

# Project for Upcoming Influenza Season

Project Overview	Comparing Deaths by Age Groups and States	Distribution of Influenza Deaths; Dea..	Relationship Between Populations Age and ..	Monthly Trend of Influenza Deaths per ..	Key Insights, Recommendations & ..
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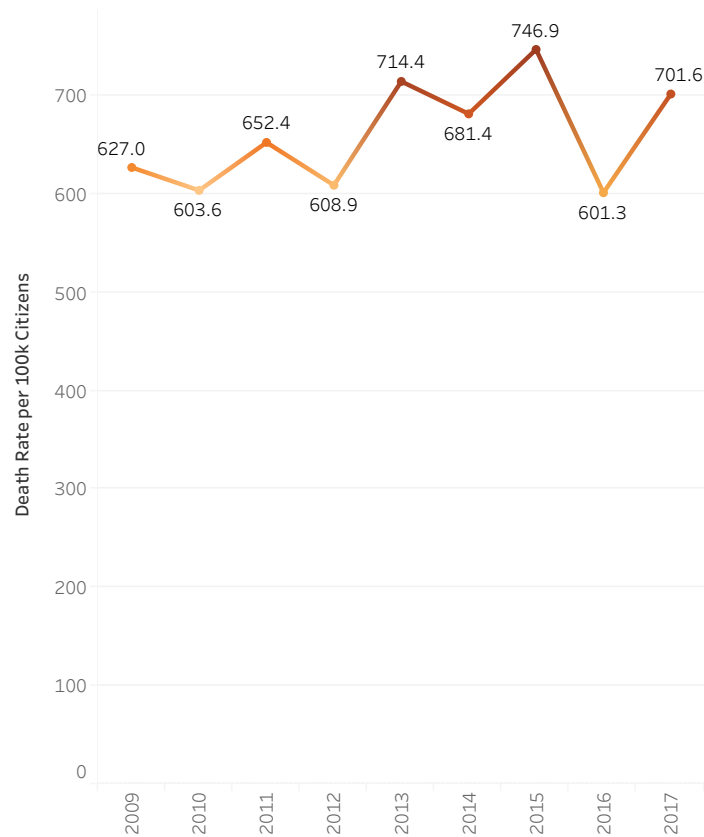
## OVERVIEW

**Goal:** To analyze influenza-related deaths and population demographics across states, particularly focusing on age groups (0-64 and 65+), to inform staffing decisions for a medical staffing agency during flu season.

### Project Overview

- **Motivation:** The U.S. influenza season leads to a surge in hospitalizations, especially among vulnerable populations, requiring additional staffing in hospitals and clinics. The agency provides this temporary workforce.
- **Objective:** Determine when and where to deploy staff across the 50 states.
- **Scope:** The project covers all hospitals in the 50 U.S. states, planning for the upcoming flu season.

Annual Trends in Influenza Death Rate (Deaths per 100,000 People) Across 2009-2017

