,493



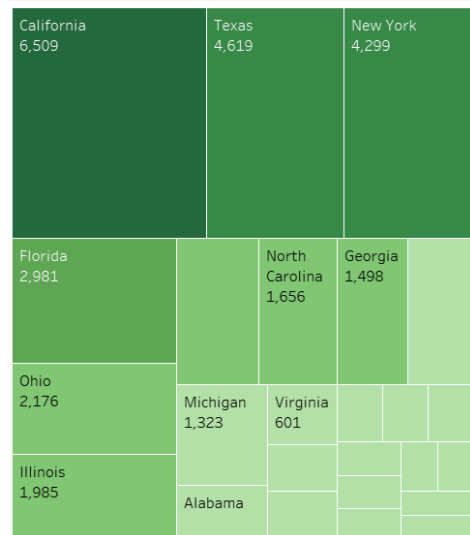
California, New York, and Texas have the highest death rates among the vulnerable population



States with higher population levels also experience higher influenza mortality.

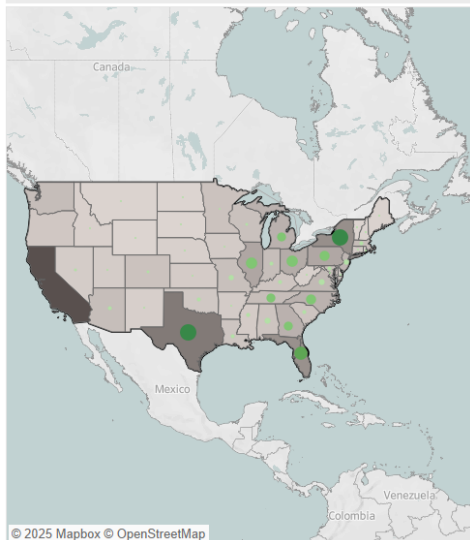
# Results: Non-Vulnerable Mortality

**Non-Vulnerable Influenza Death ( Age 15 - 64)**



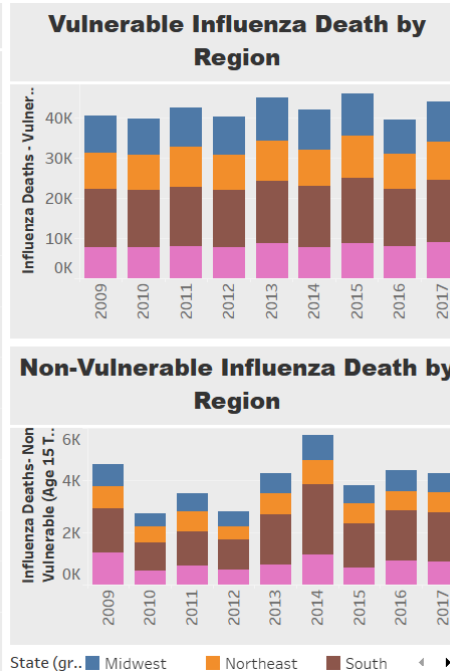
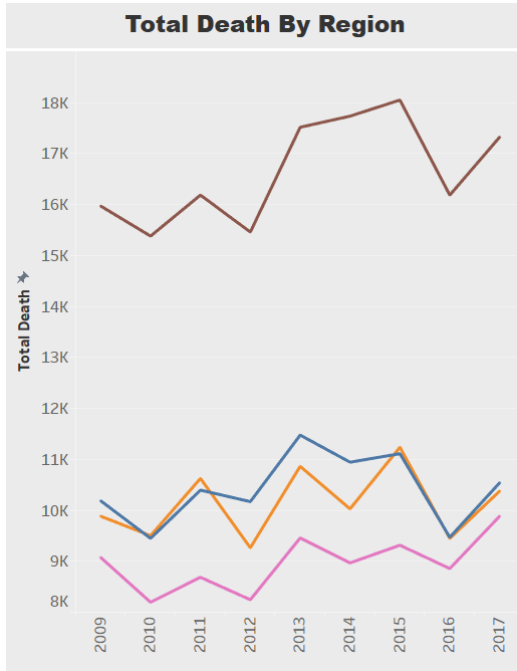
Influenz.. 0 6,509

**Total Population Vs Non-Vulnerable Influenza Death**



- California, New York, and Texas also have the highest death rates among the non vulnerable population
- States with higher population levels also experience higher influenza mortality.
- Both the vulnerable and non-vulnerable populations share the same top five states.

# Results: Regional Analysis



Southern states have the highest influenza death rates among all regions, however they have all been following the same trend.

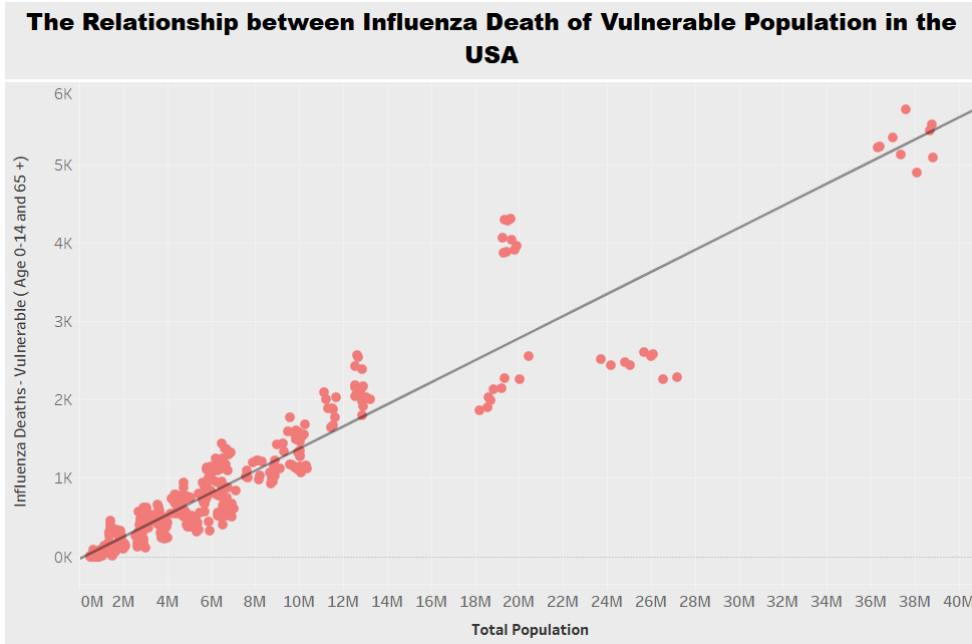


Although the southern states report the highest number of deaths, they also have the largest populations.



Vulnerable population deaths have remained stable, while non-vulnerable deaths have fluctuated over the years.

# Results: Correlation



The scatterplot shows a strong positive correlation between the two variables, with an R-squared value of 0.90.

This suggests that as population increases, so does the mortality rate among the vulnerable group.

# Conclusion

## Insight

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- Areas with higher population density also show an increase in influenza deaths across both groups.
- There is a strong positive correlation between the vulnerable group's mortality rate and population.
- Each region has been following similar trends in influenza mortality. Deaths in the vulnerable group have remained consistent, while those in the non-vulnerable group have been more sporadic.

## Recommendation

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- **Increase staff levels** in areas with higher population density. The analysis shows that regions with larger populations also experience higher total deaths across both groups.
- **Continuously monitor trends** to inform future staff allocations. Total deaths in the non-vulnerable group have fluctuated over the years, and tracking these trends will help us better prepare for potential increases in mortality.