



Portfolio Case Study

Carlos Khalili Boukai – London 13/10/2023

Project study – preparing for America's next influenza season

My role

I work for a medical staffing agency that provides temporary medical staff for hospital and clinics in an as-needed basis.

My goal

You have been asked to help the agency prepare for the upcoming influenza season in America, where more people can get ill with the flu virus. Some of those patients might develop severe complications from the flu, and without proper care they might die from the illness. You have been tasked with helping the agency allocate the right number of personnel into each state without under or overstaffing any of those places (minus or plus 10% of personnel).

Scope

This project is meant to cover the upcoming 2018 influenza season.

Questions

1. Who is more likely to get the virus (focus on gender, age, ethnicity)?
2. Which states are more vulnerable against the flu, and will need more help from the medical agency?
3. At what times will those states require this additional help? Are there differences in mortality depending on the calendar months?

Stakeholders

1. Medical company management.
2. Hospital and clinic directors.
3. Temporary staff personnel.

Step 1 – approaching the task

Which data is necessary for the task?

Problems

- No background in quantitative data.
- Rudimentary Excel skills.

Solution

- Critical thinking.
- Academic Skills – qualitative data
- Adhere to timeline to achieve goal while learning new skills.

Criteria

I applied the following criteria to the data sets, to decide which data to include in the project:

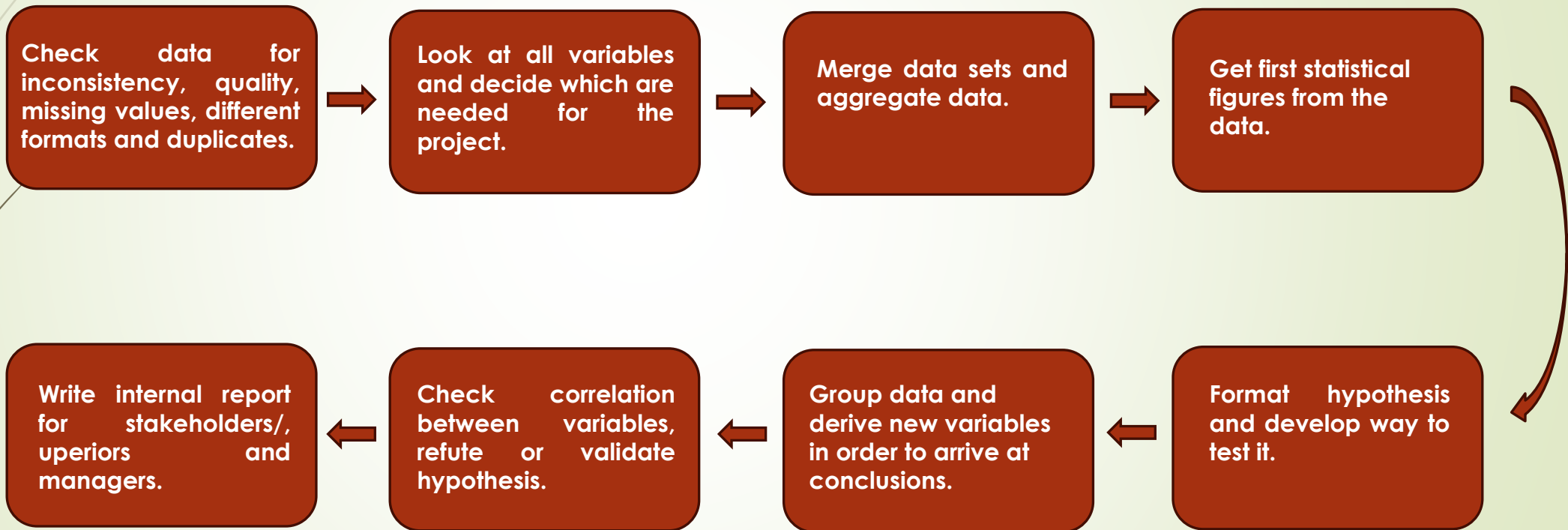
- Reliability.
- Completeness.
- Consistency.
- Timeliness.
- Bias.