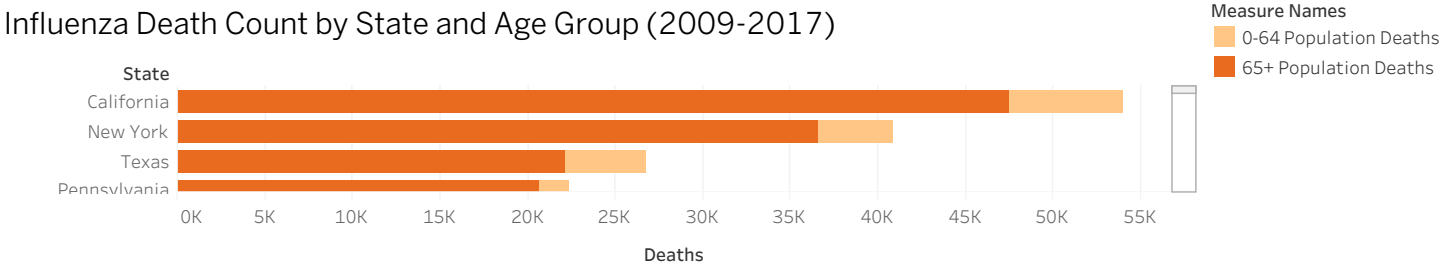


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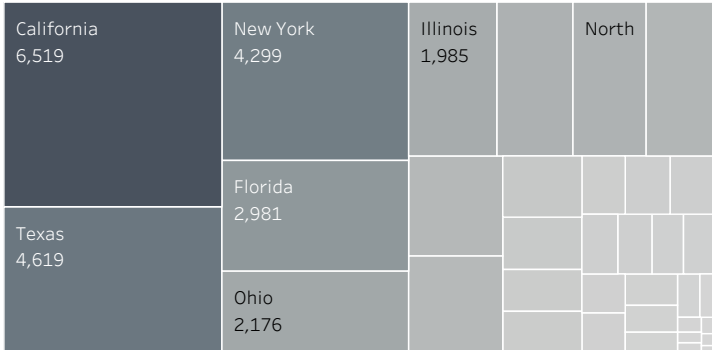
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This analysis compares two age groups: **0 to 64 years old (younger)** and **65 years old and older (older)**. The bar chart presents the influenza death count by state, segmented by age group, allowing for a clear identification of the states most affected by influenza deaths (California, New York, Texas). Additionally, two treemaps display the death counts separately for the 0-64 and 65+ age groups. The data indicates that the **younger age group** experiences **fewer deaths**, with California, the most affected state, showing 8 times fewer deaths in the younger group compared to the older group. These insights can guide more effective staff allocation by highlighting the states most severely impacted.

Influenza Death Count by State and Age Group (2009-2017)



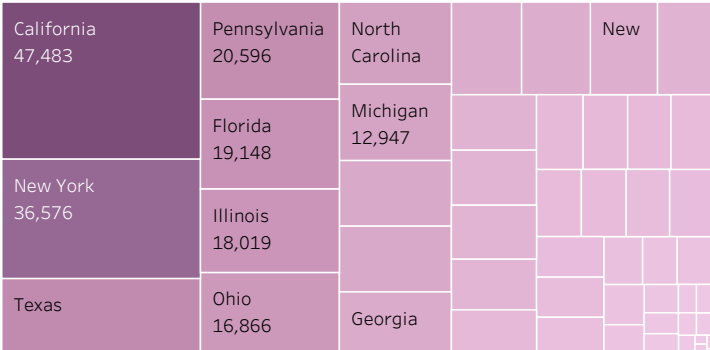
Influenza Death Among Ages 0 to 64 by State (2009-2017)



Death Count Age 0-64



Influenza Death Among Ages 65 and Older by State (2009-2017)



