Med Staff Influenza Season Planning

- **Project Management Plan**

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8 December 2021

Project Management Plan

Introduction

The medical staffing agency Med Staff have recently engaged Healthcare Inc to help them plan for influenza season. 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.

Med Staff provides temporary workers to clinics and hospitals on an as-needed basis. The analysis undertaken by Healthcare Inc will help Med Staff plan for influenza season, a time when additional staff are in high demand. The objective of the project is to determine when to send staff, and how many, to each state. The final results will examine trends in influenza and how they can be used to proactively plan for staffing needs across the country.

The full project charter including the assumptions and constraints can be found here: https://images.careerfoundry.com/public/courses/data-immersion/A1-A2_Influenza_Project/A1-A2%20data%20immersion_project%20brief%20.pdf

Project Scope

The Med Staff agency covers all hospitals in each of the 50 states of the United States, and the project will plan for the upcoming (2022) influenza season. The scope includes the initial exploratory data analysis, the examination of the trends in influenza in each of the 50 states and identification of vulnerable groups within these states. In addition the scope also includes examining current staffing ratios and flu shot vaccination rates. Project completion will occur when Med Staff have received the documentation and presentation containing the final analysis determining when to send staff, and how many, to each state. The scope of this project does not include the implementation and monitoring of these recommendations.

All Healthcare Inc project work will be performed internally and no portion of this project will be outsourced.

Project Milestones

Milestone	Description	Completion
Data Sourced and Cleaned	Sourcing, profiling, cleaning and transforming the data.	17/12/2021
Exploratory Data Analysis	A statistical analysis on the key variables.	21/12/2021
Statistical Hypothesis Testing	Formulating and testing the statistical hypothesis.	24/12/2021
Interim Report	Interim report on the exploratory data analysis.	03/01/2022
Data Analysis	Analysing the data and creating visualisations.	17/01/2022
Tableau Storyboard	Creating a storyboard for the project in Tableau.	21/01/2022
Final Report and Presentation	Presenting the findings to the stakeholders.	25/01/2022

Schedule and Work Breakdown Structure

The work breakdown structure for the project comprises of work packages which do not exceed 6 hours of work but are at least 1 hour of work. The work packages were developed through close collaboration among project team members and all relevant stakeholders.

Work Packages:

Week 1

1. Sourcing the Right Data (1 - 3 hours)
   - Describe the data sets accessed for the project
   - Explain the relevance and limitations of each data set.
2. Data Profiling & Integrity (1 - 3 hours)
   - Create a data profile for each of the data sets in the analysis.
   - Include information on data types, data integrity issues (accuracy and consistency), any cleaning conducted, as well as summary statistics in each profile.

Week 2

3. Data Quality Measures (1 - 3 hours)
   - Implement additional data quality measures to the data profiles related to completeness, uniqueness, and timeliness.
4. Data Transformation & Integration (1 - 3 hours) ***Milestone***
   - Integrate data from two sources into one cohesive data set using data transformations.

Week 3

5. Conducting Statistical Analyses (1 - 3 hours) ***Milestone***
   - Calculate the variance and standard deviation for key variables.
   - Identify variables with a potential relationship and test for a correlation.
6. Statistical Hypothesis Testing (1 - 3 hours) ***Milestone***
   - Formulate a statistical hypothesis regarding an outcome of interest around two groups in the data.
   - Conduct hypothesis testing and interpret the results.

Week 4

7. Consolidating Analytical Insights (4 - 6 hours) ***Milestone***
   - Create an interim report consolidating the findings of the analysis.

Week 5

8. Intro to Data Visualization (1 hour)
   - Explain how data visualizations will be used in the project.
9. Visual Design Basics & Tableau (1 - 3 hours)
   - Create a data visualization design checklist.
   - Connect the project data to Tableau.
10. Composition & Comparison Charts (1 - 3 hours)
    - Create a pie, bar, or column chart, as well as a treemap in Tableau.
    - Use the visualization design checklist to design the charts.
11. Temporal Visualizations & Forecasting (1 - 3 hours)
    - Create a time forecast for a variable and display it in Tableau.
    - Use the visualization design checklist to design the chart.

