2.10- Presenting Findings to Stakeholders

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Links: Tableau:
https://public.tableau.com/app/profile/shelby.steele/viz/PreparingforInfluenzaSeason_16636943539920/PreparingforInfluenzaSeason?publish=yes

Google Drive:
https://drive.google.com/file/d/1qznL9weBb40i9jPpF9Q0A6X7cwb3vl8N/view

Script:
Slide 1:

Hello, my name is Shelby Steele and I am the analyst on this project. The goal of this project is to help a medical staffing agency that provides temporary workers to clinics and hospitals on an as-needed basis, a plan for the upcoming influenza season that can be used to proactively plan for staffing needs across the country.

For some background, 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 needs to determine when to send staff, and how many, to each of the 50 states. The data used is from 2009-2017.

Slide 2:

To start off the analysis, it was important to ask when the flu season begins and ends throughout the United States. According to the CDC, the flu season starts in October and ends in May with a peak season between December and March. The northern hemisphere states have peaks associated with the cold winter months, while the southern hemisphere states have peaks tied to the rainy season.

Looking at the chart, we can see that each region of the United States has a designated color that stretches from July - June of the following year. We can also drill down by year to determine any trends year over year. Currently highlighted is 2017. From this visual, we can answer our first question: that most regions experience the start of flu season in October, have peak season between December and March, and ends around May.

Slide 3:

Now that we understand when the flu season starts, our next question was to determine what age group is most affected by the flu in terms of mortality rate. To do this, we separated out all age groups in 10-year increments to analyze any trends throughout the years. Looking at the chart, we discovered that the most vulnerable population that experiences the highest mortality

rate is the 65+ age group. This insight is key to the analysis as our next steps are to understand where this vulnerable age group lives in the United States.

Slide 4:

Now that we have narrowed down our vulnerable age group, our next question was to establish an understanding of where this population lives in the United States. To do this, we needed to determine which states have the highest density of the vulnerable age group by population and mortality rate.

Starting with the chart of the left, we have tracked the frequency of mortality by state for the vulnerable age group. States with lower mortality rate are shown in a lighter color, while states with a higher mortality rate are shown with a darker color. Transitioning over to the right chart, it shows the mortality rate frequencies and compares it to population by state. States with a higher vulnerable population and mortality rate are a darker color, while states with a lower population of the vulnerable age group and mortality rate are shown in a lighter color.

Together, these charts tell us that there is a positive relationship between states that have high vulnerable populations and a high mortality rate.

Slide 5:

So, where are these states with high vulnerable populations and mortality rates? If we refer to the map, we can confirm a few key insights. First, the states are shaded in various hues of blue which represents the mortality rate. Darker the state, the higher the mortality rate. Second, on top of each state is a circle which represents the population size and density. The darker and larger the circle, the higher the population and more dense that state is with the vulnerable age group.

Based on these findings, it's an interesting observation to learn that not only does climate play a factor in the flu season, but so does the state's population of the vulnerable age group.

Slide 6:

So, where and when do we send medical personnel for the upcoming season? We have learned that states with a higher vulnerable population can spread influenza quicker leading to increased mortality rates than states that have a lower vulnerable population.

Due to the strong relationship between the 65+ vulnerable state population, and the number of influenza deaths, its is recommended to send additional medical personnel to the following states:

California, New York, Florida, Pennsylvania, Texas, Illinois, Ohio, North Carolina, Michigan, and Tennessee.

It is recommended to send the additional medical personnel starting in November to each of these states before peak season hits in December. Priority should be placed on the top 5 states as they have the highest vulnerable population and mortality rate in the United States.

If there are any questions, please feel free to reach out. Thank you.

Create a document reflecting on your project data limitations and metrics.

1. **Were there any limitations that prevented you from conducting an analysis? Think of these in terms of a future project or wish list (i.e., "If I had x, I would have been able to do y.")**.
    a. It would have been interesting to understand the relationship between campaigns for educating on the flu vaccine compared to the vulnerable populations/mortality rates in states. Are the states with high mortality also states with low educational campaigns or is there no correlation?

2. **Did your data have any limitations that may have affected your results? Consider this in terms of data quality and data bias.**
    a. One limitation was that the deaths of less than 10 were suppressed so I did not have an exact number and ended up using the median to get a reflection on the suppressed group.
    b. Most data was only collected on an annual basis, and in survey mode so there could have been errors due to manual entry.

3. **How might you monitor the impact of the staffing changes you recommended?**
    a. I think a follow up survey for the medical staff asking if they felt enough support to provide quality patient care, as well as a survey for patients to see if there was timeliness on their treatments. We can also follow up after the upcoming flu season has ended to see if the additional staff in high priority states decreased the mortality rates in the vulnerable population.

4. **Is there a metric that could be used for monitoring this impact?**
    a. We can follow up after the upcoming flu season has ended to see if the additional staff in high priority states decreased the mortality rates in the vulnerable population.