Data Immersion

2.10: Presenting Findings to Stakeholders

Tableau - Published workbook

YouTube - Presentation recording

'Project Overview'

- Greeting
- Sharing insights on past flu seasons in the U.S.
- Annual average of 46,000 flu-related deaths (2009-2017)
- 91% of hospitalizations are aged 65 and older
- Medical staffing agencies crucial for extra support

'Vulnerable Populations'

- Focusing on the most vulnerable
- Bar chart: 65+ age group accounts for 90%+ flu deaths
- Statistical analysis confirms higher risk for 65+
- Histogram & scatterplot illustrate mortality patterns
- Identifying states with vulnerable populations for staff allocation

'Spatial Distribution'

- Shape plot & map: Population and mortality rates for 65+
- Size doesn't correlate with mortality rates
- Reasons: vaccination rates, medical personnel, healthcare access, prevention, weather
- Classifying states: high-need, medium-need, low-need

'Temporal Distribution'

- Line graph: Influenza deaths by U.S. regions (2009-2017)
- Deaths rise in September, peak Dec to March, decline by April
- Forecast for 2018 aligns with historical patterns

'Conclusion & Recommendations'

- Deploy staff strategically
- High-need states (e.g., California, Hawaii, Florida): additional personnel from September-March
- Medium-need states (e.g., Connecticut, Georgia, Illinois): extra staff just before peak in December
- Low-need states (e.g., Alaska, Montana): no additional staff needed for now
- Data limitations

    - Caveats to conclusions and recommendations
    - Population-based estimates can be inaccurate
    - Death certificates may mask pre-existing conditions
    - Suppressed data (< 10 people) affects age group < 5 years
    - Limited historical records for predicting staff needs
- Next steps
    - Patient-to-staff ratio: redistribution from overstaffed to understaffed states
    - Staff and patient surveys: assess sentiment about the project
    - Vaccination rates: develop plan for low rates
- Despite limitations, past season analysis aids in formulating staffing plans for upcoming influenza seasons
- Thank you for your attention. Any questions or suggestions are welcome

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Were there any limitations that prevented you from conducting an analysis?

- Missing patient-to-staff ratios and staffing data by state. If I had this data, I would have been able to accurately calculate how many staff to send to each state.
- Missing data on vaccination rates. If I had sufficient data on vaccination rates, I could have examined where low vaccination rates might be a factor contributing to high mortality rates.

Did your data have any limitations that may have affected your results?

‘Population data by geography, time, age, and gender’ from US Census Bureau

- Accuracy: The numbers in each category are estimates and may not be completely accurate. In addition, because the data was collected manually through surveys, it is susceptible to human error (e.g., incomplete information, and transmission errors).
- Data biases: The census relies on sampling techniques, and if the sample is not representative of the entire population, it can introduce bias. Additionally, the survey response rate can vary, and a low response rate may introduce non-response bias.

‘Influenza deaths by geography’ from CDC

- Accuracy: The data source is based on death certificates in which providers report only a single underlying cause of death, which could lead to masking and inaccurate reporting of patients with pre-existing conditions.
- Data suppression: Statistics representing less than ten people (0-9) are suppressed to protect confidentiality, particularly affecting data for the age group < 5.

How might you monitor the impact of the staffing changes you recommended?

- I will monitor the deaths within the age group 65 and over throughout the upcoming influenza season. If the project was successful, the mortality rate of people aged 65 and over should decrease compared to the data from the 2017 season.
- I will also conduct staff and patient surveys to assess the impact and feelings about the project. If the project was successful, the survey should reflect positive feelings about the staffing plan and access to healthcare in the hospitals.

Is there a metric that could be used for monitoring this impact?

- The mortality rate within the age group 65 and older (relative to the population).
- Satisfaction ratings from staff and patient surveys (e.g. ranking from 1 to 5).