The Battle of Craft Breweries in Denver

Applied Data Science Capstone
February 2019

Introduction/Business Problem

- 1754 craft breweries in 2010 in US

- 6266 breweries today

- 13% of the market share

- $26 billion in value growth in 2017 in US

- Denver:

  - 96 breweries in early 2019

  - One craft brewery for every 7300 inhabitants

Figure 1 Location of Denver (Source: Google Earth)

Introduction/Business Problem

- Project
  - 1.
    - Analyze the current craft beer situation in Denver
    - Review where are located the craft breweries around the city
  - 2.
    - Assess where should a newcomer open its premise
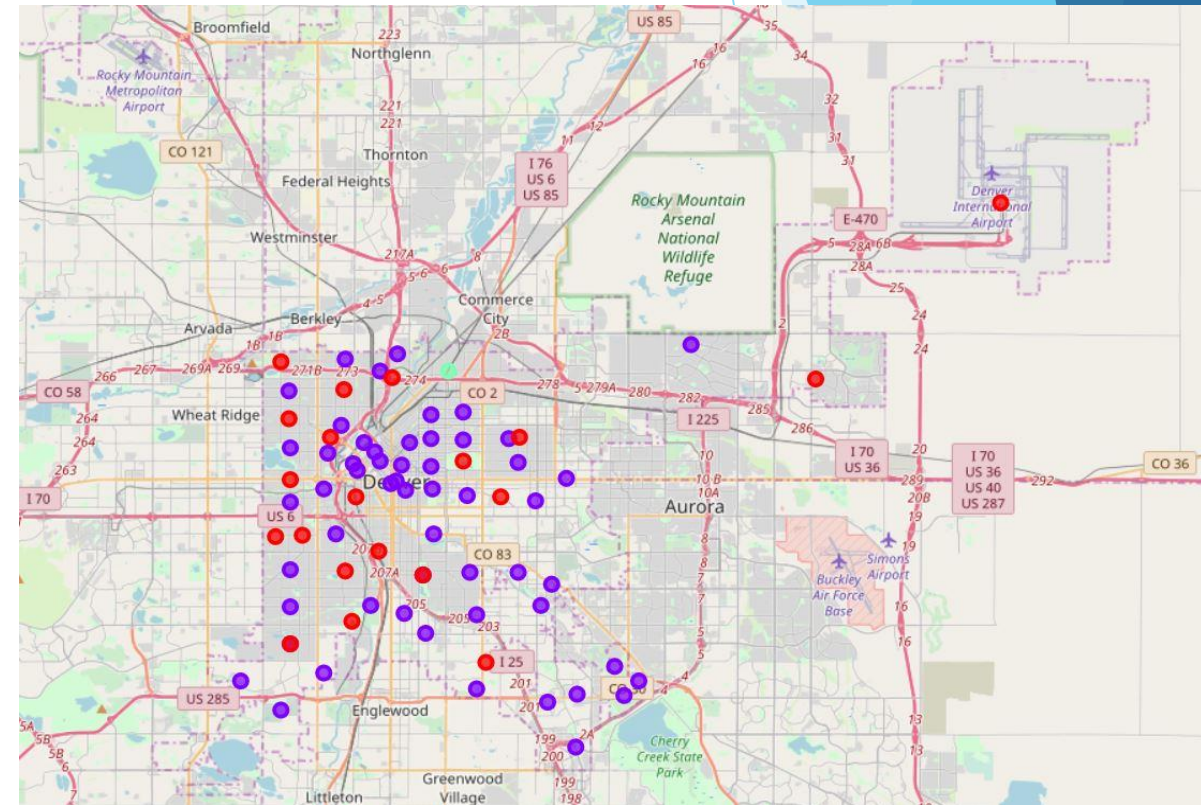   - Aim the target population for this business

Data

- Main data
  - Foursquare venues in the different neighborhoods of Denver
  - Neighborhoods of Denver on Wikipedia
  - US Census for the Inhabitant revenues per neighborhood

- Complementary data
  - 2018 Q3 Denver Retail Market Report by Colliers International
  - Denver Retail Conditions and Opportunities Study by the City and County of Denver

