Sample Data Science Problem:

A musician is planning to move to Manhattan. Since music work requires access to a number of different venues for employment, the musician would like to view all possible places of employment and will use this analysis to inform a decision about the best neighborhood to live in. The ideal place to live would be closest to the greatest number of venues, to save on transportation costs. Create a map that shows all music venues in Manhattan, available through the Foursquare API, relative to the neighborhoods of Manhattan.

Data:

This analysis will use the Foursquare API to search for relevant venues in Manhattan. It will also use a json file that contains geographic data for New York City.

Methodology:

1. Import a json file containing geographic data for NYC, clean the data, and convert the cleaned data to a dataframe (called 'neighborhoods').

2. Select all neighborhoods in Manhattan from the dataframe 'neighborhoods' and create a new dataframe called 'manhattan\_data.'

3. Create a folium map of Manhattan (called 'map\_manhattan').

4. Use the Foursquare API to search for all music venues (excluding schools and stores that don't have performance opportunites) in Manhattan.

5. Display the results of the search in step 4 on the folium map of Manhattan and rename the map 'music\_venues.'

6. Create circle markers for each venue (blue) and neighborhood (green) on the map 'music\_venues.'

7. The map music\_venues will show neighborhoods that have the greatest concentration of venues (possible places of employment).

Results and Discussion:

The map shows that the following neighborhoods are in close proximity to clusters of music venues: Manhattan Valley, Upper West Side, Midtown, NoHo, and Lower East Side. Therefore, the musician planning to move to the city should concentrate a housing search in any one of these neighborhoods, in order to be close to prospective employment venues.

Conclusion:

This project was intended to be a simple exercise that could be helpful to a musician planning to move to NYC. The results of the project could also be useful in a marketing situation, in which a company seeks to target a marketing strategy toward a particular audience, such as people who frequent neighborhoods with many live music venues.