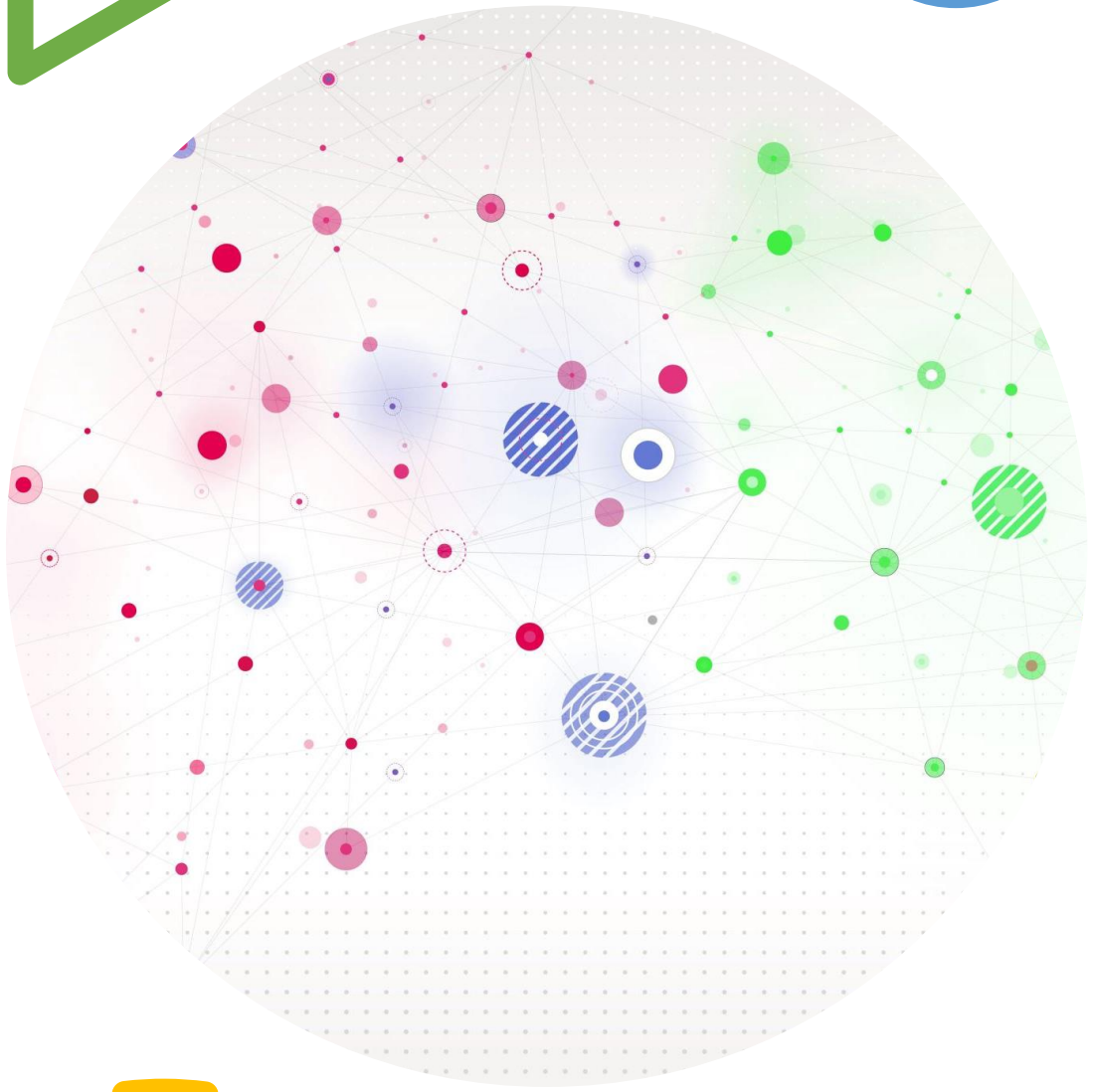
Vijayalakshmi Venugopal

DATA ANALYST

Collect, process, analyze and present data – from supporting everyday business decisions to fueling global change with the help of tools like Excel, SQL, Python and Tableau.

Preparing for Influenza Season

Preparing for upcoming flu season in the US



PREPARING FOR INFLUENZA SEASON

Business Problem: To help a medical staffing agency that provides temporary workers to clinics and hospitals on an as-needed basis. The analysis will help plan for influenza season, a time when additional staff are in high demand. The results will examine trends in influenza and how they can be used to proactively plan for staffing needs across the country.

Limitation:

- The data is for the years 2009-2017 and due to privacy concerns 54014 data was suppressed.
- The census data also contains some estimated values as the census is conducted every 10 years.