Week 6

12. Statistical Visualizations: Histograms & Box Plots (1 - 3 hours)
    - Create visualizations that look at the distribution of a variable.
    - Use the visualization design checklist to design the charts
13. Statistical Visualizations: Scatter Plots & Bubble Charts (1 - 3 hours)
    - Create visualizations that look at the correlation between variables.
    - Use the visualization design checklist to design the chart.
14. Spatial Analysis (1 - 3 hours)
    - Map a variable and justify the spatial visualization choice (heat, density, or choropleth).
    - Use the visualization design checklist to design the chart.

Week 7

15. Textual Analysis ***Milestone*** (1 - 3 hours)
    - Create a word cloud using qualitative data.
    - Use the visualization design checklist to design the chart.
16. Storytelling with Data Presentations ***Milestone*** (4 - 6 hours)
    - Create a narrative to communicate the research findings and insights in relation to the research goals.
    - Publish the analysis as a Tableau Storyboard.

Week 8

17. Presenting Findings to Stakeholders ***Milestone*** (1 - 3 hours)
    - Record a video presentation for the stakeholders.

Communications Management Plan

This Communications Management Plan sets the communications framework for this project and serves as a guide for communications throughout the life of the project. It will be updated as communication requirements change. This plan identifies and defines the roles of the project team members as they pertain to communications. It also includes a communications matrix which maps the communication requirements of this project, and communication conduct for meetings and other forms of communication. A project team directory is also included to provide contact information for all stakeholders directly involved in the project.

The Project Manager will take the lead role in ensuring effective communications on this project.

Communication Type	Description	Frequency	Format	Participants / Distribution	Deliverable	Owner
Project Launch	Meeting to launch the project.	Once (Week 1)	In Person	Project Sponsor, Team and all relevant Stakeholders	Agreed BRD and Communication Plan	Project Manager
Weekly Project Status Report	Email summary of project status.	Weekly	Email	Project Team	Status Report	Project Manager
Biweekly Project Team Meeting	Meeting to review findings.	Every Fortnight	In Person	Project Team	Updated Actions	Project Manager
Weekly Project Updates	Updating stakeholders and answering queries.	Weekly	Call	Project Manager and relevant Stakeholders	Updated Queries	Project Manager
Project Interim Review	Meeting to discuss and finalise the interim report.	Once (Week 4)	In Person	Project Sponsor, Team and all relevant stakeholders	Interim Report	Project Manager
Project Newsletter	Newsletter with project update and initial findings	Once (Week 7)	Email	Project Sponsor, Team and all Stakeholders	Project briefing for all Stakeholders	Project Manager
Project Report and Presentation	Communicating the project research findings.	Once (Week 8)	In Person	Project Sponsor, Team and all relevant Stakeholders	Tableau Storyboard and Presentation	Project Manager

Emergency/Contingency Plan:

Any urgent issues are communicated via email and responded to within one day, if required a follow-up call will be scheduled within three days.

Communications Conduct:

While informal communication is a part of every project and is necessary for successful project completion, any issues, concerns, or updates that arise from informal discussion between team members must be communicated to the Project Manager so the appropriate action may be taken.

Meetings:

The meeting agenda will be distributed at least 2 days before any scheduled meeting and all participants are expected to review the agenda prior to the meeting. Meetings will be chaired by the Project Manager who will adhere to the time schedule and the note keeper will distribute the minutes no later than 48 hours after each meeting.

Email:

The Project Manager should be included in any email relating to the Project. Emails should be distributed to the correct project participants in accordance with the communication matrix above. If the email is to bring an issue forward then it should discuss what the issue is, provide a brief background on the issue, and provide a recommendation to correct the issue.

All emails should be professional, free of errors, and provide brief communication with the attachments for external stakeholders sent as pdfs in established company formats.

Project team directory

Name	Title	Email	Office Phone	Cell Phone
Firstname Lastname	Project Sponsor	f.lastname@Healthcarelnc.com	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Firstname Lastname	Project Manager	f.lastname@Healthcarelnc.com	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Firstname Lastname	Senior Data Analyst	f.lastname@Healthcarelnc.com	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Firstname Lastname	Junior Data Analyst	f.lastname@Healthcarelnc.com	(xxx) xxx-xxxx	(xxx) xxx-xxxx

Stakeholder communication

The frequency of communication with the various stakeholders will vary depending on the work packages being addressed. All initial stakeholder communications should be sent by email and must be authorised by the Project Manager to avoid duplication. The stakeholder directory contains the details for the contacts representing the identified stakeholders: frontline staff (nurses, physician assistants, and doctors) from the medical agency Med Staff; Med Staff administrators; hospitals and clinics that use Med Staff's services; and influenza patients.

