

Preparing for Influenza Season

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Preparing for Influenza Season

Project Overview	How to ensure ad..	Is there any influ..	Does influenza se..	When is the influ..	Who is vulnerabl..	Which states hav..	Which states sho..	.
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PROJECT OVERVIEW

Motivation:

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 will provide this temporary staff.

Objective:

Determine when to send staff, and how many, to each state.

Scope:

The agency will cover all hospitals in the 50 states of the United States, and this project will plan for the upcoming influenza season.

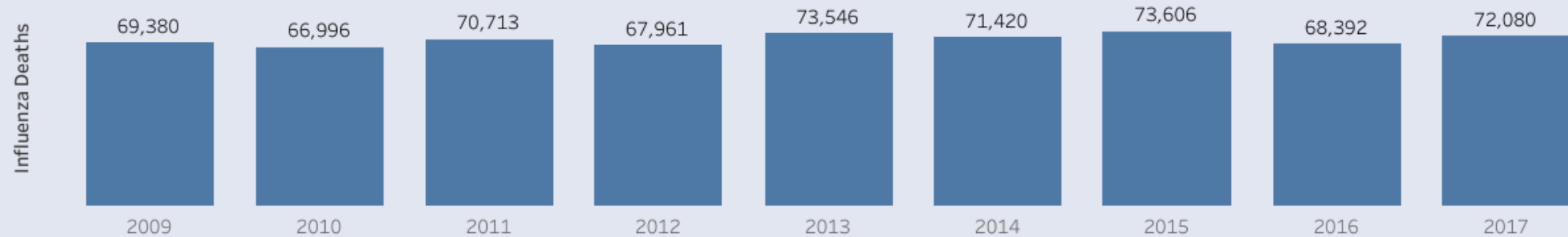


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INFLUENZA CAN KILL!

According to CDC, from 2009 to 2017, an average of 70,000 influenza deaths happened in the United States every year. Fortunately, deaths can be prevented with adequate medical staff.



4 steps to ensure sufficient medical staff for the upcoming influenza season:

1. Identify the influenza season of each state
2. Identify which age groups are vulnerable
3. Identify the states with large vulnerable populations and high influenza deaths
4. Categorize the states based on their vulnerable population sizes

The timeframe of the data used in this analysis is from 2009 to 2017.

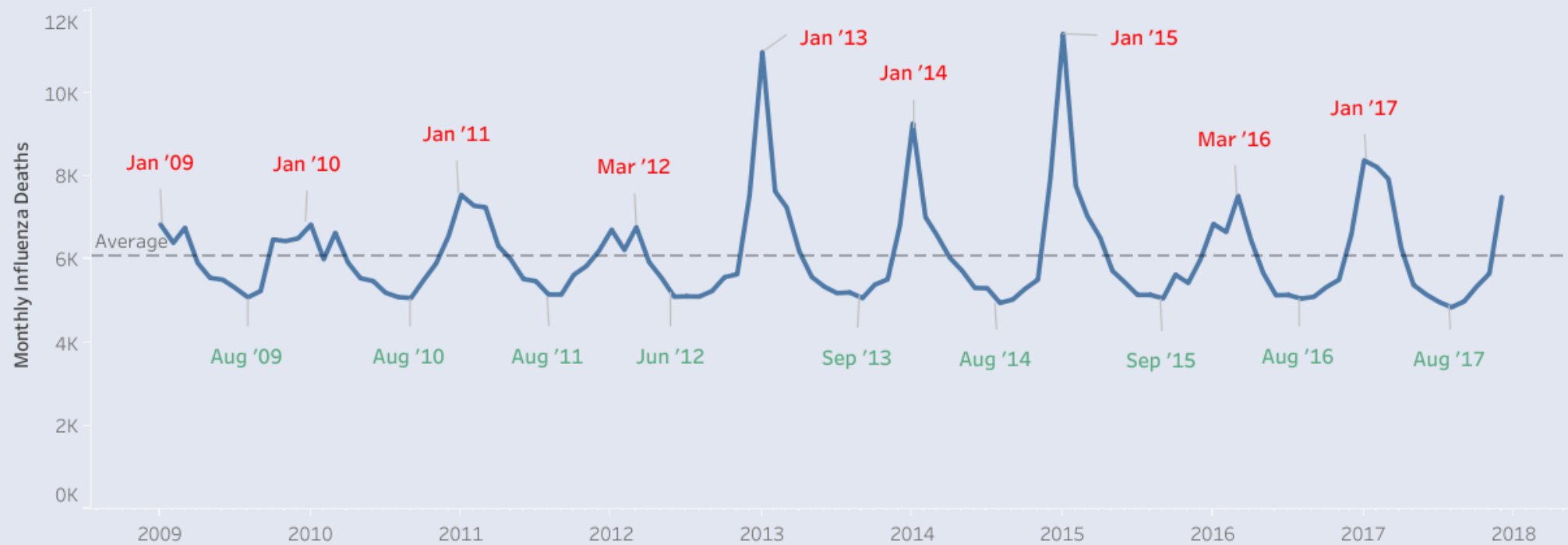
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From the line chart, an influenza seasonal trend did appear in the United States.