Methodology

▶ Statistical methodologies

    ▶ Exploratory data analysis

        ▶ Characterizing each neighborhood

        ▶ Obtaining the most frequent venues for each of them

        ▶ Foursquare data

        ▶ Classification according to the neighborhood of the venue

    ▶ Machine Learning

        ▶ K-means method

        ▶ Clustering the data and grouping them by similarity
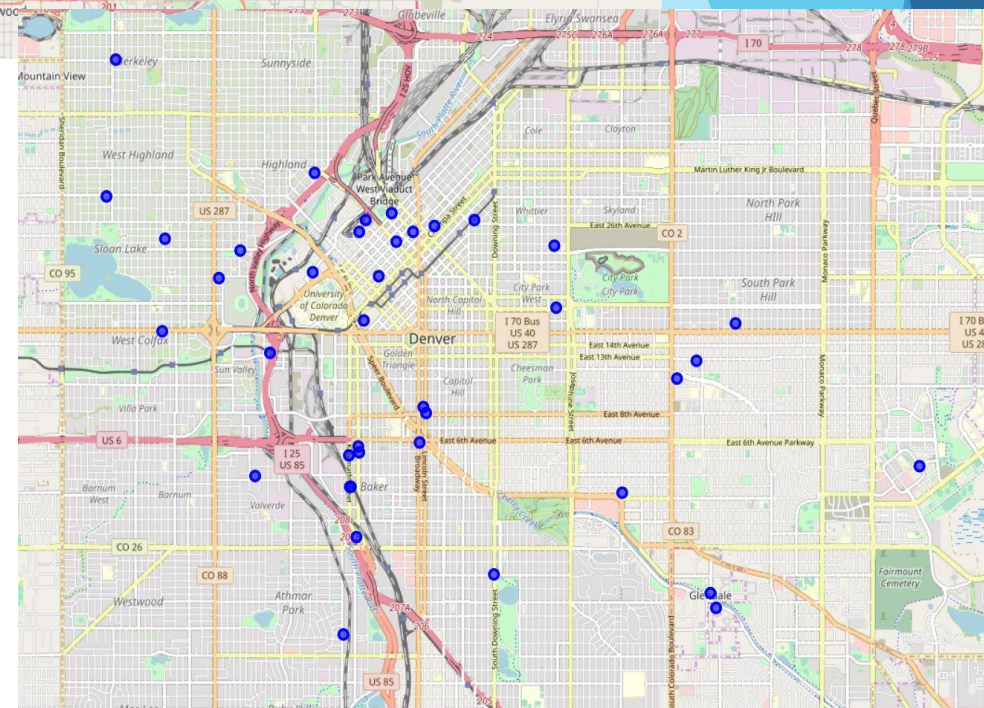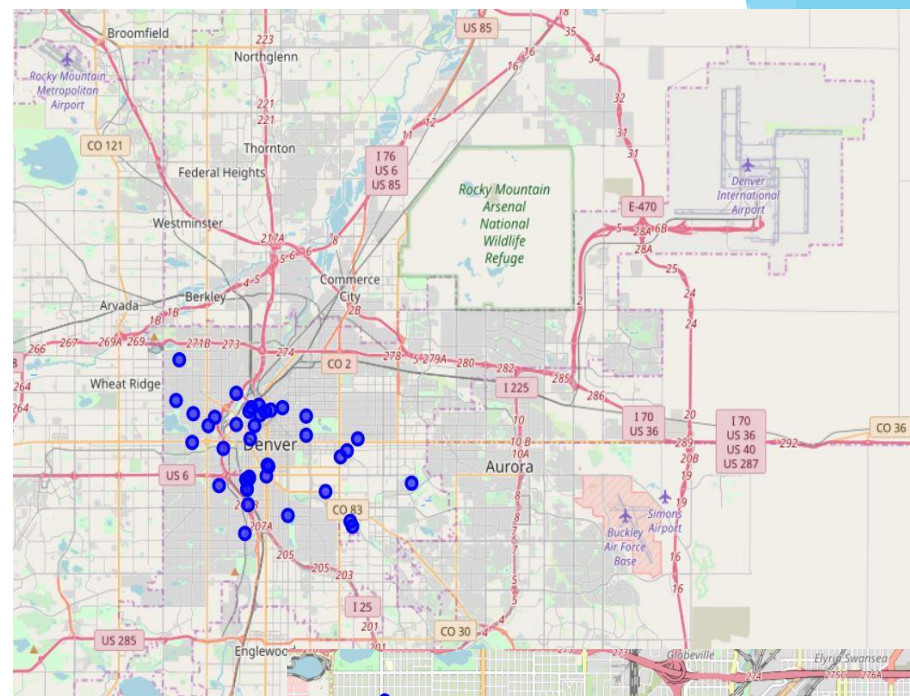
Results