Death Count Age 65+



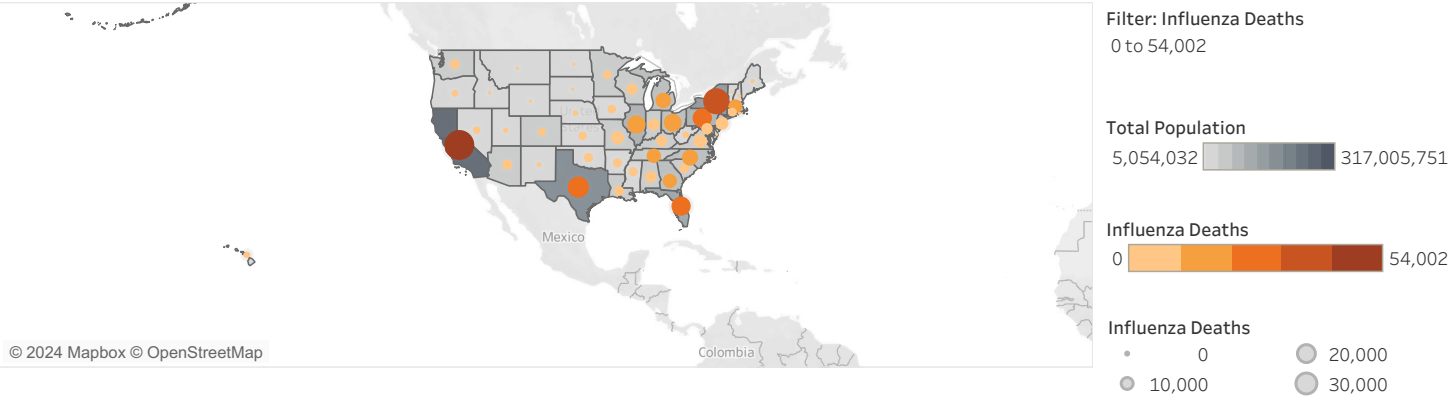
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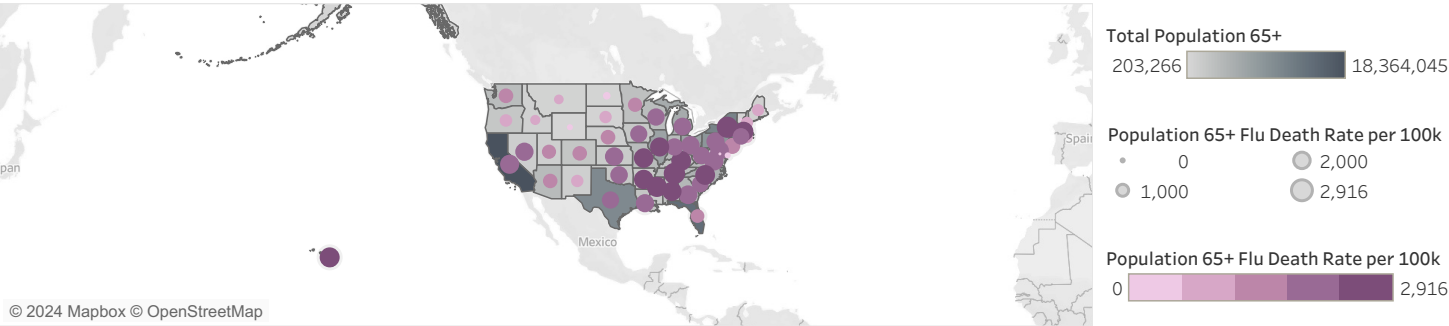
**First Graph:** Shows state populations with darker gray indicating larger populations. Circle size and color represent influenza death counts. Key findings: California, New York, Pennsylvania, and Texas have the highest mortality. The East Coast, Texas, and California are the most affected, with New York having significant deaths despite its population size.

**Second Graph:** Displays states with the largest populations aged 65+, in gray. Circle size and color represent death rates per 100,000 citizens. States with smaller vulnerable populations may show higher death rates, indicating a need for targeted healthcare. Notable states include Massachusetts, Tennessee, and Pennsylvania, while Texas and Florida, despite large vulnerable populations, do not have the highest rates.

Population and Influenza Deaths per State (2009-2017)



Population Aged 65+ and Their Influenza Death Rate per 100K by State (2009-2017)