The **peaks** tend to be around December to March, while the **valleys** tend to be around May to November.

Monthly Influenza Deaths in the U.S.



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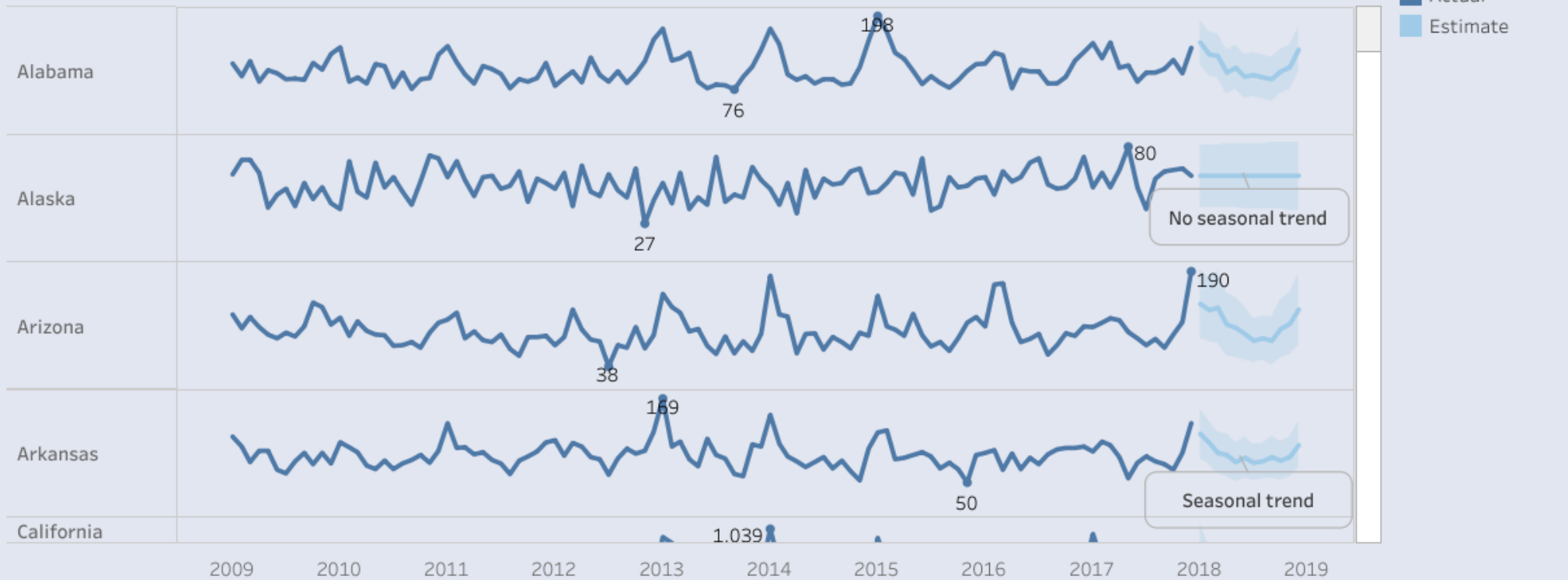
Which states hav..