Name	Title	Email	Office Phone	Cell Phone
Firstname Lastname	Med Staff Nurse Representative	f.lastname@MedStaff.com	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Firstname Lastname	Med Staff Physician Representative	f.lastname@MedStaff.com	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Firstname Lastname	Med Staff Doctor Representative	f.lastname@MedStaff.com	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Firstname Lastname	Med Staff Administrator Representative	f.lastname@MedStaff.com	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Firstname Lastname	Hospital Representative	f.lastname@Hospital.com	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Firstname Lastname	Clinic Representative	f.lastname@Clinic.com	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Firstname Lastname	Patient Representative	f.lastname@Infuenza.org	(xxx) xxx-xxxx	(xxx) xxx-xxxx

Project deliverables

- An interim report consolidating the findings of the analysis.
- A recorded video presentation of the Tableau Storyboard published analysis.

Audience definition

The audience for the deliverables includes the stakeholders who come from a variety of backgrounds. With such a varied audience the deliverables must be accessible to people with a lower level of data-proficiency and those who are unfamiliar with jargon. The report and presentation should therefore include thorough explanations of any calculations and terms that may be unfamiliar.

Questions Identified from the Business Requirements Document

- Background reading about hospital planning for influenza
- Background reading about influenza

Clarifying and Adjoining Questions

- *When is flu season?*

Influenza is seasonal and in temperate climates like most of the USA occurs mainly during autumn and winter. In Hawaii and South Florida which have a tropical climate it may occur throughout the year, causing more regular outbreaks.[1] Flu activity mainly peaks between December and February, but can last as late as May.[2]

- *Which states are most affected by influenza?*

It changes slightly year to year, but there are trends.[3]

Some of the most affected states over the last five years: Mississippi, Hawaii, Alabama, Tennessee, West Virginia, South Dakota, Arkansas, Nevada, New York.

Some of the least affected states over the last five years: Alaska, Vermont, Minnesota, Colorado, Florida, Oregon, Washington, Arizona.

- *Are there factors other than vulnerable populations that contribute to the high rate e.g. people mixing indoors due to colder temperatures, higher population density?*

  Seasonal influenza spreads easily, with rapid transmission in crowded areas including schools and nursing homes.[1]

- *Which states have the most residents in vulnerable populations?*

About 52 million Americans are age 65 or older, according to the Census Bureau's 2018 population estimates. One quarter of these older Americans live in one of three states: California, Florida, and Texas. Seven other states—Georgia, Illinois, Michigan, New York, North Carolina, Ohio, and Pennsylvania—account for another one-quarter of Americans age 65 or older.4

Top 8 states ranked by percent of population age 65 or older, 2018: Maine, Florida, West Virginia, Vermont, Delaware, Montana, Hawaii, Pennsylvania.[4]

The states with the lowest birth rates in 2021: Vermont, New Hampshire, Maine, Connecticut, Rhode Island, Massachusetts, Oregon, West Virginia, Florida, Pennsylvania.[5]

The states with the highest birth rates in 2021 are: Utah, North Dakota, Alaska, South Dakota, Texas, Nebraska, District of Columbia, Oklahoma, Kansas, Mississippi.[5]

Top 5 states ranked by percent of population age 4 or under in 2020: North Dakota, Hawaii, South Dakota, New York, Alaska.[6]

- *How do you define the vulnerable populations?*

  People at greater risk of severe disease or complications when infected are: pregnant women, children under 59 months, the elderly, individuals with chronic medical conditions and individuals with immunosuppressive conditions.[1 & 2]

  Health care workers are at high risk of acquiring influenza due to increased exposure to infected patients and risk further spread particularly to vulnerable individuals.[1]

- *What is the flu shot vaccination rate within each state?*

Top 10 states ranked by percentage of population age 6 months - 4 years vaccinated for flu in 2020/21: Rhode Island, Massachusetts, Nebraska, New Jersey, Connecticut, New York, District of Columbia, Maryland, New Hampshire.[7]

Top 10 states ranked by percentage of population age 65 and over vaccinated for flu in 2020/21: Rhode Island, Philadelphia, New Hampshire, Iowa, Illinois, Connecticut, Delaware, Wisconsin, Massachusetts, Vermont.[7]

