



Preparation for Flu Season in the USA



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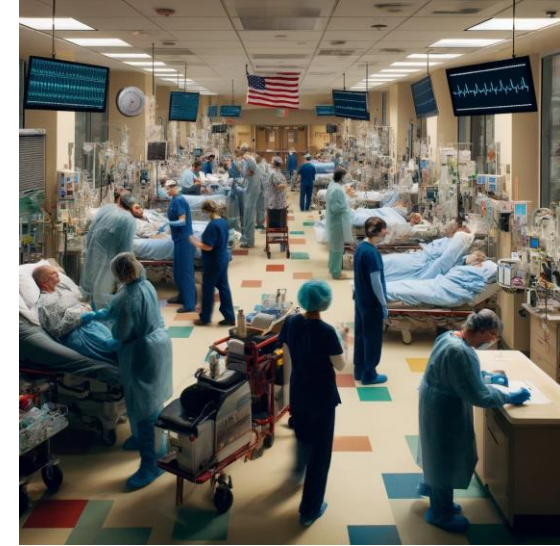
Data Analyst



Background

Challenges and Motivations

- Influenza threatens US population
 - High mortality rate
 - Economic strain
- Avoidable deaths occur
 - Compromise healthcare sector
- Severe economic burden
 - Low workforce productivity
 - High health insurance costs



Background

Aims

- Offer evidence-based enhancing vaccination strategies
- Mitigate the spread of flu across the population in the USA



Objectives

- Identify key trends and risk factors through data analysis
- Test mortality rate between old and young population ($H1$)
- Compare influenza infestation rates by gender ($H2$)
- Compare mortality rate with regional population density



Projects Overview

In an ambitious effort to mitigate the impacts of influenza across the different regions in the US, I spearheaded a comprehensive virtual project in March 2024 for three weeks.

The initiative focused on:

- ❖ Analysing extensive data on influenza spread
- ❖ Analysing extensive data on vaccine efficacy
- ❖ Providing data-driven actionable recommendations
- ❖ Effectively improving vaccination strategies in the USA



Projects Overview

Methods utilized

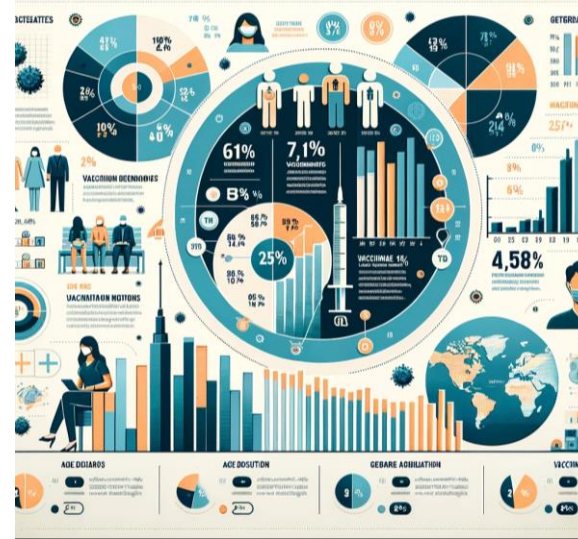
- Data sourcing and cleaning
- Data integration and transformation
- Statistical hypothesis (H) testing
- Data visualization and story telling
- Results summary presentation
- Conclusions and recommendations



Projects Overview

Data source and used tools

- [Population](#) + [vaccination](#) datasets
- Source data online from US CDC website



I used the followings tools

- Excel (data cleaning, transformation, integration)
- Tableau (for data visualization and story telling)
- MS PPT (for data story and presentations)
- MS Word (for writing and noting project steps)



Methodology

Steps

Step 1: Data quality assessment with Excel

- Data cleaning + integration
- Data transformation



Step 2: Descriptive analyses with Excel

- Age and gender
- Death counts by states

Step 3: Deployed story telling using

- MS PPT + Tableau + Results presentations



Methodology

Approach

➤ Tableau for data visualization

- Age vulnerability (bar charts)
- Gender infestation (pie chart)
- Mortality by population density (choropleth map)

