Does influenza flu deaths increase with age?

WHEN is the Flu Season and HOW does it impact each STATE.

The Most Versus the Least Affected States

PAST Versus FUTURE. What to expect? Forecasting by State.

WHO is AT RISK?

#### PREPARING FOR INFLUENZA SEASON IN THE USA

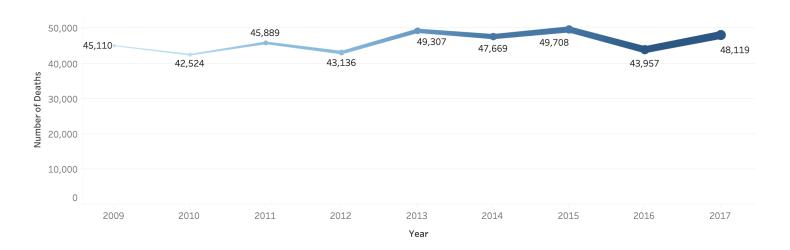
Motivation: The United States has an influenza season where more people than usual suffer from the flu. Some people, particularly those in vulnerable populations, develop serious complications and end up in the hospital. Hospitals and clinics need additional staff to adequately treat these extra patients.

Objective: This project's goal is to plan for the upcoming influenza season by providing temporary workers to clinics and hospitals on an as-needed basis. Therefore, the analysis is looking to determine when to send staff, and how many, to each state. The data sets used contain entries from 2009 to 2017.

#### Research hypothesis

If patients are part of the vulnerable population category, then the mortality by influenza increases.

# Influenza Deaths Trends by Years in the USA 2009-2017



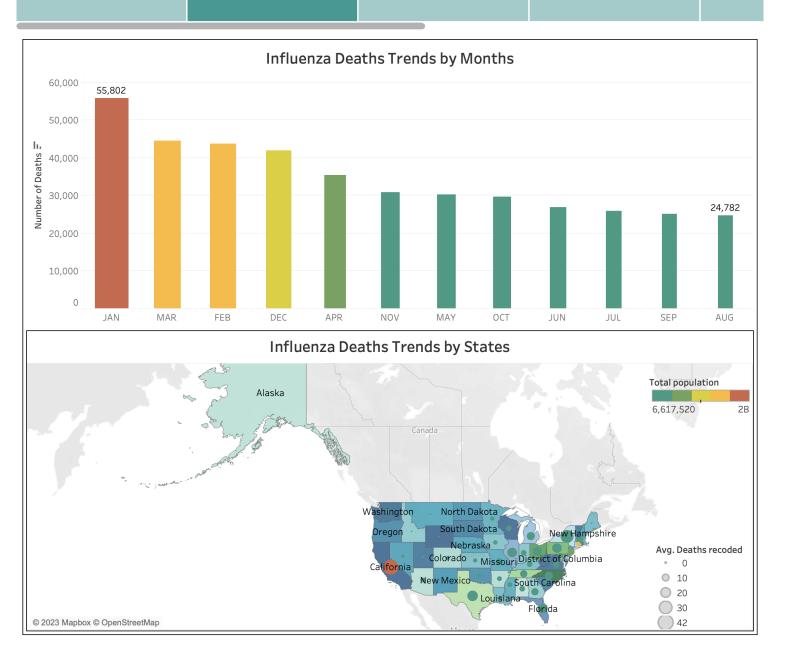
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California

New York

Texas

Pennsylvan..

Florida

Illinois

Ohio

North

Carolina

Michigan

Tennessee

Does influenza flu WHEN is the Flu Season and HOW PAST Versus FUTURE. What to WHO is AT RISK? expect? Forecasting by State. deaths increase with does it impact each STATE. age? 60,000 54,002 Top 10 · Highest # of deaths # 100 Top 10 · Highest # 20,000 659 Bottom 10 - Lowest # of deaths -12,442 10,000 Florida Illinois Michigan North Carolina Californi District of Columbia Wyoming Delaware Montana South Dakota Alaska North Dakota Rhode Island Only Month January February 50K March Top 10 - Highest # of Deaths by Month April 5,925 May 5,074 June July 4,102 4,486 August 3,926 September 3,518 October 3,523 November 20K 3,300 December 3,296 3,774 10K 4,116 3,124

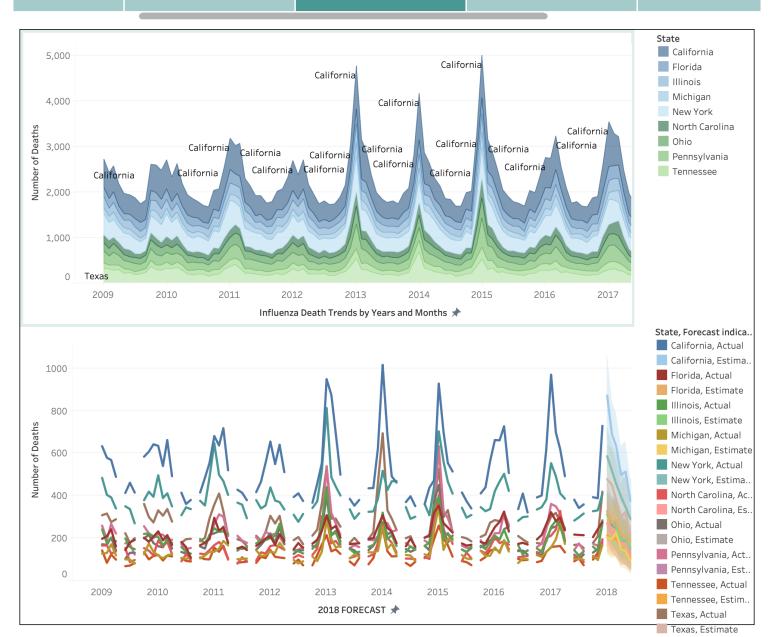
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Vulnerable versus Less Vulnerable Population