Tools : Excel, Tableau

Skills:

- Translating business requirements
- Data cleaning
- Data integration
- Data transformation
- Statistical hypothesis testing
- Visual analysis
- Forecasting
- Storytelling in Tableau
- Presenting results to audience

Project_Brief

Storyboard Presentation:

Analysis - Hypothesis Testing

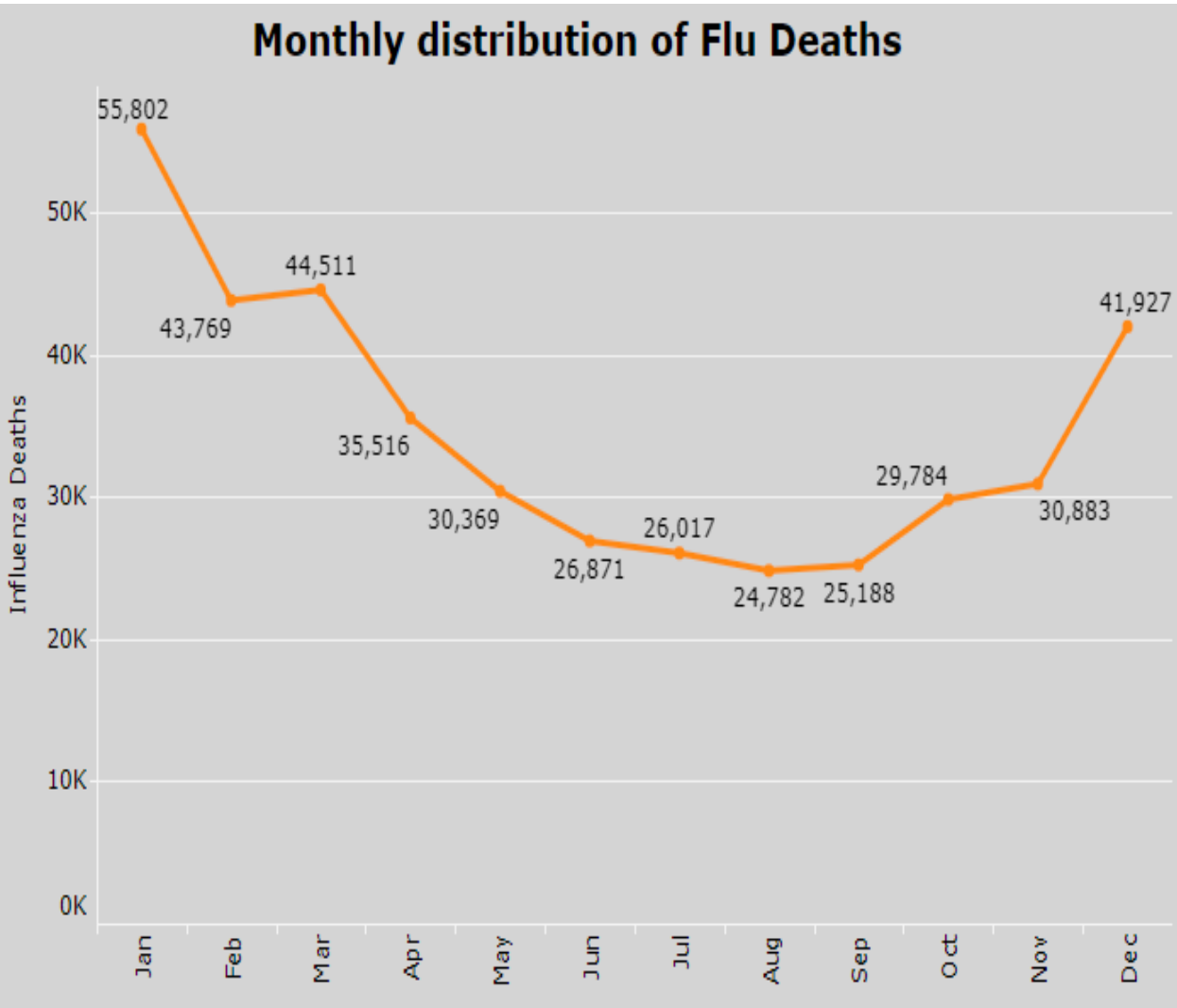
Research Hypothesis: If the patient is in the vulnerable group, then the chance of mortality is higher.

Test type: One sample t-test because this t-test is to determine that death mortality rate of vulnerable age group (i.e., <5 &>65 years) is higher.

Summary of test: The non-vulnerable group has an average of death mortality rate of 0.04%, while the vulnerable age group has a mortality rate of 0.17%. The p-value of 4.84E-71 is less than the significance level of 0.05. That indicates that mortality rate of population with age above 65 and below 5 due to influenza is higher.