Which states sho..

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From the monthly influenza deaths record and forecast, not all the states show the influenza seasonal trend.

Monthly Influenza Deaths for each State

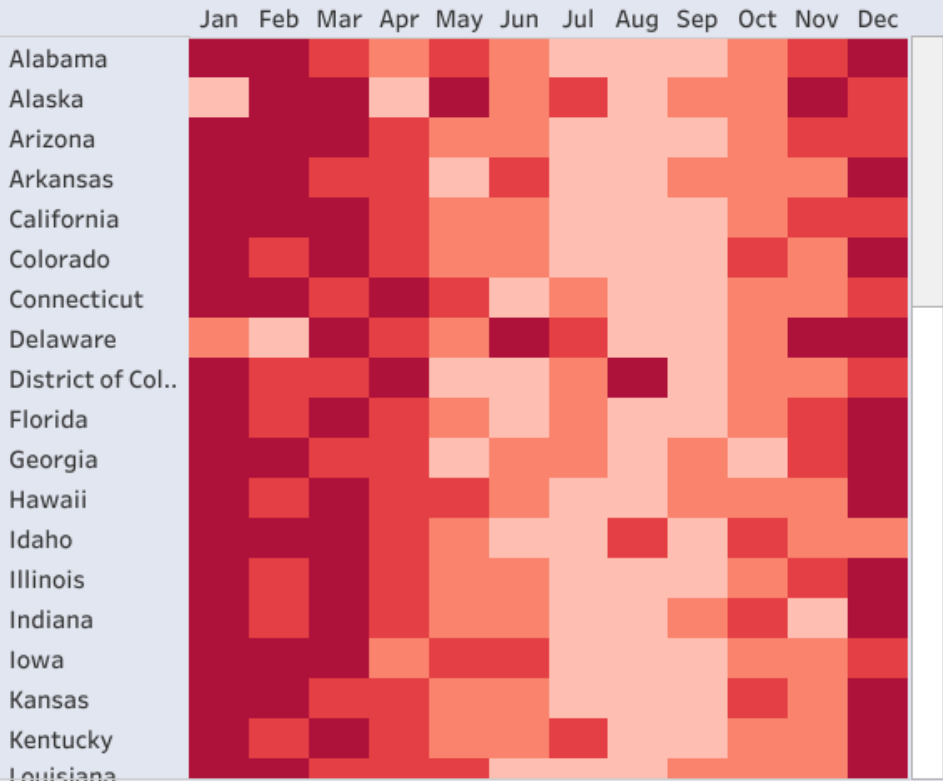


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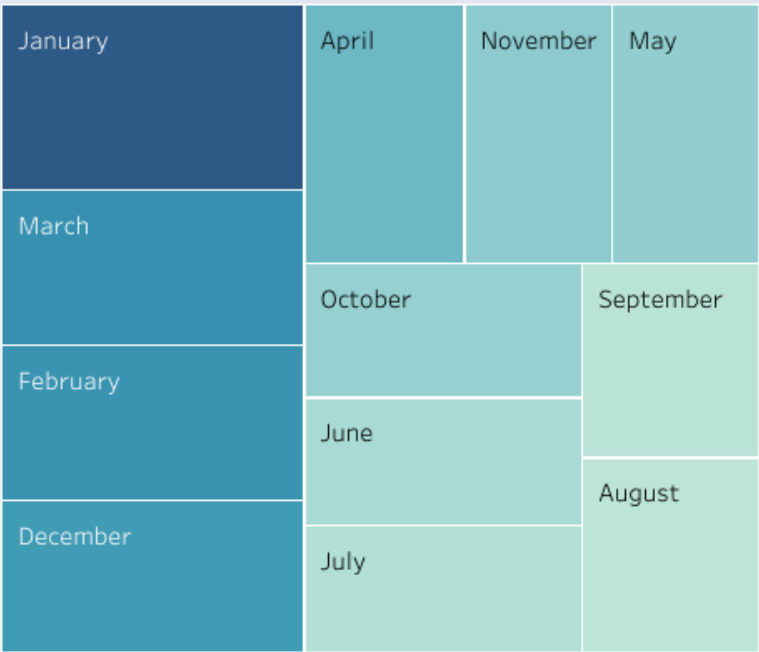
Project ..	How to ensure ad..	Is there any influ..	Does influenza se..	When is the influ..	Who is vulnerabl..	Which states hav..	Which states sho..	Conclusion..
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Use the seasonality filter to see the difference between states with and without influenza season.