Choosing the right data for the project

(Links: [Census.gov](https://www.census.gov), [National, Regional, and State Level Outpatient Illness and Viral Surveillance \(cdc.gov\)](https://www.cdc.gov))

Data set name:	Outcome:
Counts of influenza laboratory test results by state (Source: CDC)	NOT to include. <ul style="list-style-type: none">❖ Reliable but data incomplete.❖ Missing values and inconsistency of formatting.❖ Not relevant as doesn't have data on age groups.
Counts of influenza patient visits by state (Source: CDC)	NOT to include. <ul style="list-style-type: none">❖ Source reliable but data incomplete.❖ Missing values and inconsistency of formatting.
Survey of flu shot rates in children (Source: CDC)	NOT to include. <ul style="list-style-type: none">❖ Source reliable but data incomplete.❖ Missing values on the shots data.❖ Possibility of bias: ethnicity variable only included information on black and Hispanic communities, which was to be contrasted with poverty levels).
Influenza deaths by geography, time, age, and gender (Source: CDC)	Include. <ul style="list-style-type: none">❖ Source reliable, data timely and complete.❖ Relevant to project.❖ Had limitation as does not specify gender in the victim's age group, so cannot analyse gender/age variable.
Population data by geography (Source: US Census Bureau)	Include. <ul style="list-style-type: none">❖ Governmental data, reliable, timely and complete.❖ Population data, not sample.

Step 2 :manipulate and analyse data (Excel)



Step 3: storytelling with Tableau

Group data in order to get visualisations.



Write a sketch for storytelling.



Build a dashboard with Tableau to share results.

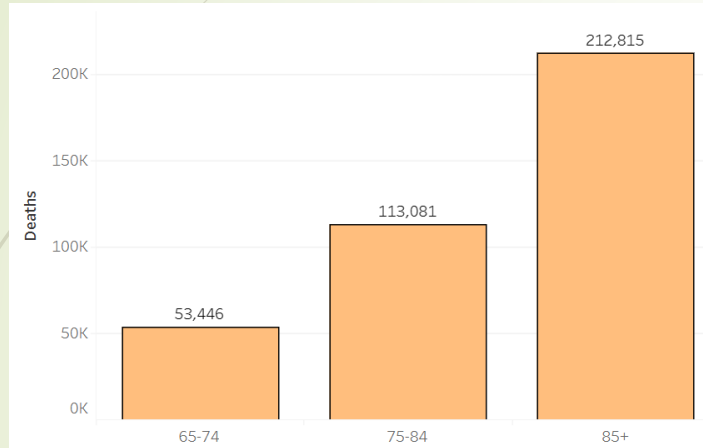


Make video presentation of findings.



Upload link for Tableau public and share this and video with stakeholders.

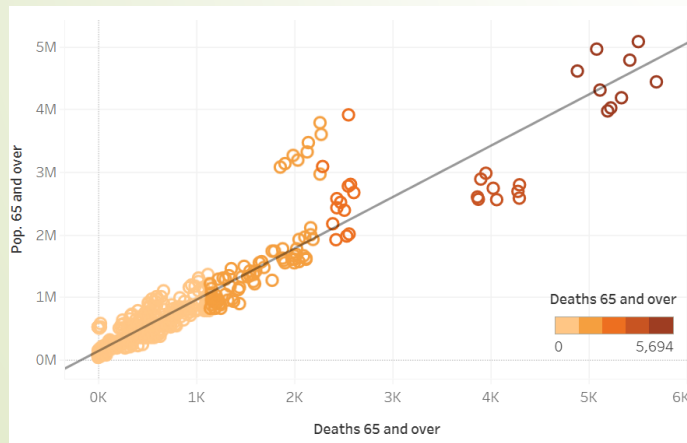
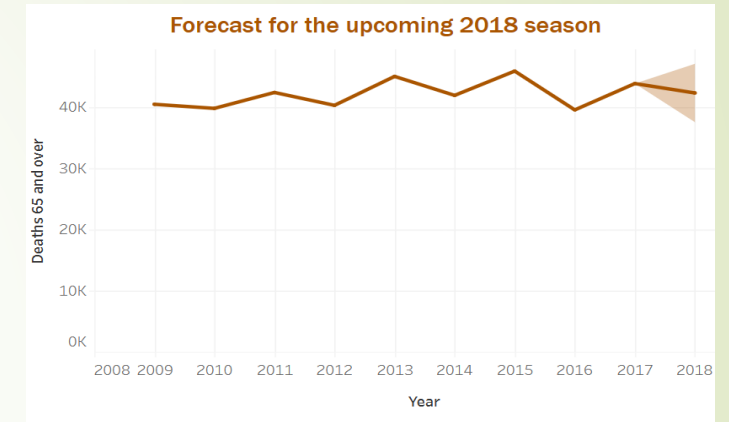
Findings from the analysis:



