Setting Up Shop in Rockingham County, VA Where to Start Your Business

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Introduction

- Background
  - With about 627,000 new businesses open every year, choosing the right location for your business can play a part in its success.
  - Cities have strengths and weaknesses in their metrics that can be judged for consideration, and cities have commonplace venues that they are known for.
- Problem
  - Two new businesses, a restaurant and building contractor, are wishing to open somewhere in the Rockingham County, VA, area.
  - There are ten cities/towns/unincorporated communities in this county, so knowing where to set up shop isn't so obvious.
- Interest
  - For those looking to start a new business in this county.
  - Same data presented here can help provide insight and guidance for any new business.

Data Metrics

- Data Metrics
  - Population of city
  - Average household income of city
  - Real estate tax in city
  - Food tax rate in city
  - Crime rate in city
- Data Sources
  - Data USA website
  - Neighborhood Scout website
  - Official government websites for cities
  - Foursquare's API

Data Collected

- Unstructured data from data sources were consolidated into CSV file of raw data for each city.

City	Latitude	Longitude	Population	Avg_Household_Income	Real_Estate_Tax	Food_Tax	Crime_Rate
Harrisonburg	38.4496	-78.8689	53064	$43,009.00	$0.86	7.00%	19.12
Elkton	38.4079	-78.6236	2795	$52,808.00	$0.11	7.00%	10.76
Broadway	38.6132	-78.7989	3793	$44,852.00	$0.07	4.00%	2.54
Dayton	38.4138	-78.9389	1622	$52,664.00	$0.08	5.00%	5.54
Massanutten	38.4096	-78.7378	2273	$76,473.00	$0.74	4.00%	7.79
Bridgewater	38.3821	-78.9767	5930	$58,625.00	$0.75	6.00%	4.57
McGaheysville	38.3711	-78.7326	2147	$55,271.00	$0.74	4.00%	7.79
Timberville	38.6390	-78.7739	2592	$47,132.00	$0.11	4.00%	9.02
Mount Crawford	38.3571	-78.9409	403	$68,125.00	$0.07	4.00%	20.30
Linville	38.5204	-78.8375	938	$40,530.00	$0.74	4.00%	14.10

Common Venues of Cities

- From Foursquare's API, the three most common venues per city were extracted.
- Many of these cities focus on food services and restaurants.

City	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
Bridgewater	Fast Food Restaurant	Convenience Store	Ice Cream Shop
Broadway	Farmers Market	Café	Wine Shop
Dayton	American Restaurant	Art Gallery	Café
Elkton	Gift Shop	Pharmacy	Food
Harrisonburg	Bar	American Restaurant	Pizza Place
Linville	Home Service	Wine Shop	Café
Massanutten	American Restaurant	Art Gallery	Convenience Store
McGaheysville	Gun Range	Discount Store	Sandwich Place
Mount Crawford	Bakery	Wine Shop	Café
Timberville	American Restaurant	Pizza Place	Gas Station

Ranking City Metrics

- Ranked city metrics based on ideal rates:
  - Desired higher population = more potential customers
  - Desired higher average household income = customers may pay for higher-priced services
  - Desired lower real estate tax = less cost for office and land rent
  - Desired lower food tax rate = less cost on prepared food and beverages
  - Desired lower crime rate = customers will feel safer, reduced chances of attempted robbery to business