Influenza Season of each State



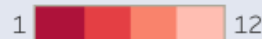
Total Influenza Deaths by Month



Seasonality

- ☒ No
- ☒ Yes

Month Ranking



(The month with the highest death count in a state is ranked as 1, an..)

Total Influenza Deaths



Influenza season starts in December, peaks in January, and ends in March.

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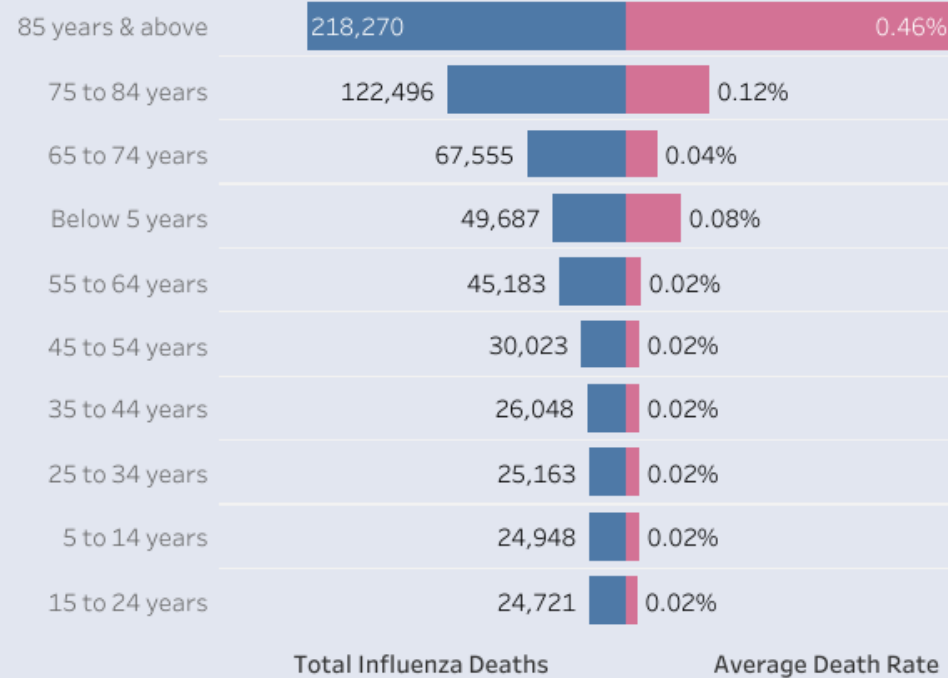
Who is vulnerabl..

Which states hav..

Which states sho..

Conclusions & rec..

