



Boise, Idaho - Hair Salon Locations

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Document History:

Author	Version	Summary	Date
Robert J Wragg	1.0	Initial Draft	8.7.2020

Introduction: Business Problem

The author's wife has recently received her license as a hair stylist. Because of this and the families desire to move to Boise, she would like to know good locations for a new salon. It is important to note that the data collected does not take into consideration the current Covid-19 Pandemic.

Boise, Idaho as of 2020 has a population of less than 250,000 people. Based on this we are looking for areas that already have a lot of venues. This will allow us to generate cross business from people visiting other locations.

We will use data science techniques to generate the most promising neighborhoods based on the above criteria. Advantages of each area will then be clearly expressed so that best possible final location can be chosen by stakeholders.

Data

Based on the definition of the problem, factors that will influence our decision are:

- number of existing venues in the neighborhood
- number of salons already in the neighborhood

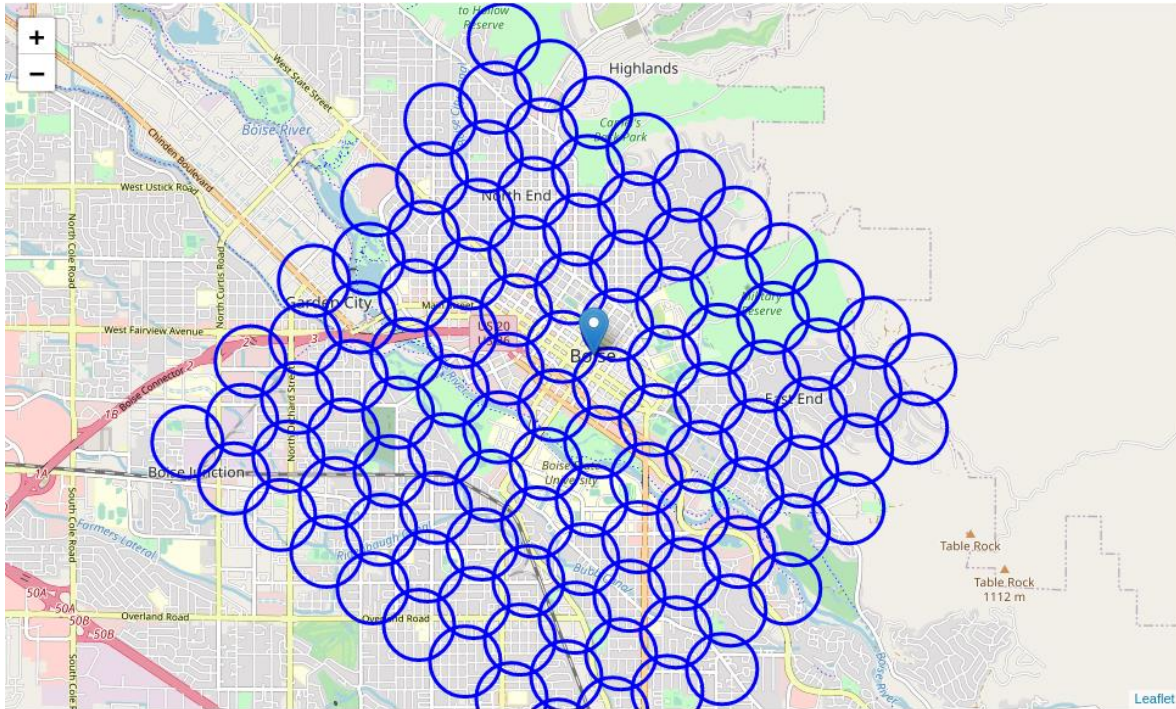
The following data sources will be needed to extract/generate the required information:

- centers of candidate areas will be generated algorithmically and approximate addresses of centers of those areas will be obtained using GeoPandas
- number of hair salons and their location in every neighborhood will be obtained using Foursquare API
- coordinate of city center's will be obtained using GeoPandas.

