

Capstone Project - The Battle of the Neighborhoods

Applied Data Science Capstone by IBM/Coursera
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Introduction

Salt Lake County, Utah is one of the fastest-growing cities in the United States. As a result, home sales prices have been gradually increasing.

In this project, we will examine home sales prices in Salt Lake County, Utah. We also analyze the home sales data to answer the question whether the number of venues around a home impact its price. This data analysis will be beneficial to people who are currently looking to buy an affordable home in Salt Lake County.

Data

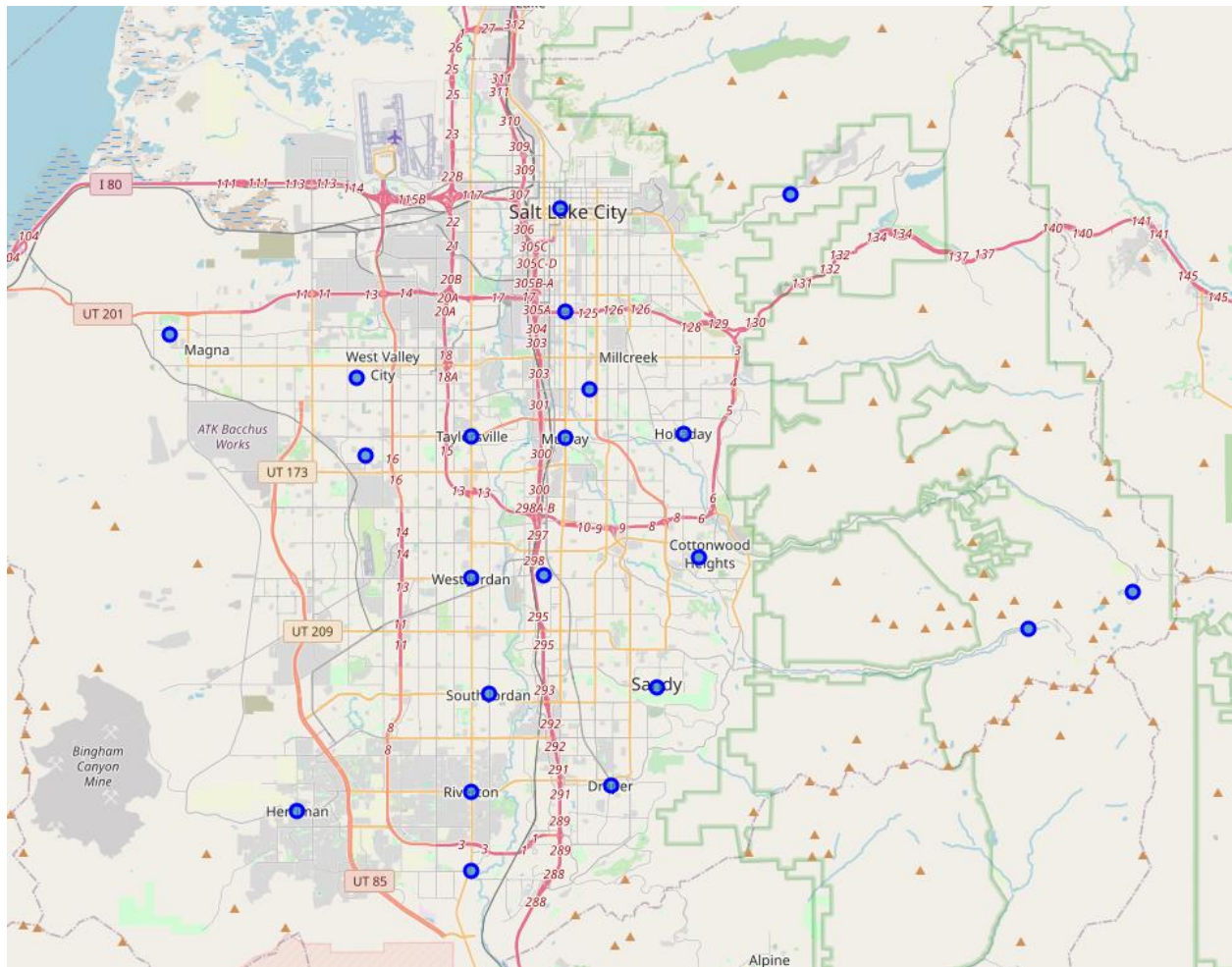
For this problem, we will need the following data:

- List of homes for sale in Salt Lake County.
- Data of venues in Salt Lake County.
- Data of coordinates of venues and homes in Salt Lake County.

