2.10: Presenting Findings to Stakeholders
Links: https://youtu.be/bTC6IxPkEjA
Tableau: 2.9: https://public.tableau.com/views/PreparingforInfluenzaSeason_16614135347050/USvs_Influenza?:language=en-GB&publish=yes&:display_count=n&:origin=viz_share_link
Video:

Script

Slide 1:

Hello, my name is Halina Kryvanos and this is my presentation on how a medical staffing agency can distribute additional medical staff to support with flu season and facilitate the burden on hospitals and clinics across the country.

The motivation behind this project is that the US has a flu season where more people than usual suffer from the flu. Some develop serious complications and end up in the hospital. Hospitals and clinics can use additional staff during flu season in order to better treat these patients and hopefully prevent deaths. The medical staffing agency provides this temporary relief. The objective of this project is to determine when to send staff and where to send them.
The time interval of the analysis is 2009-2017

Slide 2:

The agency covers all hospitals in each of the 50 states of the United States.
To determine where to send employees, we first need to find out who is most affected by the flu, when is flu season, where these people live, and where the death rate is highest. As we can see in this chart, there is a very strong correlation between the population number and mortality. People die more in those states with a large population.
For instance, California has both - the highest population and highest death count and Wyoming has the lowest population and a very low death count in 2017.

Slide 3

Influenza is a seasonal disease. In the US, the flu season is the autumn and winter. In the US, the flu season is in the autumn and winter. I used a line chart and a year time frame to see the start and end of the flu season based on the number of deaths during that time. The colors here represent US states divided into nine climate regions based on data from the National Environmental Information Centers.
Although influenza viruses circulate year-round, flu activity peaks between December and February, but in some states activity may continue into May.
But for example, in the Northern Rockies and Plains region, we don't see large outbreaks of mortality from influenza, but the population there is low.

Slise 4

We know that people from vulnerable population are more likely to suffer complications from the flu. Vulnerable population are patients who may develop complications from the flu and require additional care, as defined by the Centers for Disease Control and Prevention (CDC). These include adults over 65, children under 5, and pregnant women, as well as those with HIV/AIDS, cancer, heart disease, stroke, diabetes, asthma, and children with neurological disorders.

For the scope of this analysis, vulnerable population are people under the age of 5 and over the age of 65. Here I have used population count data to determine if a State has a low, medium or high number of vulnerable residents: less than a million, from one to two million, and more than two million.
We know that people from vulnerable population are more likely to suffer complications from the flu and require additional care, as defined by the Centers for Disease Control and Prevention (CDC). These include adults over 65, children under 5, and pregnant women, as well as those with HIV/AIDS, cancer, heart disease, stroke, diabetes, asthma, and children with neurological disorders.

For the scope of this analysis, population to be those people under the age of 5 and over the age of 65. Here I have used population count data to determine if a State has a low, medium or high number of vulnerable residents. Less then million, from one to two millions and more than two millions.
As we can see, all reports with low deaths are from states that have low vulnerable population, and all deaths with the highest numbers are from states with high vulnerable population.

Slide 5

Now that we have established WHO is greatly impacted, we need to know where they are in order to know where to send the additional medical staff. This map shows the number of deaths that happened in 2017
The states with a high level of vulnerable population are marked on the map according to the color, the dark color indicates high density of vulnerable population, and the dots show the number of deaths, the larger and redder dots show more deaths were recorded per year.
California has the largest number of vulnerable population and the highest number of deaths.
We see the same trend in New York. But Montana, New Mexico are states with low mortality and low number of vulnerable residents.
we see the same trend in New York. But Montana, New Mexico are states with low mortality and low population.

Slide 6

This analysis showed that there is a strong correlation between the number of vulnerable residents living in a particular state and the severity of the flu season.
I can use the tables below to determine which states might require additional staffing throughout flu season based on the number of vulnerable residents they have. States have been categorized as having a High, Medium or Low number of vulnerable residents. Particular attention should be paid to those States categorized as having a High vulnerable population.

Slide 7

Depending on the climate of the region of the state or weather conditions, there are 3 groups of seasonality:
1. Northeast and Northern Rocky Mountains and Plains: September - February.
2. Northwest: October - January
3. Ohio Valley South, Southeast, Southwest, Upper Midwest, and West:
• Strong relationship between vulnerable population and number of deaths; the higher the vulnerable population, the higher the number of deaths. Population density can contribute to the spread of influenza.

Recommendations

Send additional personnel to New York and Pennsylvania from September until February.
Send additional personnel to California, Florida, Texas, Illinois, Ohio, North Carolina, Michigan from November until March.

To determine the number of additional personnel sent, be guided by the number of vulnerable population in the state.

That is all from my side. Thank you for your attention.

Recognize limitations

Influenza deaths by geography, time and age

• "Suppressed" data - mean values have been imputed that may affect this result. Most of the “supressed” values were reported for children under five years of age. However, children under five years of age are considereda vulnerable population and should be included in the report. because some states have a large population of the older generation.
• Vulnerable population isare not limited to the elderly, pregnant women, children under 59 months of age, or people with chronic illnesses.
• Only one primary cause of death is listed on the death certificate. Indicators are marked as "unreliable" when the number of deaths is less than 20.

2010 census data

Data was collected manually through interviews and surveys. In particular, the 2010 US Census was conducted by self-reporting citizens by mail, and the enumerators served to selectively check randomly selected areas and settlements. As part of efforts to improve counting accuracy, 635,000 temporary counters were hired.

Influenza Lab Datasets and Patient Visits

This is a survey data - it is not complete and some participants may not have answered truthfully. It does not include data from 2016.

Children's flu shots

The data was collected through a survey and interviewers may not remember the exact dates. Data provided for 1 year 2017. At the time of analysis, this is not enough.

The metric I would use to gauge the effectiveness of staffing changes would be the number of flu deaths in the next flu season. If there is an overall reduction in mortality, especially among vulnerable groups, in the states that have received the most additional medical personnel, then the plan can be considered a success. Further analysis may confirm or refute this assumption.