MIS 183 Spring 2020 Final Exam

Please read all of the questions in the exam before beginning work on any question.

You are working as the lead data analyst at an investment research firm that is participating in forecasts regarding when local economies will ease economic restrictions. One of the key factors that has been required is the ability to process large numbers of COVID tests, and the percentage of the population that has already tested positive for the virus.

In completing this exercise you will make the following assumptions.

A Health Center will be able to process 5,000 tests per day.

A Public Health Department will be able to process 10,000 tests per day.

All other types of locations will be able to process 1,000 tests per day.

. Specifically you have been asked to address:

* Which states have the highest total testing capacity? Which states are the lowest?
* Which states have the highest testing capacity per capita? Which states are the lowest?
* How does the percentage of the population who have tested positive vary by state?
* Which states have the most testing locations relative to the total state land area?
* Which states have the most testing locations relative to the state population density?
* According to the data, what is the testing infrastructure like in Northern California?

For questions regarding data preparation please describe each step that you take to prepare the data files for analysis. You will need to combine data from two different tables with different levels of granular detail as well as develop calculated fields. Document all actions that you will take to clean, modify and merge the data in completing the exam. You may use image capture to paste in examples of your actions if you desire.

For the final submission you will include this “Word” document describing the steps that you have taken to complete the assigned tasks, and a power point presentation that includes the slides that will be used in communicating with others in your company.

For each question requesting a visualization, please provide an appropriate visualization (following the directions of the question), as well as a few bullet points that interpret the visualization that you present. When making visualizations follow all of the design principles that have been discussed in class. Copy and paste your visualizations into the included power point file with your bullet point narrative for grading.

Completed files will be loaded to canvas in the Final Exam folder indicated

Use the files “Exam file 1” and “Exam file 2” on the Canvas page for the course to complete this exercise.

## Question 1: 5 pts

Describe the steps to relate the data provided in “Exam file 1” and “Exam file 2” so that you can conduct analysis combining elements from both tables.

## Question 2: 5 pts

Describe the steps required to clean and prepare the data for analysis.

## Question 3: 10 pts

One of the questions that must be addressed is regarding testing capacity. Describe the steps required to create a custom field to allow for the visualization of testing capacity by state based on the types of locations.

## Question 4: 30 pts

Looking at the data and using the assumptions regarding capacity that were provided in this document create visualization that displays the states with the most total capacity to conduct tests. Create a **horizontal bar chart that includes the top 5 and bottom 5 states**:

## Question 5: 30 pts

Looking at the data and using the assumptions regarding capacity that were provided in this document create visualization that displays the states with the most capacity per capita to conduct tests. Create a **horizontal bar chart that includes the top 5 and bottom 5 states**:

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## Question 6: 30 pts

You need to discuss the percentage of the population by state that has tested positive for the virus. In order to highlight the number of positive cases per capita of state population create a **choropleth map**:

In order to highlight the variation between the states use diverging colors based on the national average of per capita positive tests and use color intensity to indicate how far a state is above or below the national average.

## Question 7: 30 pts

Explore which states have the most testing locations and testing capacity relative to their land area. Create a **scatter plot chart that includes all states for which there are data**:

## Question 8: 30 pts

Explore which states have the most testing locations and testing capacity relative to their population density. Create a **scatter plot chart that includes all states for which there are data**:

## Question 9: 30 pts

**Use a symbol map** to demonstrate where testing locations are available in Northern California. Use different colors for different types of location service types.