Ranked City Metrics

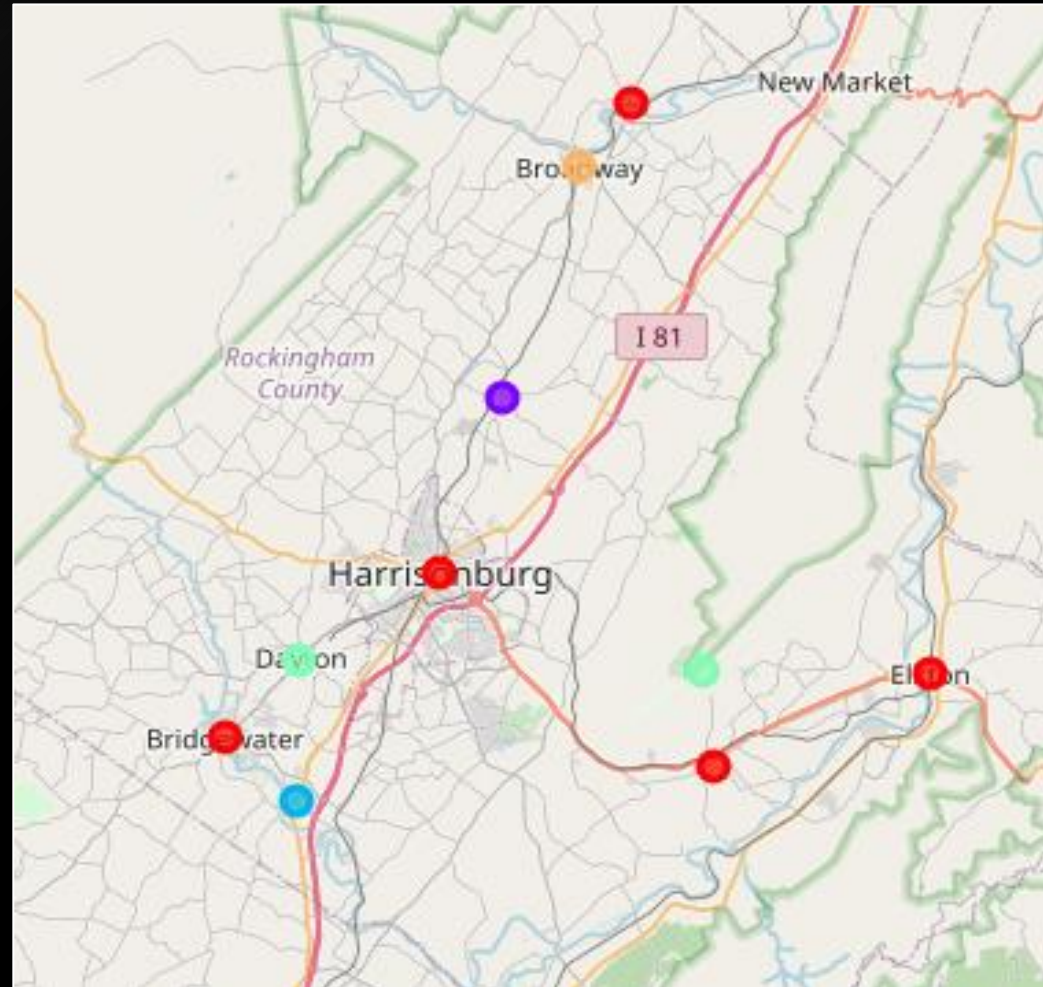| City	Latitude	Longitude	Population	Avg_Household_Income	Real_Estate_Tax	Food_Tax	Crime_Rate
Harrisonburg	38.4496	-78.8689	10	2	0	1	1
Elkton	38.4079	-78.6236	7	6	6	1	3
Broadway	38.6132	-78.7989	8	3	9	7	9
Dayton	38.4138	-78.9389	3	5	7	3	7
Massanutten	38.4096	-78.7378	5	10	3	7	6
Bridgewater	38.3821	-78.9767	9	8	1	2	8
McGaheysville	38.3711	-78.7326	4	7	3	7	6
Timberville	38.6390	-78.7739	6	4	6	7	4
Mount Crawford	38.3571	-78.9409	1	9	9	7	0
Linville	38.5204	-78.8375	2	1	3	7	2