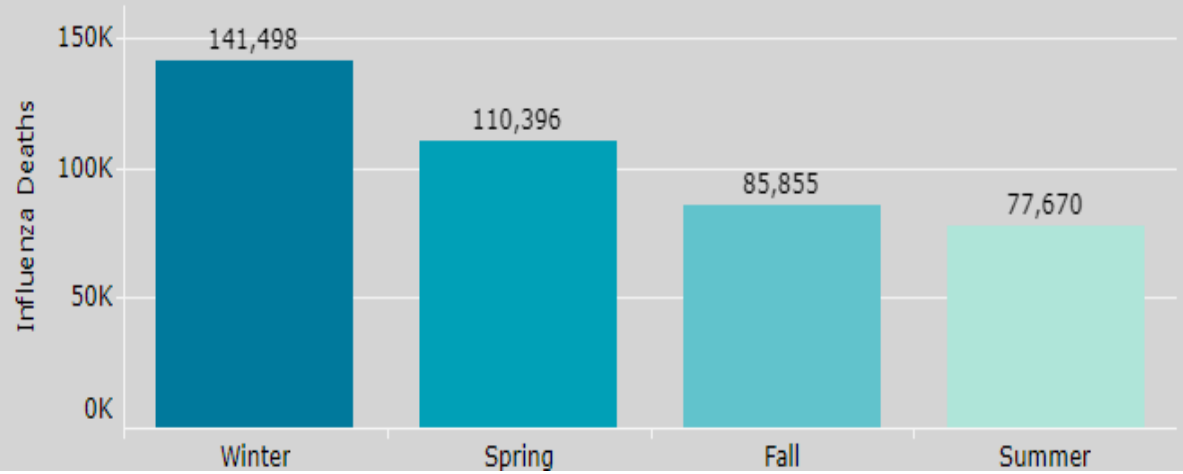
t-Test: Two-Sample Assuming Unequal Variances		
	% Deaths 5-64 years	% Deaths <5 and 65+ years
Mean	0.000388077	0.001650231
Variance	1.63254E-07	1.54872E-06
Observations	459	459
Hypothesized Mean Difference	0	
df	553	
t Stat	-20.66662452	
P(T<=t) one-tail	4.83949E-71	
t Critical one-tail	1.647613736	
P(T<=t) two-tail	9.67899E-71	
t Critical two-tail	1.964263051	
	Population Vulnerable group	Deaths Vulnerable group
Mean	1193272	1169
Standard Deviation	1327221	940
Correlation	0.94	
	% Deaths - Non -Vulnerable group	% Deaths - Vulnerable group
Mean	0.000388077	0.001650231
Standard Deviation	0.000404047	0.001244477
Correlation	0.97	

Analysis - Visualizations & Insights



December to March being the peak Influenza Season. **35%** of Flu death occurs during winter.

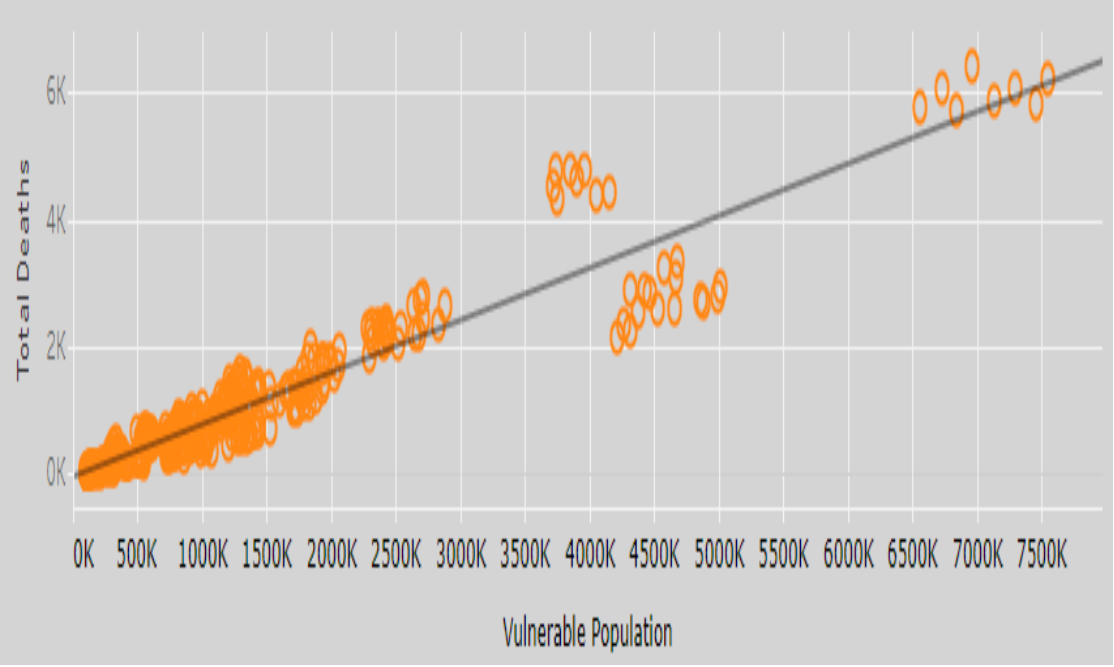
There is Influenza related death throughout all the seasons.