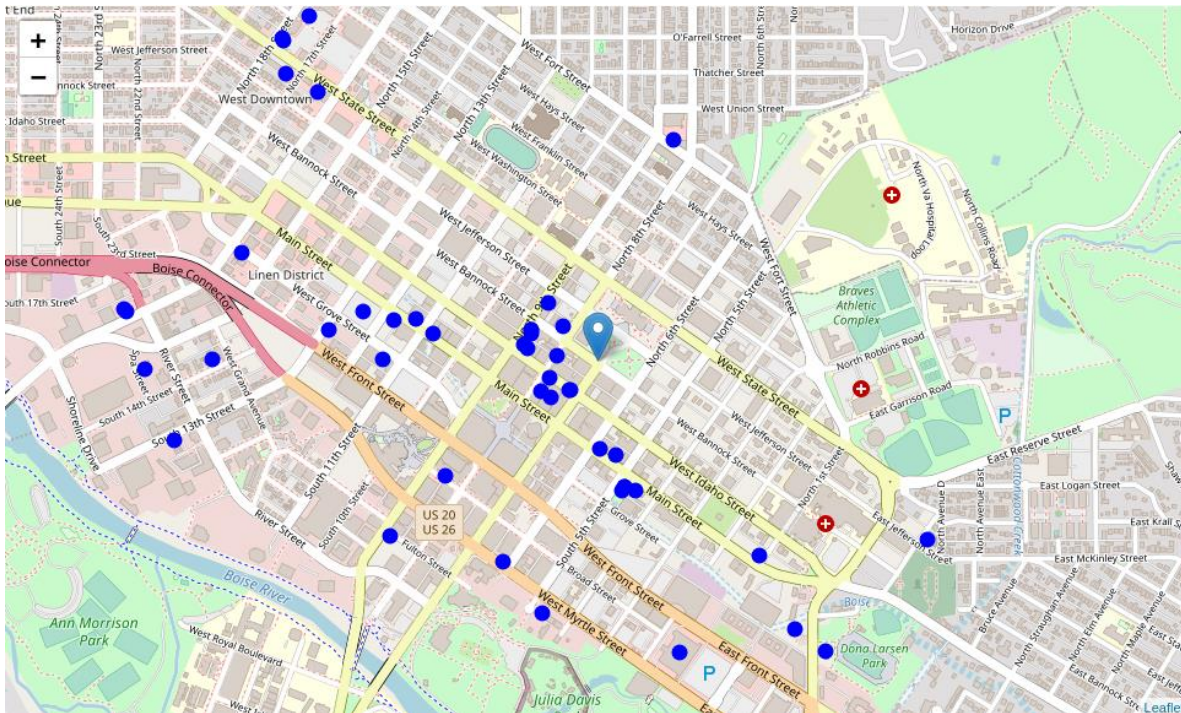
Methodology:

This project will take into consideration existing hair salons as well as existing businesses. The process will be as follows:

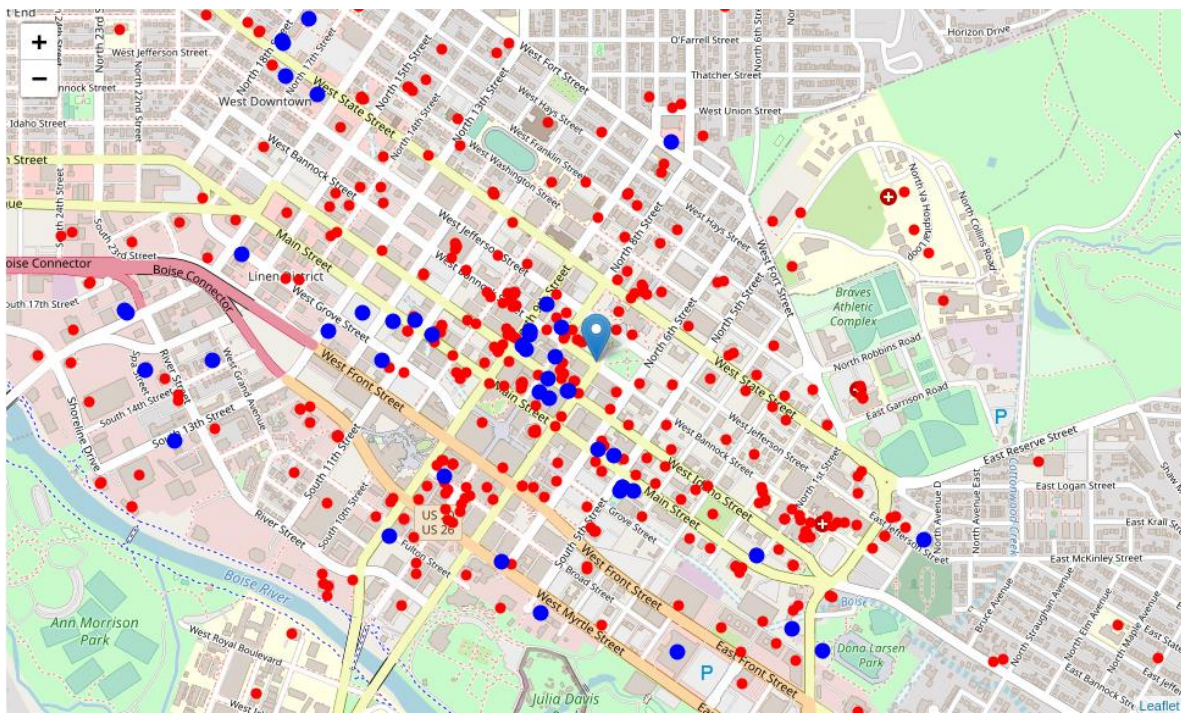
- First we will partition Boise into equal regions



- Next we will utilize four-square to gather existing hair-salon locations, and show them on the map



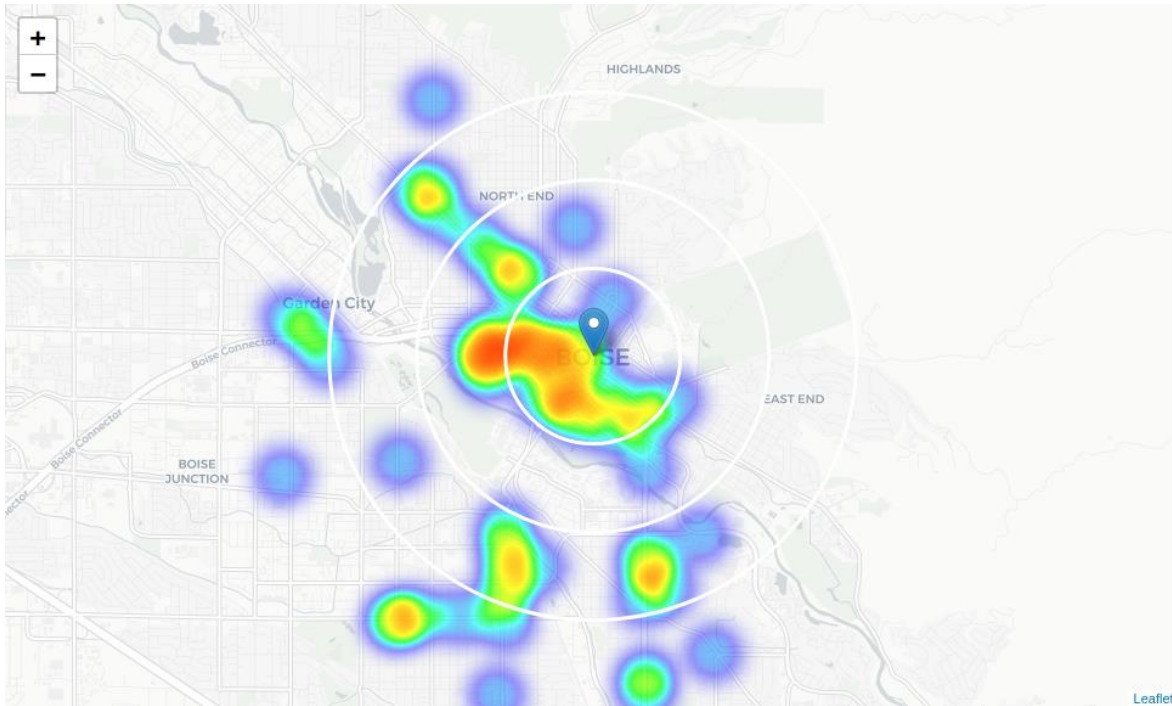
- We will then show existing venues in the area (red) and overlay them with salon locations (blue)