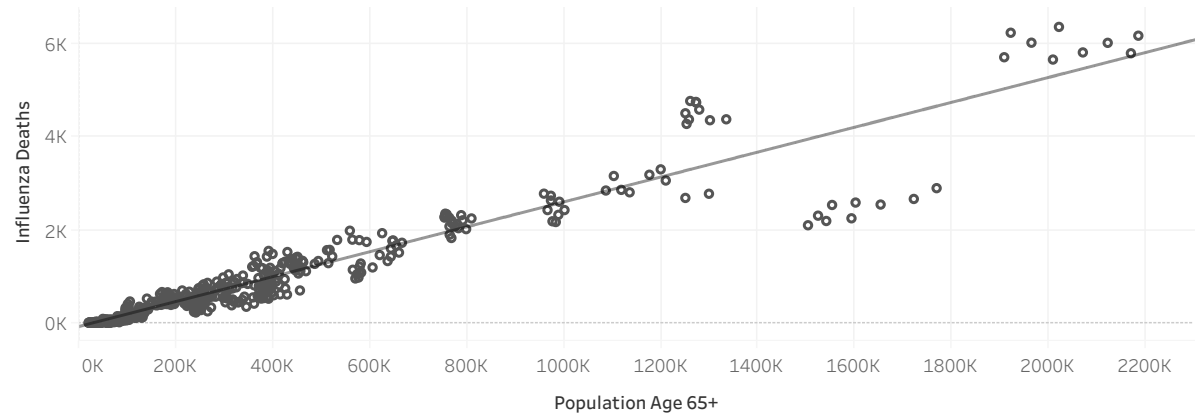


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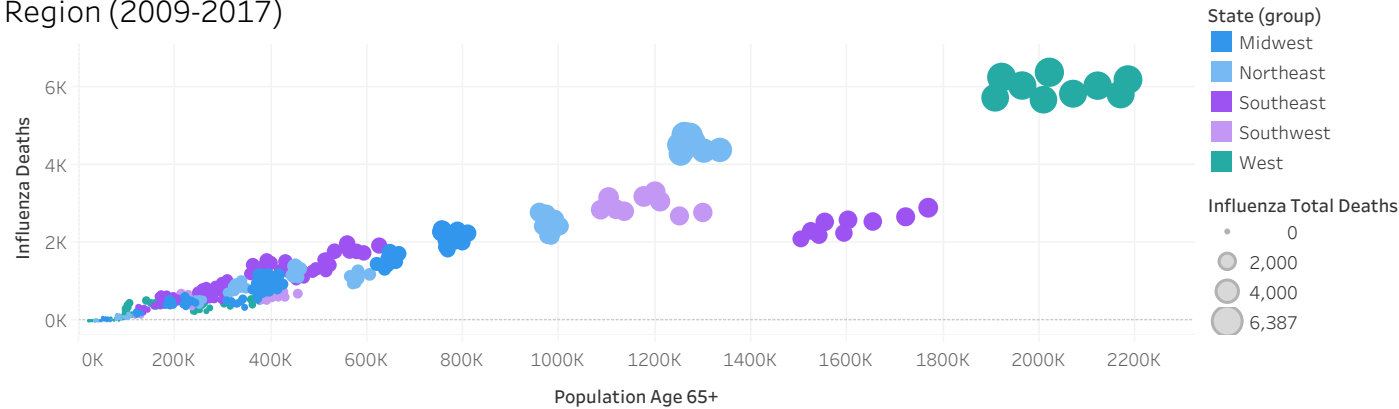
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The correlation between the population aged 65+ and influenza death counts is strongly significant, with an R-squared value of **0.9**. This indicates a robust relationship, suggesting that **increases in the 65+ population are strongly associated with higher influenza death count**. This strong correlation underscores the importance of targeted healthcare resources for the elderly to mitigate influenza-related mortality.

Correlation Between 65+ Population Size and Influenza Death Count (2009-2017)



Correlation Between 65+ Population Size and Influenza Death Counts by State Region (2009-2017)