Total Influenza Deaths and Average Death Rates of Age Groups

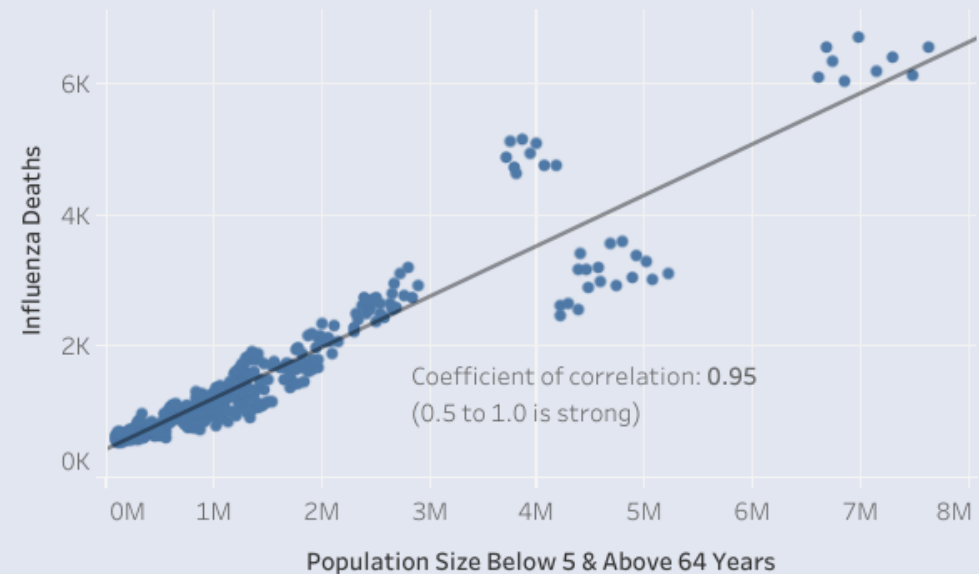


72% of total influenza deaths from 2009 to 2017 comes from age groups below 5 and above 64.

Age groups below 5 and above 64 can be classified as vulnerable groups. They have higher death counts and higher death rates than the rest.

A strong positive correlation is found between the vulnerable ..

Population Below 5 & Above 64 vs Influenza Deaths of a State



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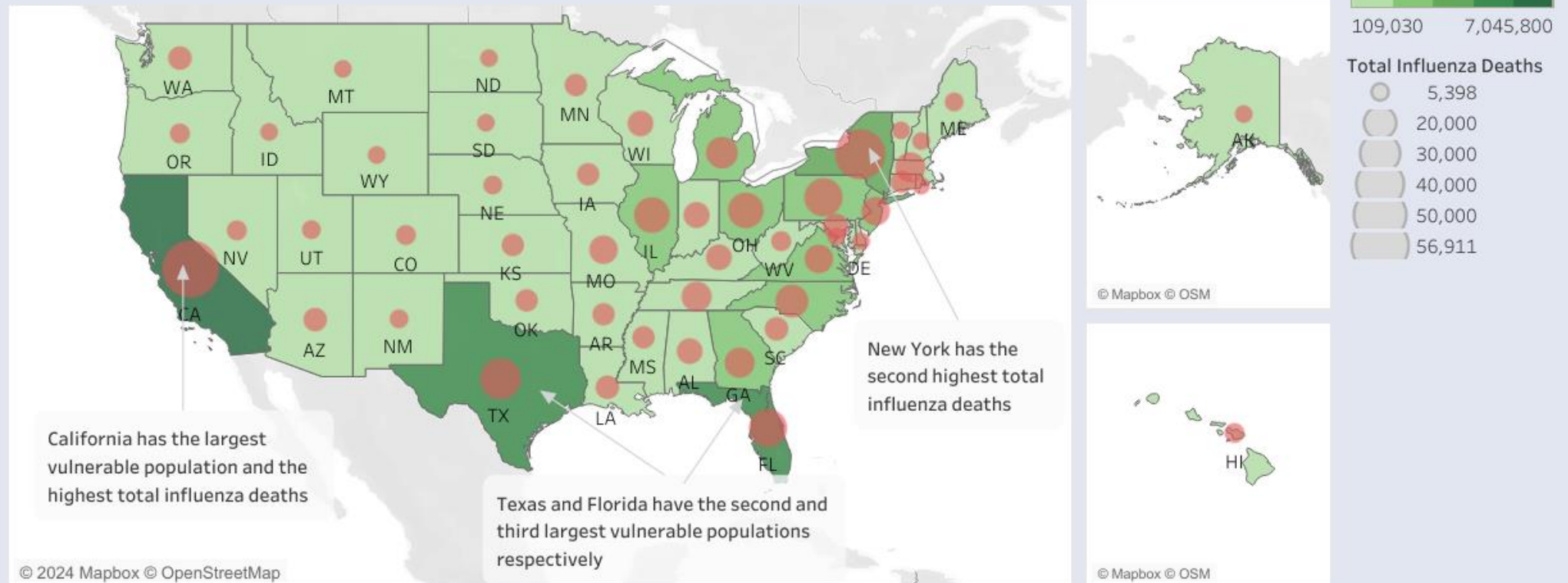
Which states hav..