- Categorization of the neighborhoods of Denver
  - Neighborhoods are very diversify
  - Categories of venues are large
  - -> Clustering
  - Two main categories of venues
    - Red category found in the west part (night venues)
      - Bar, restaurant, convenience stores
    - Purple category is found in the east part except the airport (day venues)
      - Retailer and coffee shops
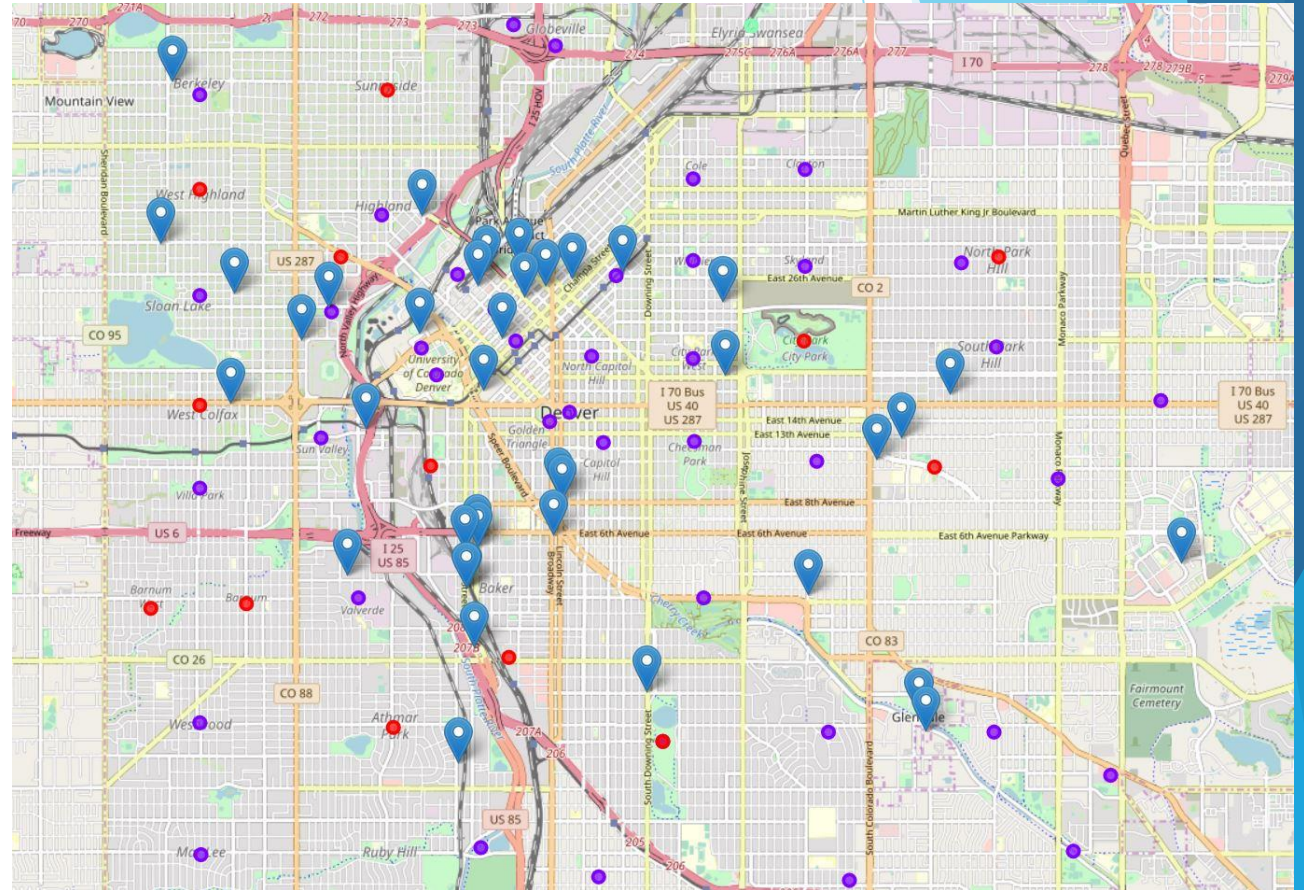   - Green category
      - Farm in this area

Results

- Craft Breweries in Denver

  - Foursquare : breweries around the city of Denver

  - Query terms : "brewery"

  - Foursquare doesn't allow to find the entire pool of breweries in Denver

    - Hypothesis : the number of breweries present in the report is representative of how breweries are spread in the city

  - Location follows a northwest to southeast location passing through the center of the city where the abundance is higher than on each extremity of Denver

