

Sociable Cider Werks Taproom: Craft Cider Market Analysis



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Springboard: Capstone I

Sociable Cider Werks

Overview: Sociable Cider Werks is a successful craft cidery local to Minneapolis, Minnesota

Objective: Sociable is looking to open a new taproom in 2018

Criteria: Target cities will be large (>400,000) metropolitan areas outside of Minnesota



What demographic features support craft cider?

1. **High Income:** Sociable would like to target cities whose populations have high incomes on average.
2. **Many Young Adults:** Craft cider is most popular among people in their 20s and 30s.
3. **Lots of Females:** Cider is typically more popular among females than males.



Cluster Analysis

The Data: K-Means Cluster Analysis was performed on the following data features:

1. Log of Population
2. Median Income
3. Median Age
4. Percent of Population in their 20s and 30s
5. Number of Males per 100 Females

Cluster Analysis

The Clusters: K-Means Cluster Analysis resulted in three major clusters:

Cluster 0:

- San Francisco, CA
- San Jose, CA
- Washington, D.C.
- Seattle, WA

Cluster Analysis

The Clusters: K-Means Cluster Analysis resulted in three major clusters:

Cluster 1:

- Mesa, AZ
- Phoenix, AZ
- Tucson, AZ
- Fresno, CA
- Sacramento, CA
- Colorado Springs, CO
- Jacksonville, FL
- Miami, FL
- Indianapolis, IN
- Louisville, KY
- Baltimore, MD
- Detroit, MI
- Kansas City, MO
- Omaha, NE
- Las Vegas, Nevada
- Albuquerque, NM
- Columbus, OH
- Oklahoma City, OK
- Tulsa, OK
- Philadelphia, PA
- Memphis, TN
- Nashville, TN
- Dallas, TX
- El Paso, TX
- Fort Worth, TX
- Houston, TX
- San Antonio, TX
- Milwaukee, TX

Cluster Analysis

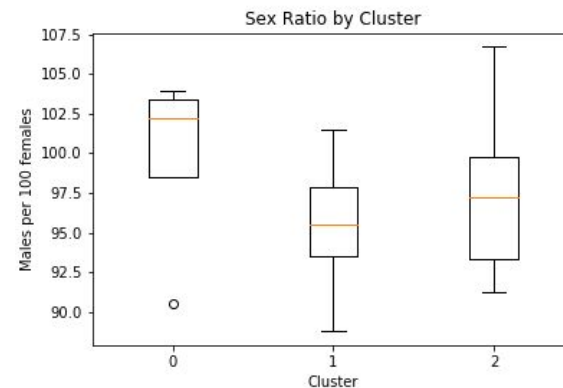
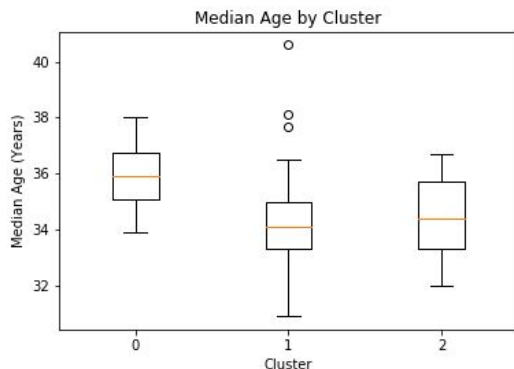
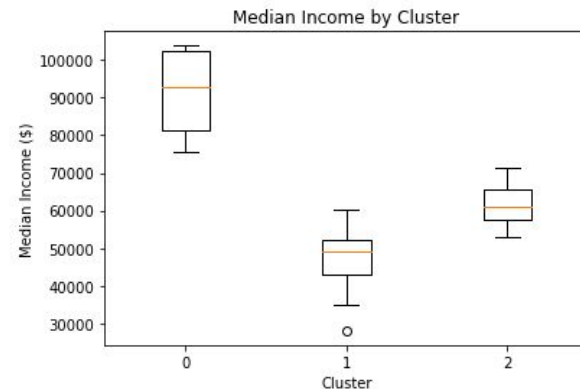
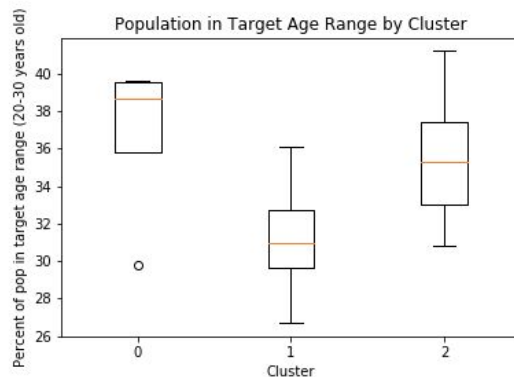
The Clusters: K-Means Cluster Analysis resulted in three major clusters:

Cluster 2:

- Long Beach, CA
- Los Angeles, CA
- Oakland, CA
- San Diego, CA
- Denver, CO
- Atlanta, GA
- Chicago, IL
- Boston, MA
- Minneapolis, MN
- New York, NY
- Charlotte, NC
- Raleigh, NC
- Portland, OR
- Austin, TX
- Virginia Beach,

Comparing the clusters

- Overall, there are only subtle differences between the clusters
- Cluster 0 has the highest median income
- Cluster 0 and Cluster 2 have the most people in their target age range
- All three clusters have similar median ages and sex ratios



Wisdom from the US Brewer's Association

According to Bart Watson, the economist for the US Brewer's Association, the best place to put a new cidery is ***near an existing cidery***.

- There are only subtle differences between demographics among the three clusters
- The next question we should be asking is:

Does one of these clusters have a higher prevalence of cideries than the other two?

Cidery Prevalence: Summary Statistics

	Cluster 0	Cluster 1	Cluster 2
Mean # of Cideries	2	0.89	3
Median # of Cideries	1	1	2
Percent of Cities with 1 or more Cideries	50%	53.6%	80%

- Cluster 2 is an immediate standout, with a higher mean and median number of cideries.
- Additionally, **80%** of cities in Cluster 2 have at least one cidery -- that is way more than the ~50% of cities with cideries in the other two clusters

Cidery Prevalence: Inferential Statistics

1. One-Way ANOVA:

- a. Test: $H_0 : \mu_{cluster0} = \mu_{cluster1} = \mu_{cluster2}$
- b. Reject the null hypothesis ($p = 0.03$). One of these cideries has a different mean number of cideries than the other two

2. Tukey's Test:

- a. Discover that the difference between the mean number of cideries in Cluster 2 and Cluster 1 is statistically significant
- b. Rule out Cluster 1

3. Permutation Samples:

- a. Test the probability that the percentage of cideries between Cluster 2 and Cluster 0 could happen by chance
- b. Reject the null hypothesis ($p=0.0001$).
- c. Cluster 2 has a statistically significant prevalence of cideries

Recommendations

Examining the demographic features of cities in Cluster 2, I would recommend the following cities:

Austin, Texas

Pros:

- Young Population
- High Median Income
- Low cost of living
- Demonstrated success in the craft cider market

Cons:

- High male to female ratio

Raleigh, North Carolina

Pros:

- Young population
- High median income
- Low cost of living
- High female to male ratio

Cons:

- Only one other craft cidery

Boston, Massachusetts

Pros:

- Young population
- Relatively high median income
- Very high mean income

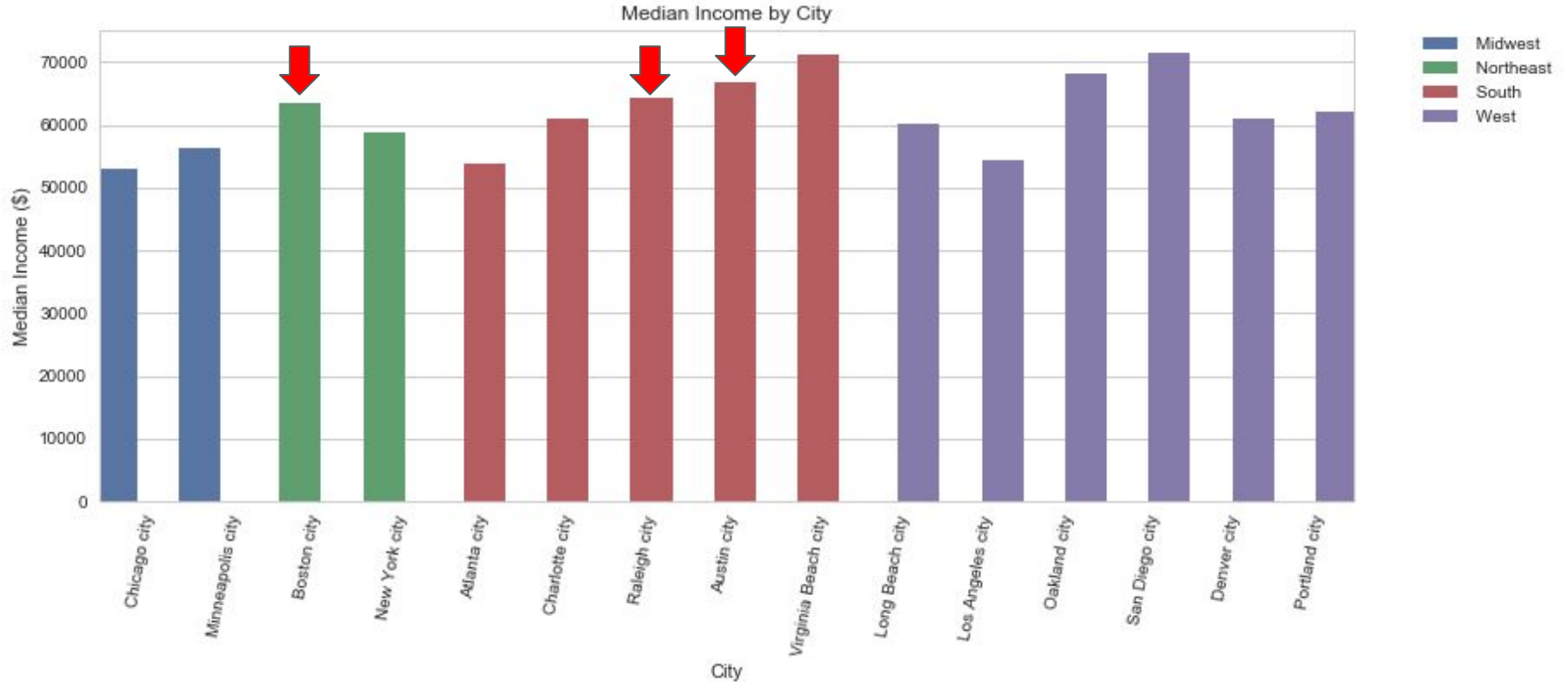
Cons:

- Very high cost of living

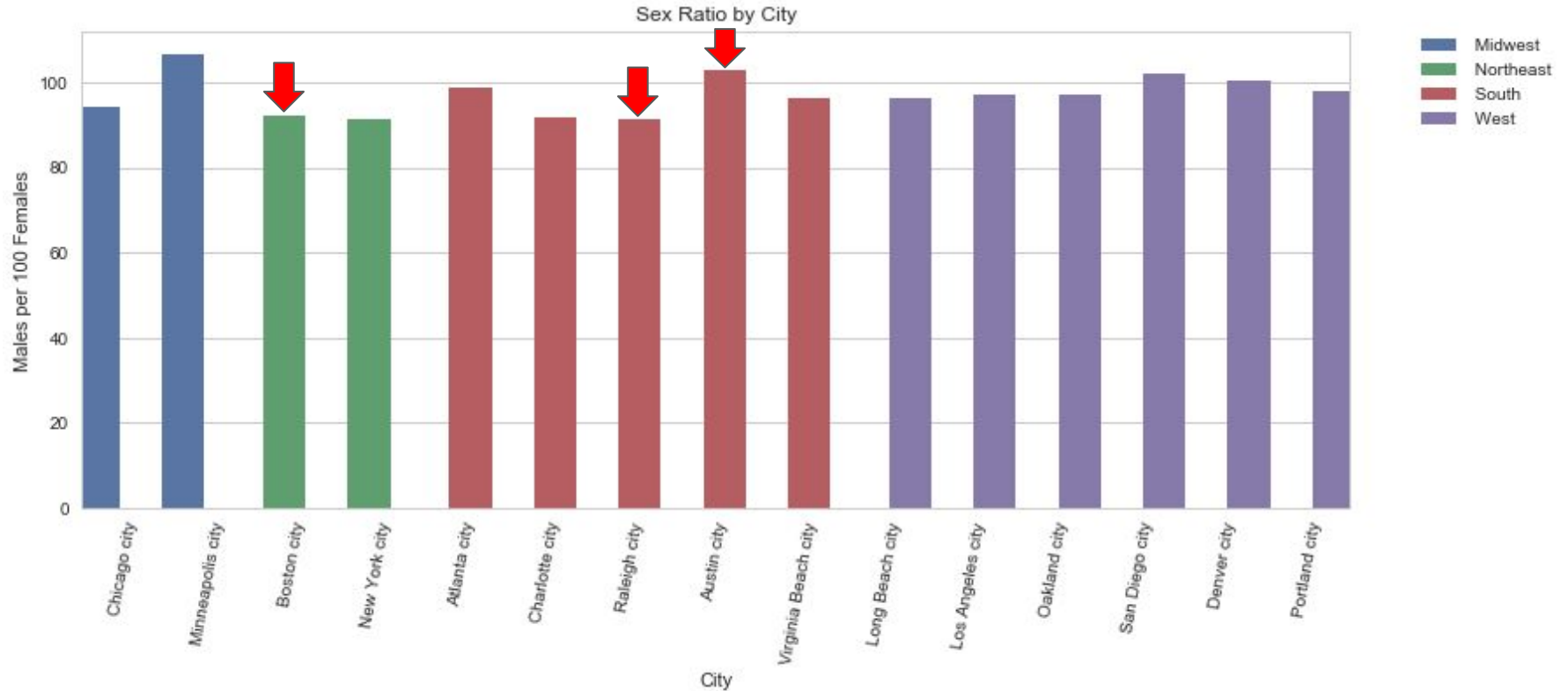
Recommendation Cities: Target Age Range



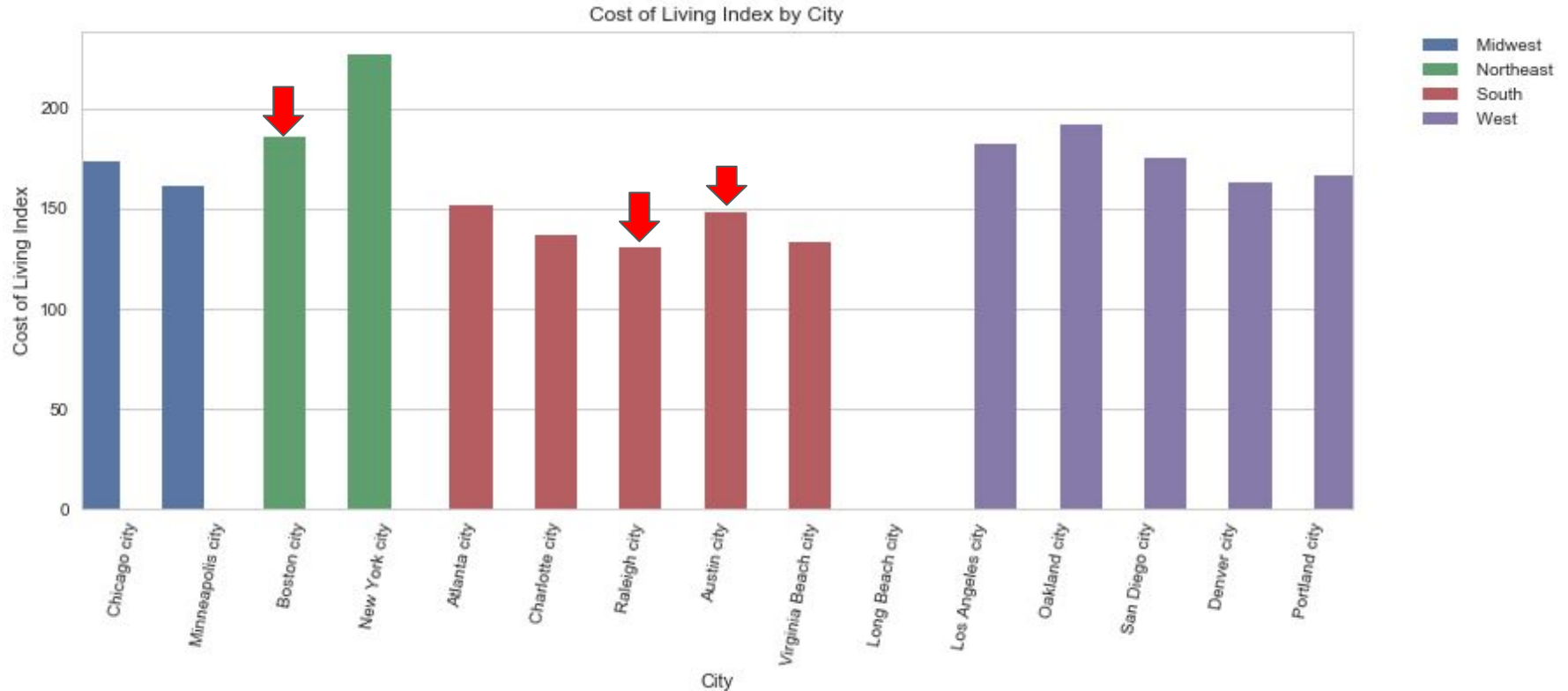
Cluster 2 Analysis: Median Income



Cluster 2 Analysis: Sex Ratio



Cluster 2 Analysis: Cost of Living Index



What's Next?

It's time for Sociable Cider Werks to decide where they want to open a new taproom. I recommend investigating Austin, Raleigh, and Boston further!