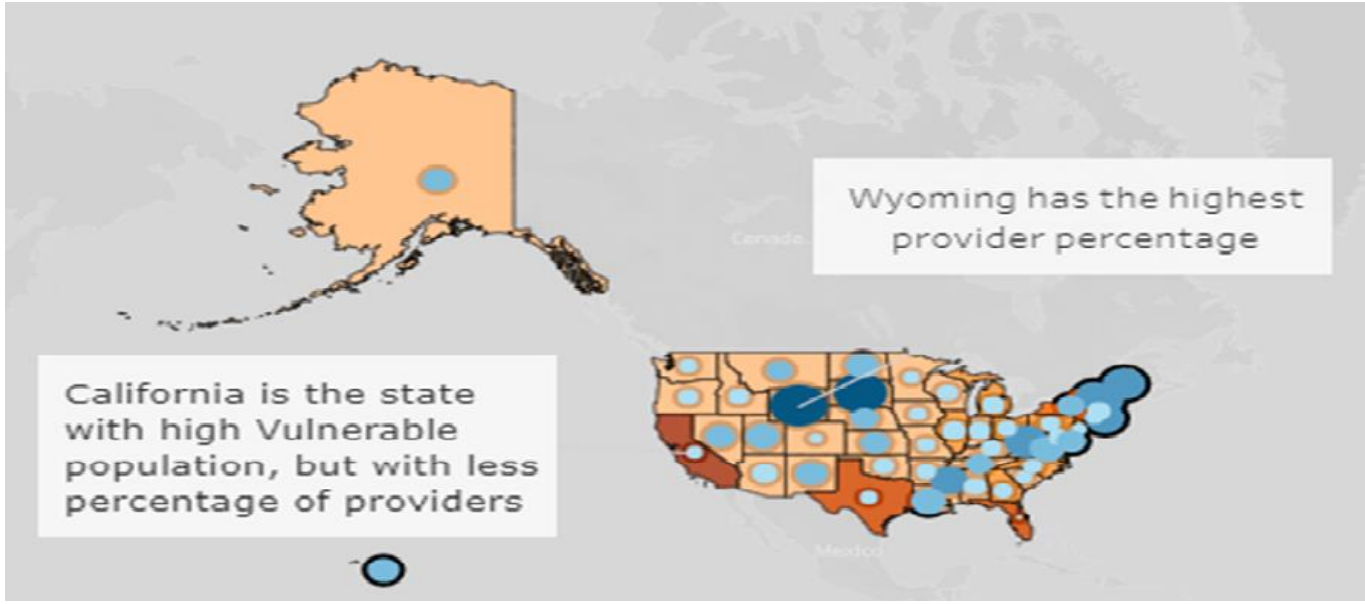


Analysis - Visualizations & Insights

Combined map showing states with highly vulnerable population and number of healthcare providers

- Florida has highest vulnerable population of 24%.





- 91% of total death due to flu is from the vulnerable population.
- On an average every state has 20% of vulnerable population and remaining 80% of non vulnerable population.

Recommendations

States like California, NewYork, Texas, Florida are high in vulnerable population.

Wyoming, North Dakota are high in provider percentage.

New York, Tennessee, Hawaii are high in total death percentage.

Based on all these factors the states are ranked and provided to the staffing agency to decide on when and where to send the staffs.

Cu..	State	Avg. Tot..	Avg. Vuln..	Avg. ILI..	Avg. % O..
1	Arkansas	0.02%	21.35%	0.13%	0.02%
2	Hawaii	0.02%	21.62%	0.28%	0.06%
	Pennsylvan..	0.02%	21.64%	0.10%	0.02%
3	Alabama	0.02%	20.62%	0.42%	0.03%
4	West Virgin..	0.02%	22.27%	0.53%	0.11%
5	Missouri	0.02%	20.73%	0.09%	0.02%
	New York	0.02%	20.02%	0.52%	0.04%
6	Kentucky	0.02%	20.33%	0.15%	0.02%
7	Florida	0.01%	23.69%	0.00%	0.00%
	Mississippi	0.02%	20.19%	1.07%	0.08%

States were ranked based on four categories high total death %, high vulnerable population %, high Flu patient visit % and low provider %.