To acquire these data, we use the sources:

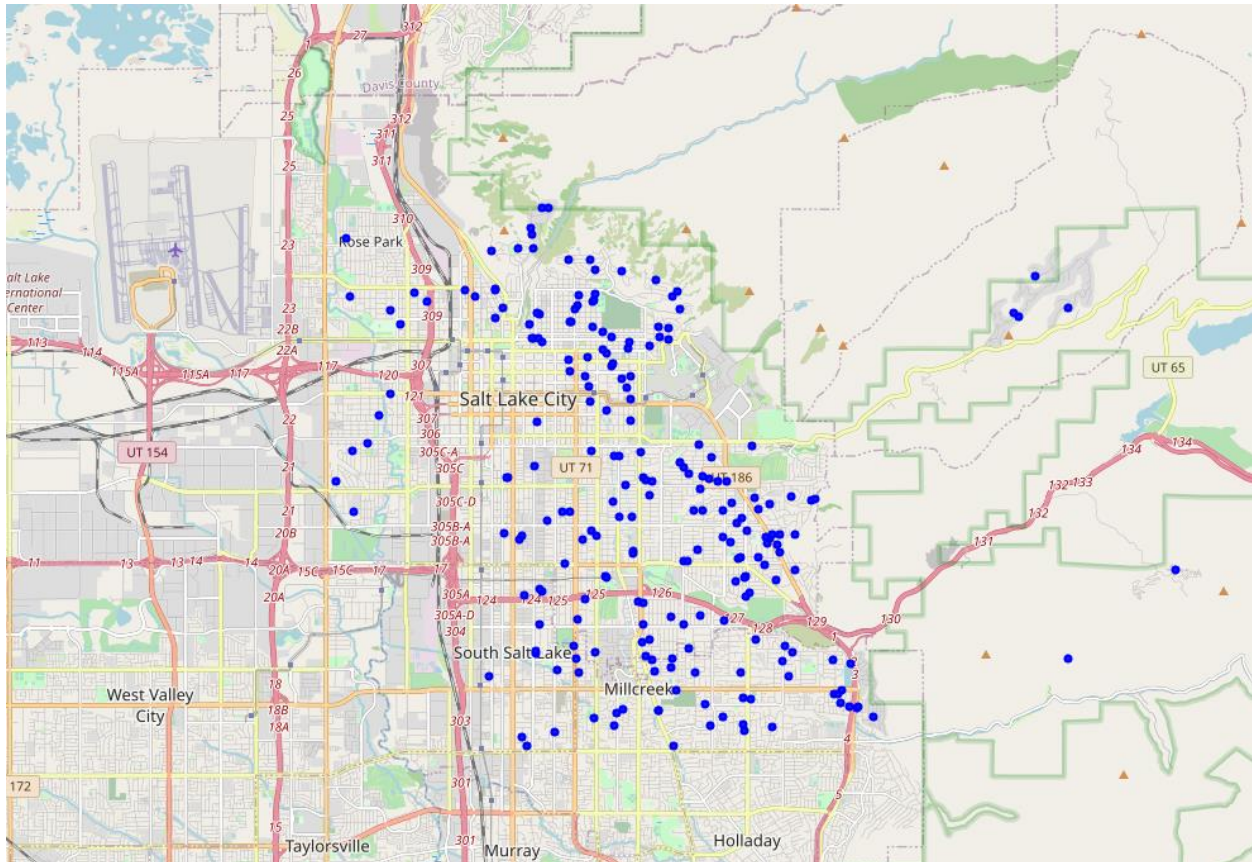
- The list of homes for sale in Salt Lake County downloaded from [redfin.com](https://www.redfin.com/).
- Number of venues, their coordinates and categories using Foursquare API.
- Coordinates of homes using Google Maps API geocoding.

After using Google Maps API and cleaning data, we have data of 26 cities and their coordinates.



Map of 26 cities in Salt Lake County

We also are able to obtain the list of homes for sale in Salt Lake City and their coordinates. Since we will compare their prices later, we narrow the homes to the type of Single Family Residential.