Bottom 10 states ranked by percentage of population age 6 months - 4 years vaccinated for flu in 2020/21: Wyoming, Idaho, Arkansas, Mississippi, Florida, Alaska, Louisiana, West Virginia, Georgia, South Carolina.[7]

Bottom 10 states ranked by percentage of population age 65 and over vaccinated for flu in 2020/21: Florida, Alaska, Mississippi, Wyoming, Louisiana, Montana, California, Georgia, Kentucky, Idaho.[7]

- *Are there external factors that have an impact on the flu shot vaccination rate?*

  The need for annual vaccination is perceived as a burden to busy people. Access to seasonal influenza vaccination needs to be improved, and barriers such as cost and inconvenience removed.[8]

- *What are the current staffing (nurses, physician assistants and doctors) ratios in each of the 50 states?*

Each state is responsible for setting its own standard for nurse-to-patient staffing ratios. Only In July 2017 fifteen states addressed nurse staffing in hospitals in law / regulations: California, Connecticut , Illinois , Massachusetts , Minnesota , Nevada, New Jersey, New York, Ohio, Oregon, Rhode Island, Texas, Vermont, and Washington.[9]

Top 10 states with the highest physician to total population ratios in 2018: Massachusetts, Maryland, New York, Vermont, Rhode Island, Connecticut, Maine, Pennsylvania & New Hampshire.[10]

Top 10 states with the lowest physician to total population ratios in 2018: Mississippi, Idaho, Wyoming, Nevada, Arkansas, Oklahoma, Utah, Iowa & Alabama.[10]

1. WHO website, Influenza (Seasonal), 6 November 2018: https://www.who.int/news-room/fact-sheets/detail/influenza-(seasonal); accessed 8 December 2021.
2. CDC website, Flu Season: https://www.cdc.gov/flu/about/season/flu-season.htm; accessed 8 December 2021.
3. CDC website, Influenza/Pneumonia Mortality by State: https://www.cdc.gov/nchs/pressroom/sosmap/flu_pneumonia_mortality/flu_pneumonia.htm; accessed 8 December 2021.
4. PRB website, Which U.S. States Have the Oldest Populations?: https://www.prb.org/resources/which-us-states-are-the-oldest/; accessed 8 December 2021.
5. World Population Review website, Birth Rate by State 2021: https://worldpopulationreview.com/state-rankings/birth-rate-by-state; accessed 8 December 2021.

6. Kids Count Data Center website, Child population by age group in the United States: https://datacenter.kidscount.org/data/tables/101-child-population-by-age-group#ranking/2/any/true/574/62/420; accessed 8 December 2021.
7. CDC website, Influenza Vaccination Coverage for Persons 6 Months and Older: https://www.cdc.gov/flu/fluvaxview/interactive-general-population.htm; accessed 8 December 2021.
8. Understanding the unique characteristics of seasonal influenza illness to improve vaccine uptake in the US, Rafik Bekkat-Berkani, Luis Romano-Mazzotti, Vaccine, 2018 Nov 19 - https://pubmed.ncbi.nlm.nih.gov/30366802/; accessed 8 December 2021.
9. American Nurses Association website, Nurse Staffing Advocacy, last updated July 2019: https://www.nursingworld.org/practice-policy/nurse-staffing/nurse-staffing-advocacy/; accessed 8 December 2021.
10. Nomad Health website, Complete List Of States With The Worst Physician Shortages, 2018 Oct 2: https://blog.nomadhealth.com/complete-list-of-states-with-the-worst-physician-shortages/; accessed 8 December 2021.

Hypothesis

If states have a high proportion of vaccinated health care workers (nurses, physician assistants and doctors), then fewer vulnerable people will develop serious complications and end up in the hospital.

- CDC website:

Influenza Vaccination Coverage among Health Care Personnel - https://www.cdc.gov/flu/fluvaxview/interactive-health-care-personnel.htm

Influenza/Pneumonia Mortality by State: https://www.cdc.gov/nchs/pressroom/sosmap/flu_pneumonia_mortality/flu_pneumonia.htm

Counts of influenza laboratory test results by state (survey) Source - https://gis.cdc.gov/grasp/fluview/fluportaldashboard.html

Laboratory-Confirmed Influenza Hospitalisations - https://gis.cdc.gov/GRASP/Fluview/FluHospRates.html

- US Census Bureau:

Population data by geography - https://www.census.gov/library/visualizations/2021/geo/demographicmapviewer.html