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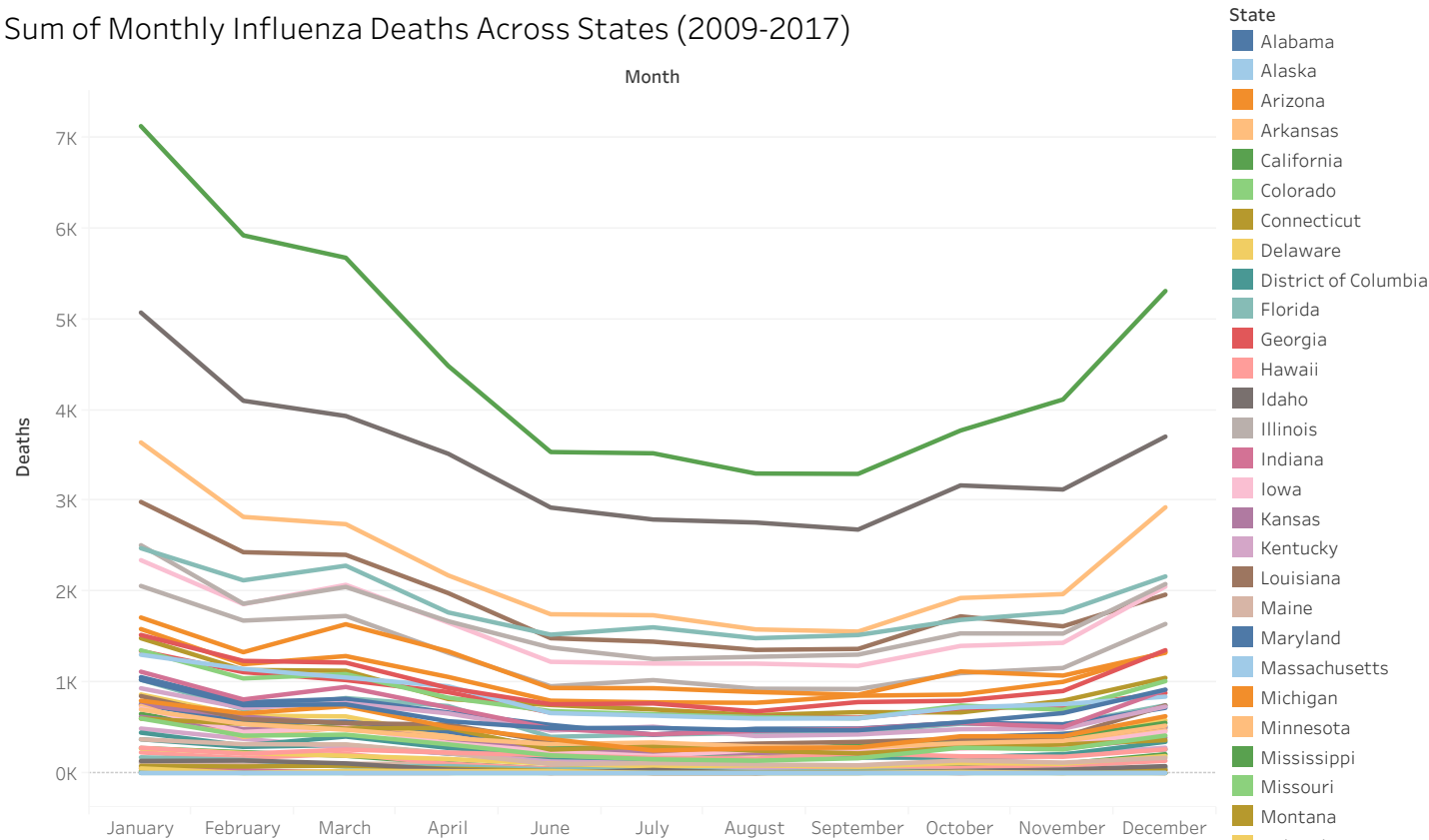
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The graph presents the total influenza deaths per month from 2009 to 2017, highlighting a distinct seasonal trend. Winter months exhibit elevated death counts, while summer months show a significant decrease.

**Winter Surge:** Allocate additional medical staff and resources during winter to address the increased mortality rates effectively.  
**Summer Preparation:** Utilize the lower summer death rates to focus on training and resource replenishment for the anticipated winter peak.

Strategically aligning resources with these seasonal patterns will optimize response capabilities and improve overall management of influenza outbreaks.

Sum of Monthly Influenza Deaths Across States (2009-2017)



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## Key Insights

- **Demographics:** Statistically significant link between 65+ population and higher influenza deaths.
- **Geography:** High mortality in California, New York, Texas, and Florida. States like Massachusetts, Tennessee, and Pennsylvania have elevated death rates despite smaller 65+ populations, while Texas and Florida, despite large vulnerable populations, do not have the highest rates.
- **Seasonality:** Winter sees peak influenza deaths, with a notable drop in summer.

## Recommendations

- **Resource Allocation:** Focus staffing and resources on states with large 65+ populations and high mortality.
- **Public Campaigns:** Target flu prevention and vaccinations, prioritizing elderly and high-risk groups.
- **Seasonal Strategy:** Increase staffing in winter; use summer for training and preparation.

## Next Steps

- **Trend Monitoring:** Continue tracking flu trends, demographics, and vaccination rates, and adjust plans based on data trends.
- **Surveys:** Conduct surveys with patients, medical staff, and hospitals to gather insights on staffing needs, patient care, and preparedness.

## New Analysis Idea

Comprehensive **Vaccination Impact** Across Age Groups with Focus on Child Mortality

To assess the impact of vaccination status on influenza outcomes across all age groups, with a specific focus on evaluating flu-related mortality rates among children aged 0-5. The aim is to identify gaps and opportunities for improving vaccination strategies and reducing flu-related deaths in young children.