Map of homes for sale in Salt Lake City

Methodology

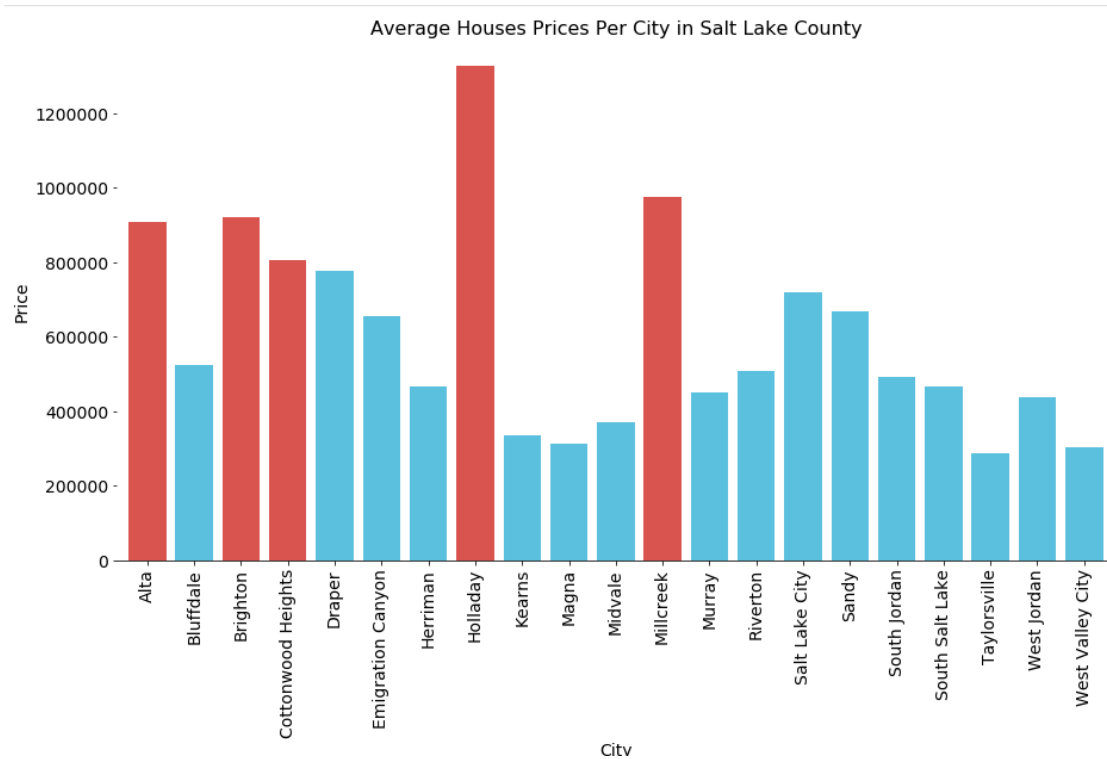
We use Google Geocoding API to obtain the coordinates of homes and also the coordinates of cities in Salt Lake County.

To compare the prices among cities, we calculate the average price of each city, and show the top 5 cities. Then we will visualize the average prices using a Choropleth map.

To analyze the impact of venues to home prices, we will get the number of venues per home and the number of venue categories per home by counting venues and venue categories based on the data. From that, we will use Scatter plots to visualize the relation between them to see if we can build a model for them.

Analysis

Homes for sale spread across all the cities in Salt Lake County, so first let's find out the homes average price per city and find the top 5 cities which have the highest average homes prices.

