

2.10 Preparing for Influenza season

Data Immersion

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1. Data limitations affecting the analysis

The project lacked detailed state-level immunisation rates and demographic data on immunisation coverage. Without vaccination data, I was unable to directly analyse the relationship between vaccination rates and mortality or evaluate the effectiveness of vaccination campaigns.

Access to vaccination data would allow analysis of the role of vaccination in reducing mortality among high-risk groups.

Mortality data were aggregated at the state level without detailed disaggregation by ethnicity, socioeconomic status, or urban/rural division. This prevented a deeper understanding of the social determinants of health and their impact on influenza outcomes.

Inclusion of demographic and socioeconomic data would improve understanding of health inequalities and guide targeted interventions.

Hospital data were limited to staff shortages, bed capacity and general statistics. There was no data on emergency department visits, ICU occupancy rates, or barriers to care during peak flu seasons. This limited our ability to accurately assess the burden on the health system.

Data on hospital utilisation rates and patient outcomes during influenza seasons would provide a clearer picture of resource adequacy.

The project relied on monthly mortality counts, but lacked data on hospitalisation trends and co-morbidities contributing to mortality.

This narrowed the focus to deaths alone, without understanding the broader public health impact of influenza.

Data on influenza-related hospitalisations and secondary health complications would allow a more comprehensive analysis.

2. Data quality and bias considerations

Influenza-related deaths may be underreported due to misclassification of causes of death or limited testing, particularly in rural or underserved areas.

This could lead to underestimation of mortality rates and misidentification of hotspots.

Standardised reporting and wider uptake of influenza testing would improve data reliability.

The dataset lacked consistent historical data on certain metrics, such as health worker absenteeism or vaccine distribution logistics. This limited the ability to analyse long-term trends or anticipate future challenges. Comprehensive longitudinal data collection would improve the robustness of trend analysis.

Mortality and hospital data were retrospective, limiting the ability to take real-time action during influenza seasons. Decisions were based on historical trends rather than dynamic, real-time changes in flu patterns. Access to real-time healthcare metrics, including vaccination rates, hospital admissions, and staff availability, could improve the timeliness of responses.

3. Monitoring the impact of recommended staffing changes

- Conduct periodic surveys to assess staffing adequacy and vacancy rates, particularly in rural hospitals.
- Track hospital occupancy rates, emergency department waiting times, and patient satisfaction during peak flu seasons.
- Monitor flu-related mortality and hospitalisation rates to determine whether improved staffing correlates with better outcomes.
- Metrics to monitor impact
 - Vacancy rates: Percentage of unfilled healthcare positions before, during and after flu season.
 - Patient-to-Staff Ratio: Number of patients per healthcare worker during peak and non-peak periods.
 - Emergency department throughput: Average waiting times and time to treatment during flu seasons.

- Hospital occupancy rates: Percentage of available hospital beds occupied during peak flu seasons.
- Mortality and morbidity rates: Changes in flu-related deaths and hospitalisations following staffing changes.

4. Metrics for future data improvement

- Vaccination coverage: Percentage of high-risk populations vaccinated annually, segmented by state and demographic factors.
- ICU capacity trends: ICU admission rates during peak flu seasons to measure the strain on critical care facilities.
- Healthcare worker absenteeism: Track the percentage of healthcare workers absent due to illness or burnout during peak seasons.
- Reach of public health campaigns: Metrics on community engagement and reach of flu awareness campaigns.

While the project provided important insights into influenza mortality and healthcare challenges, limitations in data granularity, coverage and real-time availability affected the scope and accuracy of the analysis. Addressing these gaps in future projects will increase the depth of analysis, enable more accurate predictions, and improve the effectiveness of proposed interventions. Monitoring the implementation of staffing changes and using detailed metrics will ensure continuous improvement and preparedness for future flu seasons.