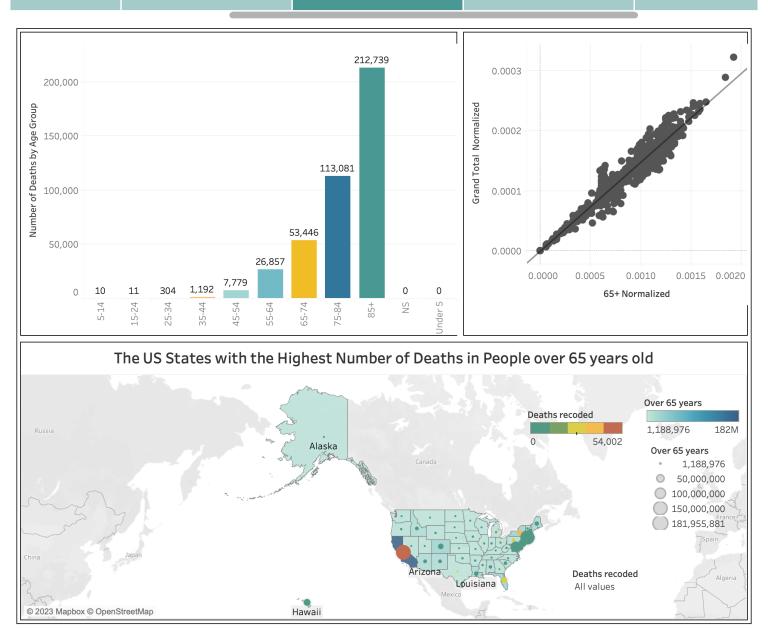
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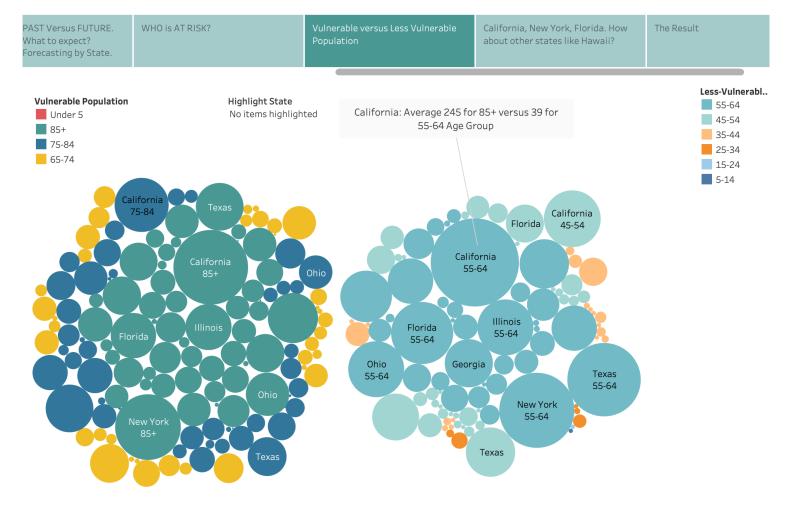
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WHO is AT RISK?

Vulnerable versus Less Vulnerable Population

California, New York, Florida. How about other states like Hawaii?





PAST Versus WHO is AT RISK? FUTURE. What to exp	Vulnerable versus Less Vulnerable Population		California, New York, Florida. How about other states like Hawaii?		The Result
Hawaii,2017 0.0019232 0.00000000	Hawaii,2013 Missis 0.0015776 0.0000 0.00000000 0.0000			New York,2015 0.0015337 0.00003420	65+ Normalized 0.001435 to 0.001923206 <65 Normalized
Hawaii,2015					0.00000000 0.00004348
0.0018417 0.00000000	Hawaii,2016 Tenness 0.0015253 0.00152 0.00000000 0.00002			New York,2009 0.0015135 0.00003876	
New York,2011 0.0016498 0.00003721	New York,2012 0.0014753 0.00003213				
New York,2010 0.0015900			Tennessee,20 0.0014741 0.00004348	13 New York,; 0.0014582 0.0000427	
0.00003484			0.00001540	0.00004270	
New York,2013 0.0015859 0.00003655	Massachusetts,2013 0.0014752 0.00000861				

PAST Versus FUTURE. What to exp	WHO is AT RISK?	Vulnerable versus Less Vulnerable Population	California, New York, Florida. How about other states like Hawaii?	The Result

After the integration and normalization of the data it was revealed that states such as **Hawaii** have **a high percentage of deaths** compared to their **relatively small population**. When preparing for the influenza season, these states **don't** have to be **overlook**ed.

There is a Moderate to **Strong Relationship** between the 65+ Age Group normalized values and 65+ Grand Total **showing that the population over 65 years old** has the **highest number of deaths** among the total population.

Although the current analysis addressed the question where to send the medical staff, it couldn't address the question of how many medical staff need to be deployed. Therefore, **further analysis** on data sets that **provide information about** the presence of the **medical staff** in each state in the **previous years**, past hospitalization of the vulnerable population and their vaccination status along with information about the **vulnerable population under five years old**, **pregnant women**, **and imuno-compromised people** will be needed to plan accordingly for the following influenza season.

**THANK YOU!**