Analysis:

Now we have gathered the data, and we need to analyze it to determine the best potential locations:

- First we will determine the density of salons in each generated area
- Next we will create a heat-map, so the data can be visualized

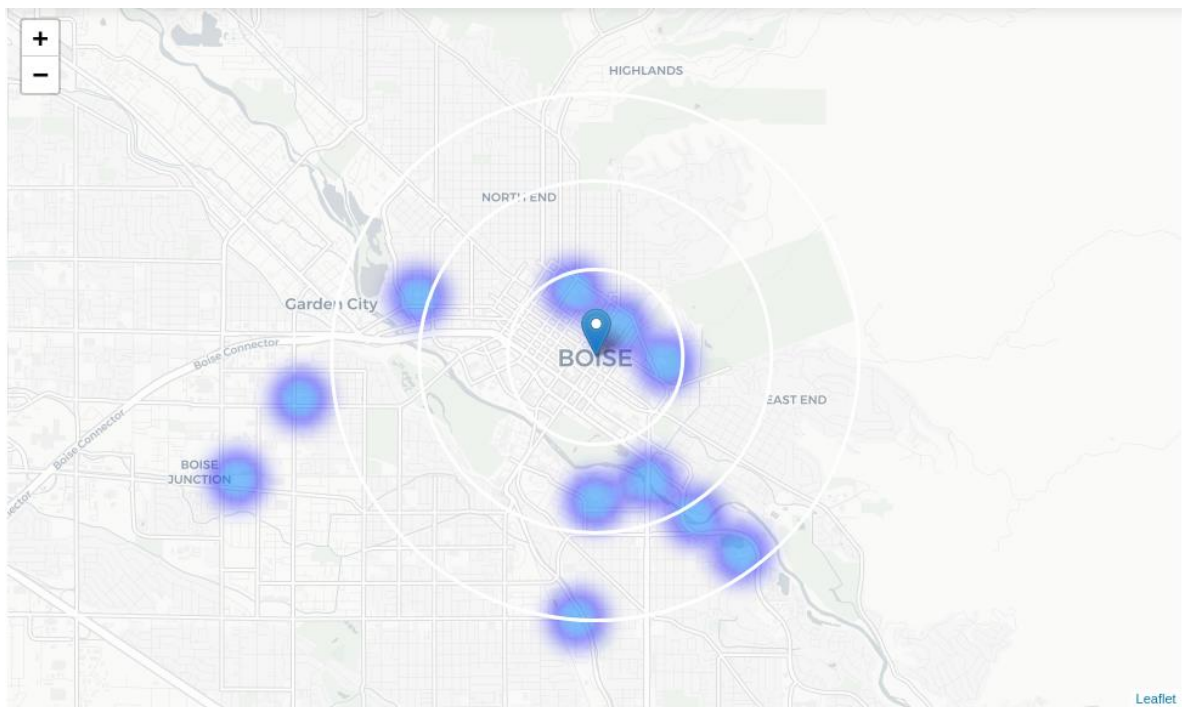


- We will then determine the density of venues in each generated area

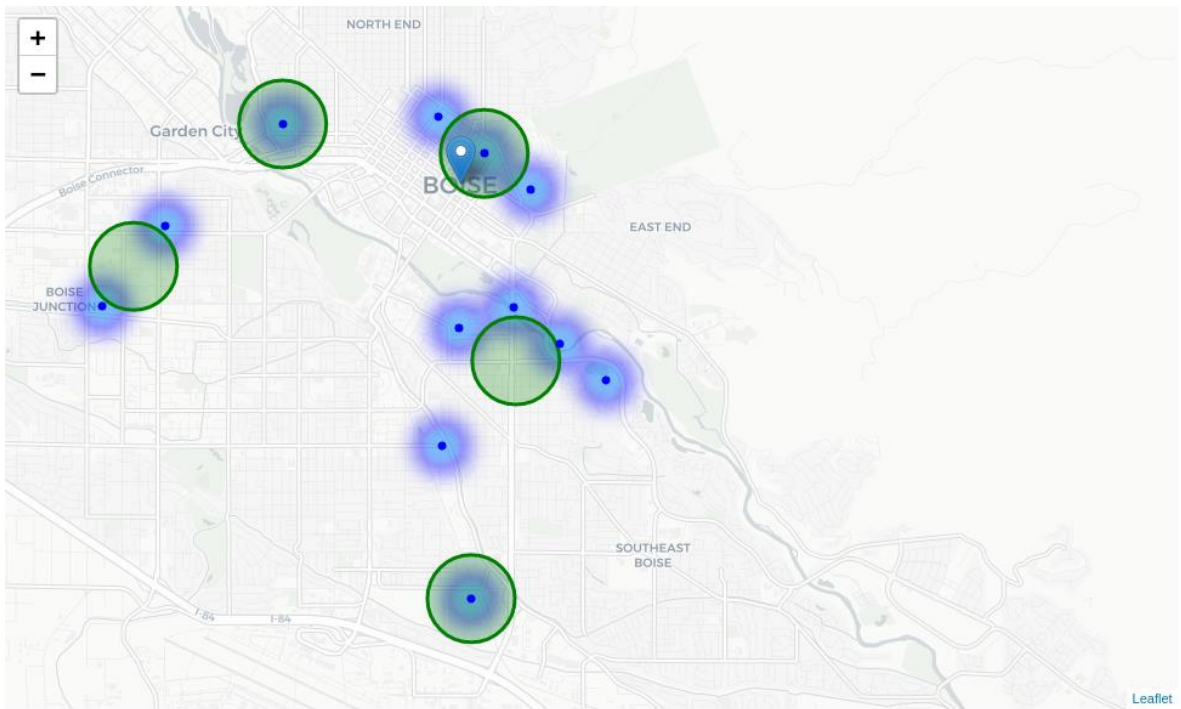
- We will then generate a heat-map, so this data can be visualized



- Now we will generate candidate locations based on the criterion of <2 salons in an area and more than 5 venues
- This we will visualize via heat-map



- We will then use the Data Science technique of KNN (nearest neighbor) to pinpoint possible locations of a new hair salon
- Once we have the locations we will visualize it on the map



Results and Discussion:

Our analysis shows that there is opportunity in Boise for a hair salon. First we showed existing salons and their locations. Next we showed business or venue locations in Boise and generated a heat map so we could see where the most dense areas are. We then generated a heat map that shows possible areas where we have few hair salons and many existing venues. We then clustered the data using Data Science techniques (KNN) to help narrow down possible locations for a new salon.

Looking at the heat map it looks like there are two possible locations. One is near the center of Boise and one is just to the South of Boise.

Conclusion:

In conclusion, we believe that the new hair salon could be located in the Center of Boise (as shown in the map above), or just to the South of the center of the city. Things to think about are:

- Cost of real estate in the city center
- Business opportunities on weekends (may be less for city center)

For these reasons we believe that the area just to the South of the center of Boise would be the best location.