Presenting Findings to Stakeholders

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Part 6 a) 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.").

Throughout the course of this project, the data provided several limitations in the data and analysis process surfaced that are worth reflecting on for future studies.

a. Data Availability and Granularity

- **Geographical Specificity:** While the data covered broad U.S. regions and states (e.g., Northeast and New York), a more granular dataset at the city level would have allowed for a more localized analysis.
    - **E.g.** Some metropolitan areas may have unique influenza trends or healthcare capacity issues that differ from the rest of the region.
    - **Wish list:** If I had **city-level data**, I could have conducted a more **targeted staffing recommendation** for specific hotspots.
- **Temporal Granularity:** The dataset covered influenza deaths from **2009-2017**, but a monthly or weekly breakdown, especially during peak flu seasons, would have allowed for real-time staffing adjustments. Yearly aggregate data provides an overall trend but misses the opportunity to adjust dynamically during flu peaks.
    - **Wish list:** If I had **weekly flu incidence data**, I could have built **more responsive staffing models** that adjust with real-time changes in flu activity.

Part 6 b) Did your data have any limitations that may have affected your results? Consider this in terms of data quality and data bias.

The Data Quality and Bias:

a. **Reporting Discrepancies:** The accuracy of influenza death reporting may vary across states and regions. Some areas may underreport flu-related deaths due to inconsistent diagnostic practices or lack of resources. This could introduce bias in identifying the most affected regions.
- **Impact on results:** These reporting discrepancies may have led to **underestimation or overestimation** of the true burden in certain areas, particularly in under-resourced regions.

b. **Age-Based Data Representation:** While the focus on **65+ populations** is crucial due to their vulnerability, the absence of detailed information on **comorbidities** and healthcare access in this age group may skew the interpretation of vulnerability.
- Certain populations within the 65+ group, such as those in rural areas or low-income groups, might face additional risks not captured by age alone.

Part 6 c) How might you monitor the impact of the staffing changes you recommended?

One of the key recommendations from this project is **flexible staffing** to ensure healthcare systems can accommodate seasonal influenza peaks, particularly in regions with highly vulnerable populations. To measure the success and impact of these staffing recommendations, several metrics and monitoring systems can be employed:

a. **Key Metrics for Monitoring**
  - **Patient-to-Staff Ratio During Peak Flu Season:**
    - Monitoring the **patient-to-staff ratio** during critical months can provide insights into whether healthcare staffing is sufficient to manage surges in influenza cases. This metric will help track whether regions with higher vulnerable populations are adequately staffed in the face of increasing patient load.
  - **Hospitalization and ICU Admissions:**
    - Tracking the number of **hospitalizations** and **ICU admissions** during flu season is crucial. If these numbers decrease over time in regions where staffing changes are implemented, it could indicate that the recommendations are working.
  - **Mortality Rates Post-Staffing Changes:**
    - **Influenza-related mortality rates** should be tracked after staffing changes. A reduction in deaths, especially in the vulnerable 65+ group, would suggest a positive impact from flexible staffing policies.

b. **Data Collection for Continuous Improvement**
  - **Real-Time Data Monitoring:**
    - Using real-time data from electronic health records (EHRs) and public health reporting can help healthcare administrators monitor trends in flu cases and adjust staffing in response. This also provides a feedback loop to refine staffing models further.
  - **Predictive Modelling Validation:**
    - The use of **forecasting models** can be validated by comparing predictions against actual flu season outcomes (e.g., deaths, hospitalizations). Discrepancies can guide improvements in future models.

Part 6 d) Is there a metric that could be used for monitoring this impact?

For future iterations of this project, the following **metrics** could be used to track the success and improve the process:
  - **Staff Utilization Rates**: To monitor how efficiently temporary or additional staff are deployed during peak times.
  - **Patient Outcomes by Age and Region**: This would help to see if the additional staffing is truly benefiting the high-risk 65+ populations in the most vulnerable regions.
  - **Seasonal Cost-Benefit Analysis**: Comparing the cost of increasing staffing to the potential savings from reduced hospitalizations and improved patient outcomes.

Sources:
https://www.cdc.gov/flu/index.htm (CDC) for influenza data & reporting standards.
https://www.who.int/health-topics/influenza (WHO) for global influenza trends.

Peer-reviewed journal articles on influenza impacts and healthcare staffing models.

Conclusion

While the data and analyses provided a solid foundation for understanding the impact of influenza on vulnerable populations, **data limitations** such as geographical specificity, temporal resolution, and reporting inconsistencies may have impacted the depth of the insights.

Future projects would benefit from more granular data and real-time updates to provide even more targeted recommendations.

Monitoring the impact of staffing changes through relevant metrics such as **patient-to-staff ratios** and **mortality rates** will be crucial in assessing the success of the proposed strategies and ensuring continuous improvement.

Video recorded link:

"C:\Users\wallm\Videos\Movie Creator\Final Preparing for Influenza Presentation.mp4"

Tableau Storyboard:

https://public.tableau.com/views/StorytellingwithDataPresentations_17289104467160/Preparingfor
InfluenzaSeason?:language=en-
GB&publish=yes&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

Vimeo uploaded link:

https://vimeo.com/1021023462