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Conclusions & rec..

States with larger vulnerable populations (darker color) mostly come with relatively higher influenza deaths (bigger circle).

Average Vulnerable Population (Below 5 & Above 64) and Total Influenza Deaths for each State



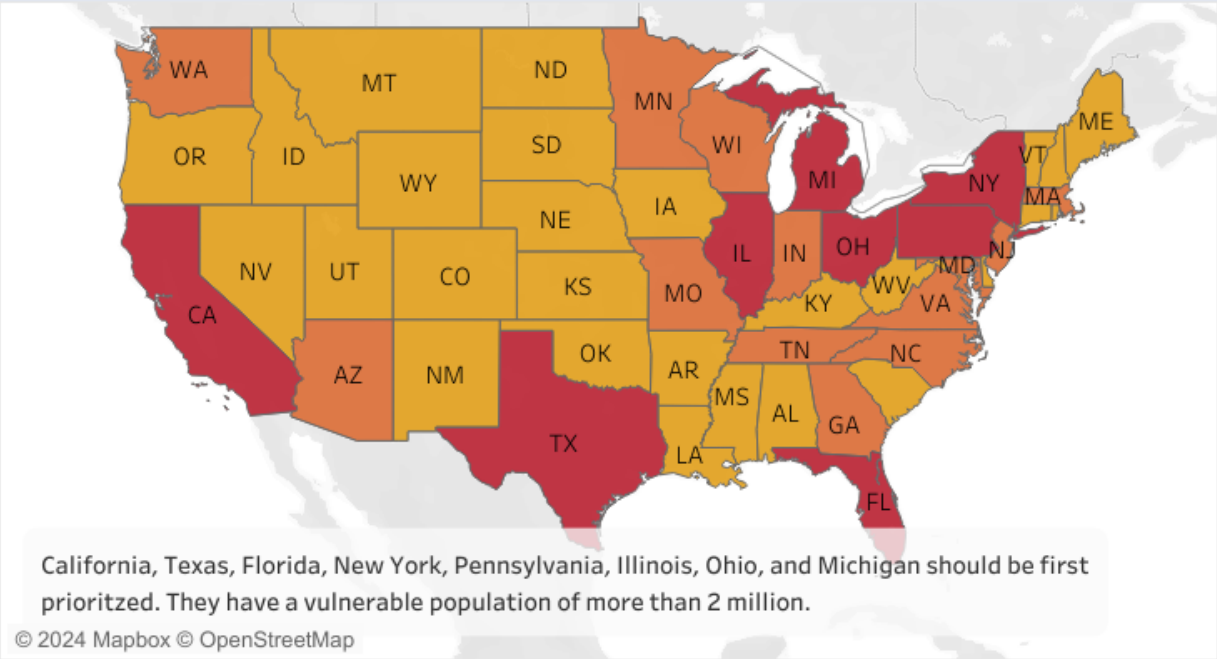
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States are categorized with high, medium and low priority levels based on their vulnerable population sizes.

State	Avg. Vulnerable Population	Total Influenza Deaths
California	7,045,800	56,911
Texas	4,721,659	29,595
Florida	4,535,972	25,398
New York	3,898,307	43,975
Pennsylvania	2,747,543	25,639
Illinois	2,496,342	23,523
Ohio	2,396,333	22,307
Michigan	2,010,121	17,623
North Carolina	1,923,584	18,990
Georgia	1,788,295	15,350
New Jersey	1,770,903	13,712

Priority Level of each State



State Priority

- High (Vulnerable Population: >2M)
- Medium (Vulnerable Population: 1M-2M)
- Low (Vulnerable Population: <1M)

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CONCLUSIONS

1. The influenza season **starts in December, peaks in January, and ends in March.**
2. Age groups **below 5 and above 64** are vulnerable to influenza.
3. **California, Texas, Florida, New York, Pennsylvania, Illinois, Ohio, and Michigan** should be prioritized.

RECOMMENDATIONS

1. Check the existing medical manpower of these high-priority states and allocate additional staff to fill the demand deficit.
2. After the step above, if there is still staff available, do the same for the remaining states based on their priority level and existing manpower.