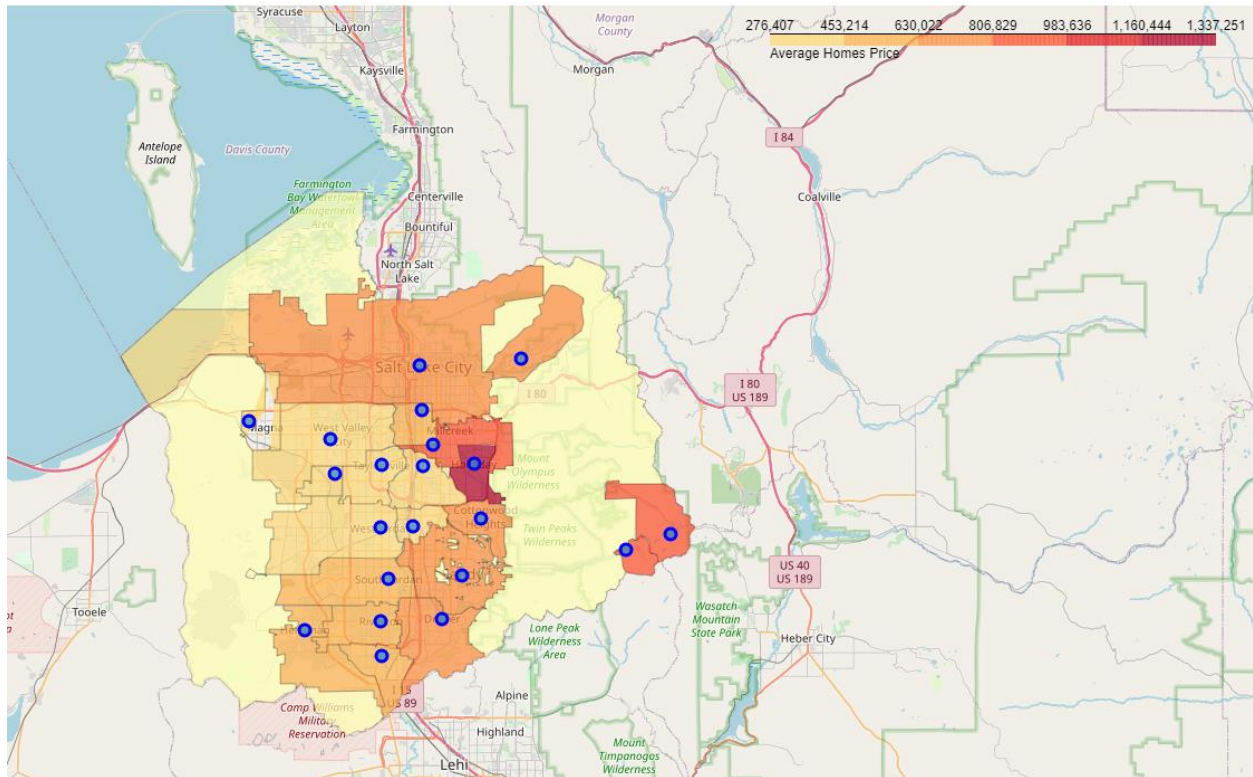


Average Homes Price per City

According to the Bar chart above, we see that the top 5 cities are:

City	Avg. Price
Holladay	\$1,326,851
Millcreek	\$976,709
Brighton	\$921,562
Alta	\$909,869
Cottonwood Heights	\$806,452

Interestingly, Downtown Salt Lake City is not in the top 5.