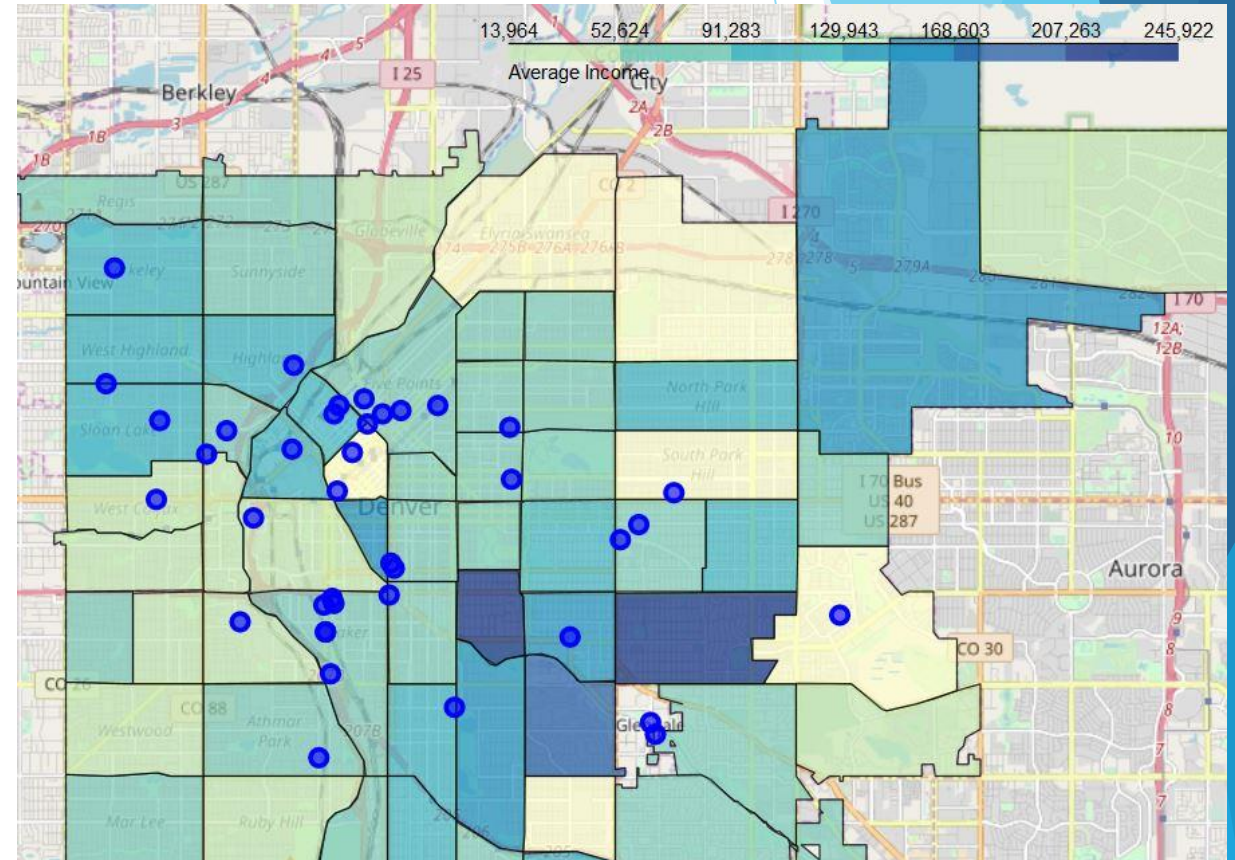 - A higher concentration located near the Stadium and the University Campus of the city

Results

- ▶ Craft Breweries in Denver
  - ▶ Breweries are mostly located in the neighborhood which are clustered in the purple categories

Results

- Relation between the average income per neighborhood and the brewery location
  - Any breweries are in the neighborhood of the richest people of the city
  - Only 4 are in the poorest part of the city
  - Breweries are in average income areas

Discussions

- Location of a venue as well as a brewery has a big impact on the revenue of the company

- Selected carefully to reach the right customer

- Two main type of neighborhood in Denver which regroup two principal type of venues

  - Day venues and the night venues

- Breweries are in the day venue neighborhood

- Explanation : open hours

- Breweries are located on a northwest to southeast axis around Denver

Discussions

- Recommandations
  - Opening breweries in the city on the northeast to southwest axis which avoid high competition
  - Locating a brewery in an area where there are already other competitors allow attract customers

- Average income is not a main factor of location for a brewery

- Average rental rates
  - Opening a brewery in the Northeast and Southwest where rental rates are lower than for the other neighborhood of Denver
  - Northwest also a good option with rental rates lower than the center and the southeast

Neighborhood	Average rental rate
Aurora	$14.33
Boulder	$20.94
Central	$20.51
Cherry Creek	$29.89
Downtown	$28.79
Northeast	$16.58
Northwest	$14.74
South	$19.81
Southeast	$20.70
Southwest	$14.18
West	$16.59

Conclusion

- Many opportunities to open a brewery in Denver

- Looking for premises in the Northeast, Northwest or Southwest of Denver

- Breweries in Denver are in the same area than the day venues of the city

Thanks for your attention