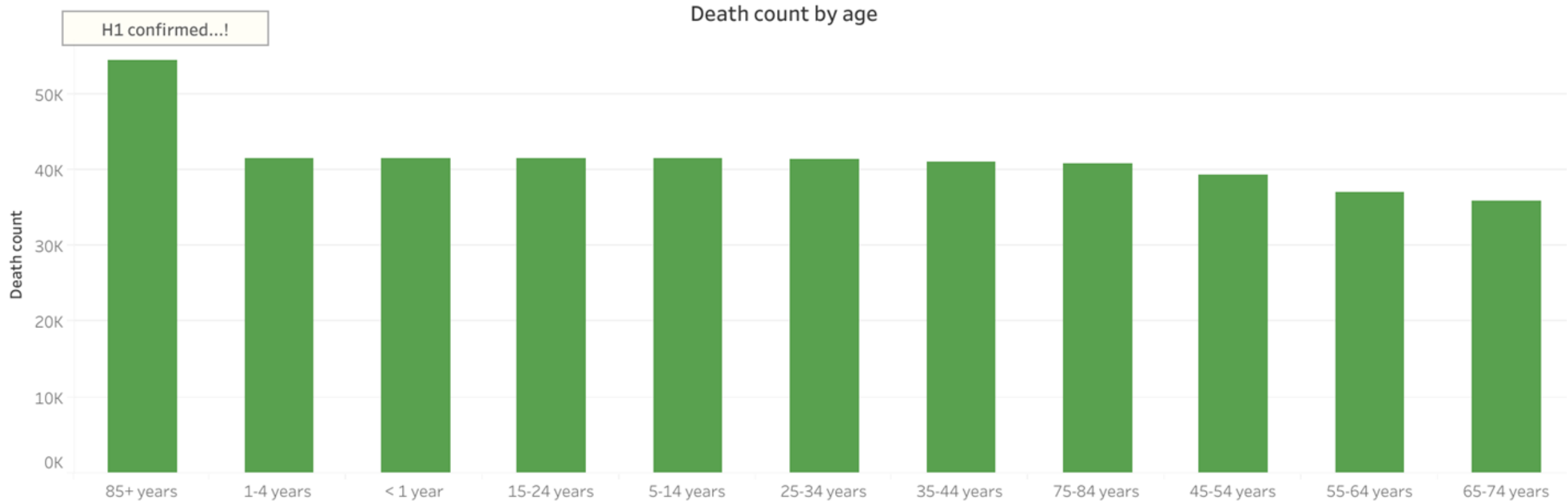
➤ MS PPT slides

- Data story telling
- Insights to confirm hypotheses



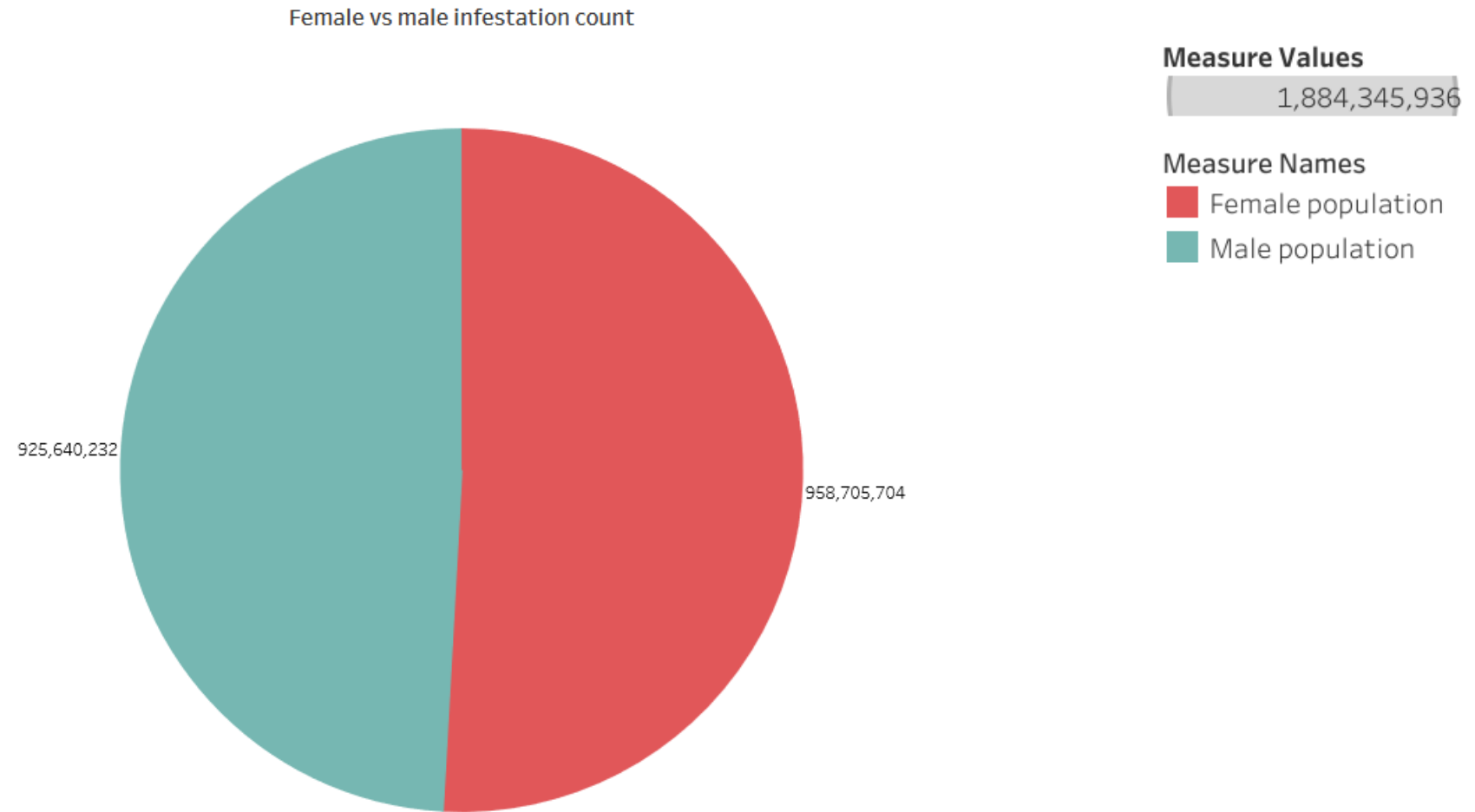
Results

85 years and above are more vulnerable to influenza infestation



➤ 85 years and above are more vulnerable to influenza infestation

Results

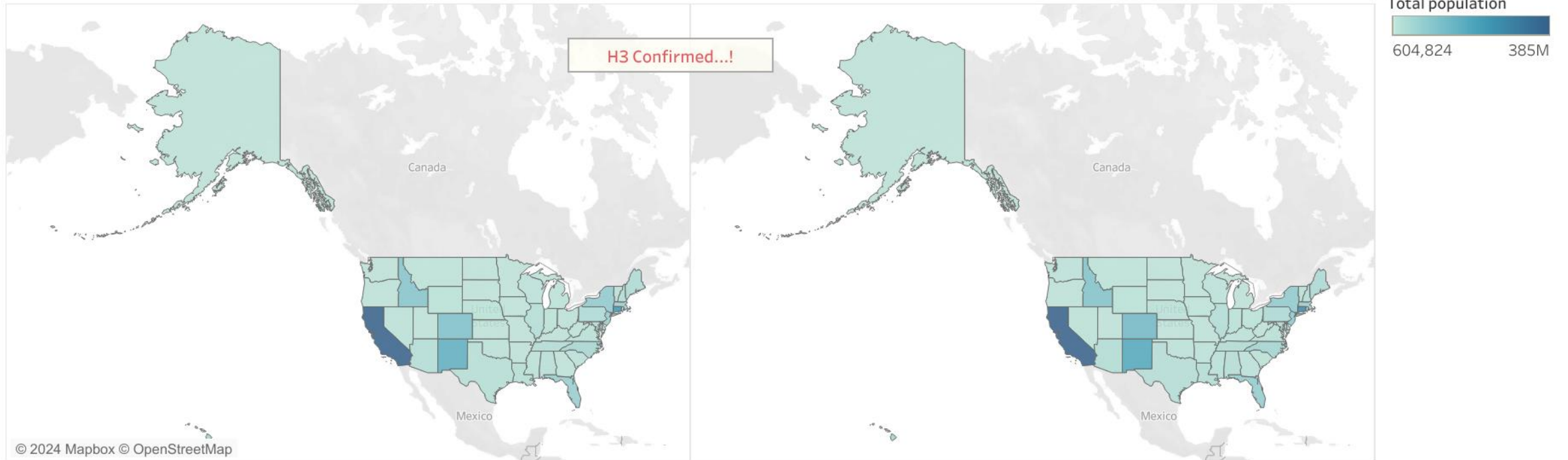


- No statistical difference between female and male infestation rates

Results

Densely populated regions record higher deaths than less populated regions

Mortality vs population by location



- High regional mortality rate is associated with high population density

Project Key Findings

- 85+ years are most vulnerable to influenza infestation
 - Elderly-targeted pre-season preparation be beneficial
- Male and female populations influenza infestation rates are same
 - Suggests a universal approach to vaccination
- Regional mortality rates correlated with increased population density
 - Region-targeted vaccination efforts could be beneficial

Conclusions

- Average death count from influenza in the US is 34 per State (**huge!**)
- There is a notable impact on aged populations and more dense regions
- Proper and effective influenza vaccination program could be implemented
- Reducing the annual burden of influenza is possible with the data information
- More health workers should be deployed in more densely populated states



Recommendations

- Review vaccine adaptations prior and after administration
- Engage with public health experts to make findings accessible
- Provide comprehensive data on influenza and vaccination outcomes
- Future projects should consider socioeconomic data; Why? To further refine vaccination strategies