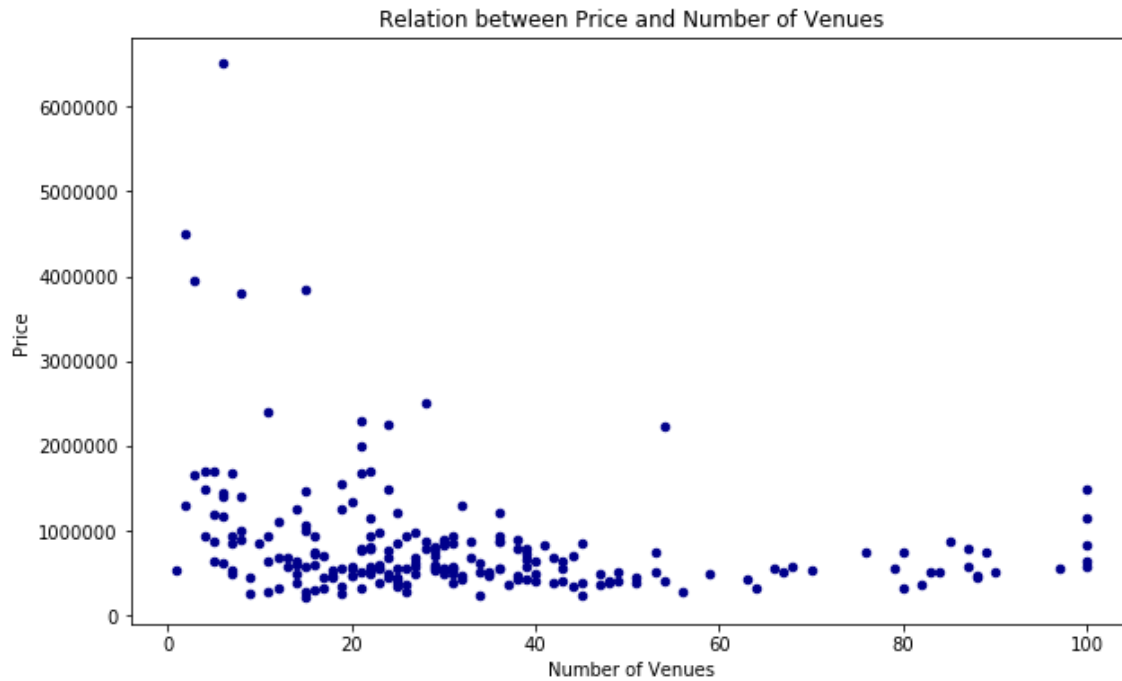


Choropleth Map of Average Homes Prices

When looking at the Choropleth map, we notice that the cities near the Wasatch Range have higher average homes prices.

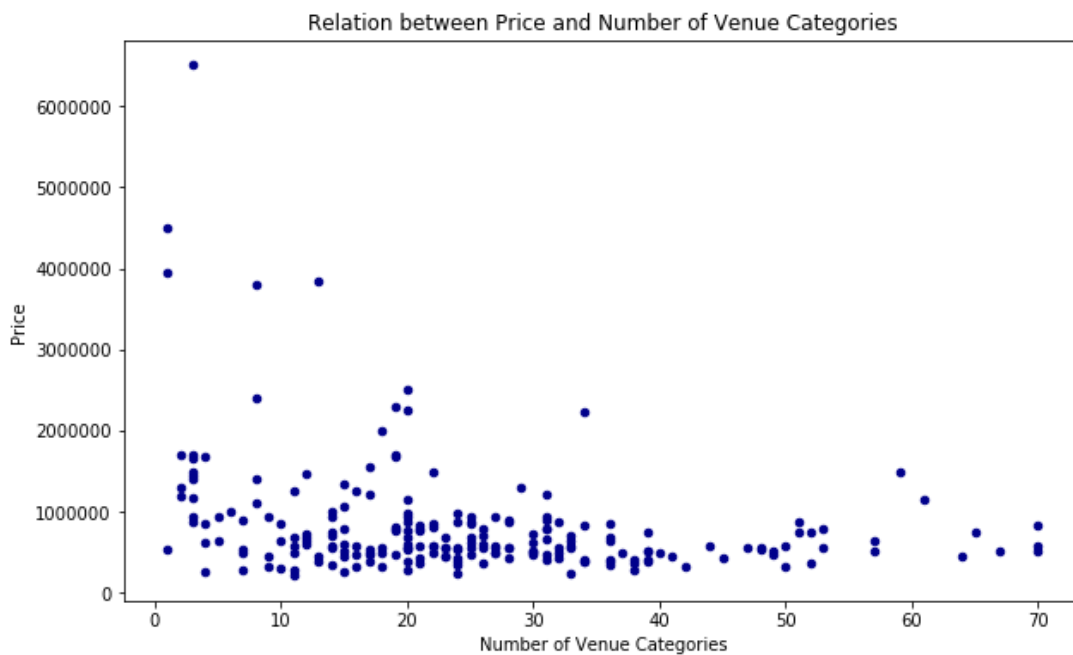
Next, we will find out the relation between the number of venues and Price.

Since Scatter charts allow us to see the relation between two variables, we can apply it in this case.



The points in the chart mostly are at the bottom of the chart, so we can't build a model, and there is no relation between the number of venues and Price.

Then, we will apply the same approach for the number of venue categories.



It looks like we can't either build a model for this chart, so there is no relation between the number of venue categories and Price.

Result and Discussion

The top five cities which have the highest home prices are: Holladay, Millcreek, Brighton, Alta, and Cottonwood Heights. The interesting point is these cities are near the Wasatch Range. In other words, homes near the Wasatch Range have higher prices than other homes.

The number of venues and the number of venue categories near a home don't impact its price. This is also interesting because most people believe that if a home has many venues nearby, its price will be high. There might be some other factors that impact the price, but they are out of scope of this project.

Conclusion

As Utah is one of the most growing states in the U.S., many people come here to find new opportunities. As a result, the demand for owning a home has been increasing. This project has given an insight of home prices which will help home buyers have more information before deciding to buy a home.