91% of all recorded deaths belong to those 65 years old and older. However, the risk is not equal to all groups within this range: it increases by 100% with every 10-year gap, making those aged 85 and older the most vulnerable against the flu.



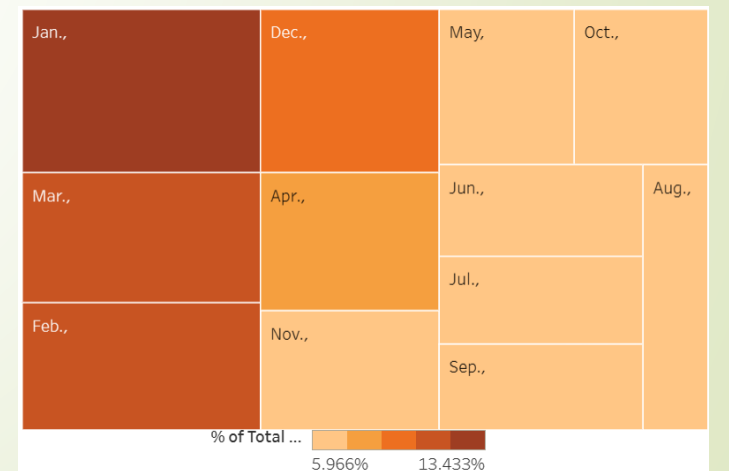
Forecast suggest a drop of 3.5% on the number of deaths compared to the previous year.



There is a strong correlation between the state's population size and its number of recorded deaths. Priority should be given to the states of California, Florida, NY and Texas. The lowest number of deaths (0) was recorded in Alaska and District of Columbia.



Most deaths (44% of the total) occur within the months December-March, with January being the deadliest among them.



Conclusions and recommendations

Our study has concluded that:

- People aged 65 years and older make the bulk of the victims of influenza (91%), so they are the most vulnerable against the flu. Within this group, those aged 85 years and older represent more than half the number of victims (56%).
- Plans for additional staff should prioritise the states of California, Florida, New York and Texas (in this order), as they have both the highest size of population and greater number of victims (30% of all deaths in these states alone).
- Forecast indicates a slight decrease (3.5%) on the numbers of victims compared to the previous year. Hence, staff planning should look at figures for last season and tweak them accordingly.
- Almost half (44,6% in total) of deaths happen during the cold winter months starting from December , with the highest peak on January. This is when additional staff is mostly needed.

Further points of study/limitations:

- There was no available data regarding the race/ethnicity of the victims, nor which was their economical or social status. This data could provide valuable insights into this study, since we cannot assess whether these factors could have influenced the outcome as the data shows. It is worthwhile to gather and look at the data to see whether the mentioned figures are maintained or not.
- Pregnant women are also considered vulnerable against the flu. However, there was no data regarding the size of population of younger (and potentially pregnant) women. Additionally, numbers of victims did not state whether the deceased was male or female. This is another point worth looking into.



Reflections on the project

New skills learned	Skills used in the project
Data wrangling	Qualitative data analysis
Excel for data cleaning, manipulation and grouping for analysis	Public speaking
Statistics on Excel	Storytelling
Excel for visualisations	Communication and collaboration
Storytelling with Tableau	Project planning

Duration of the project:	Three months
Finished on time:	Yes, but close to the deadline.
Reasons for the time-limit used:	Took longer as I needed to assimilate new concepts and put them to practice. Juggling full time job with career change program.



Thank you.

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