Correlation of Ranked City Metrics

- No strong positive or negative correlations between city metrics.
- No advantage for cities with one high-scoring metric.
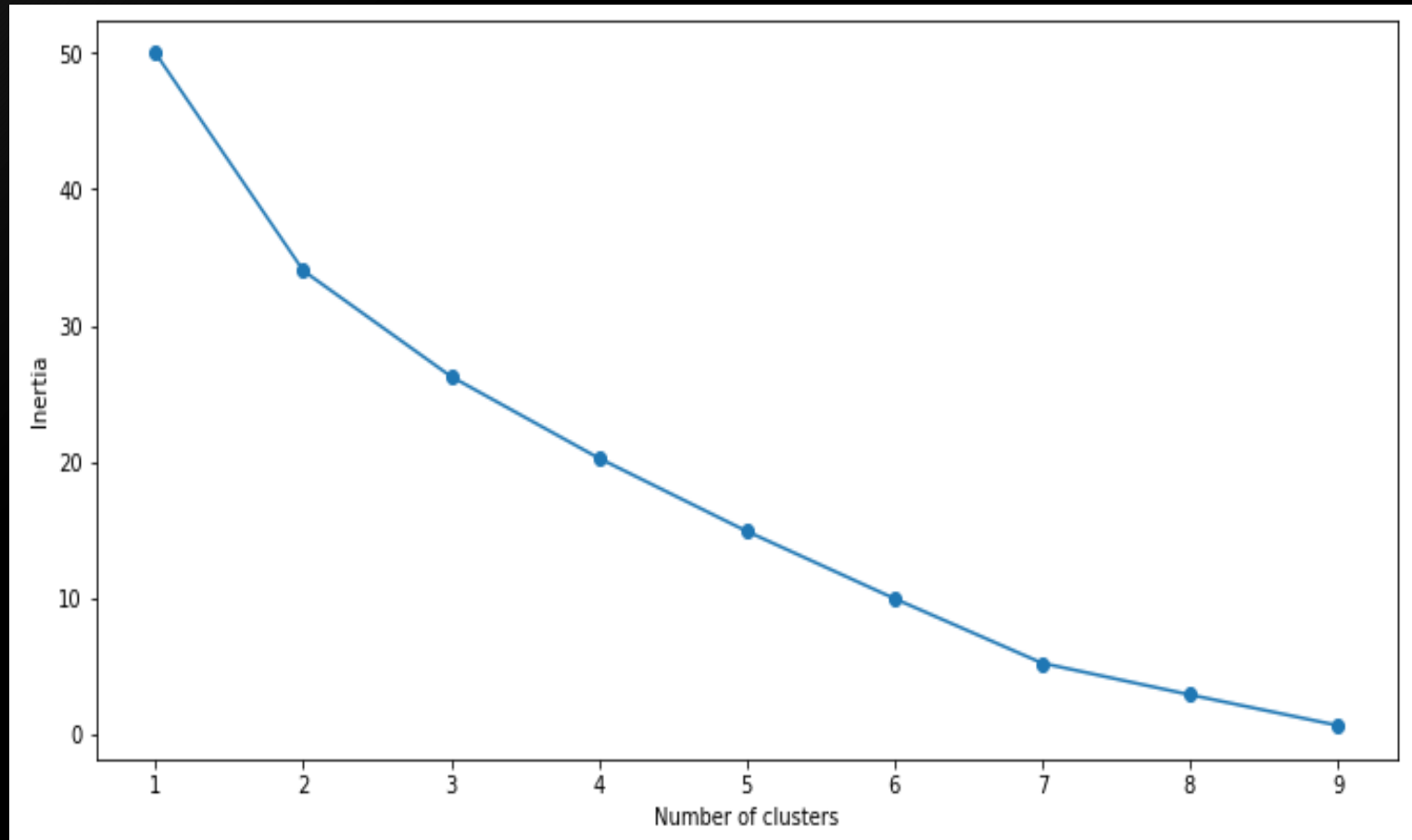- All cities are on the same playing field.

Clustering of Cities with Alike Venues

- 5 clusters of cities with alike common venues:
  - 1 cluster contains 5 cities
  - 1 cluster contains 2 cities
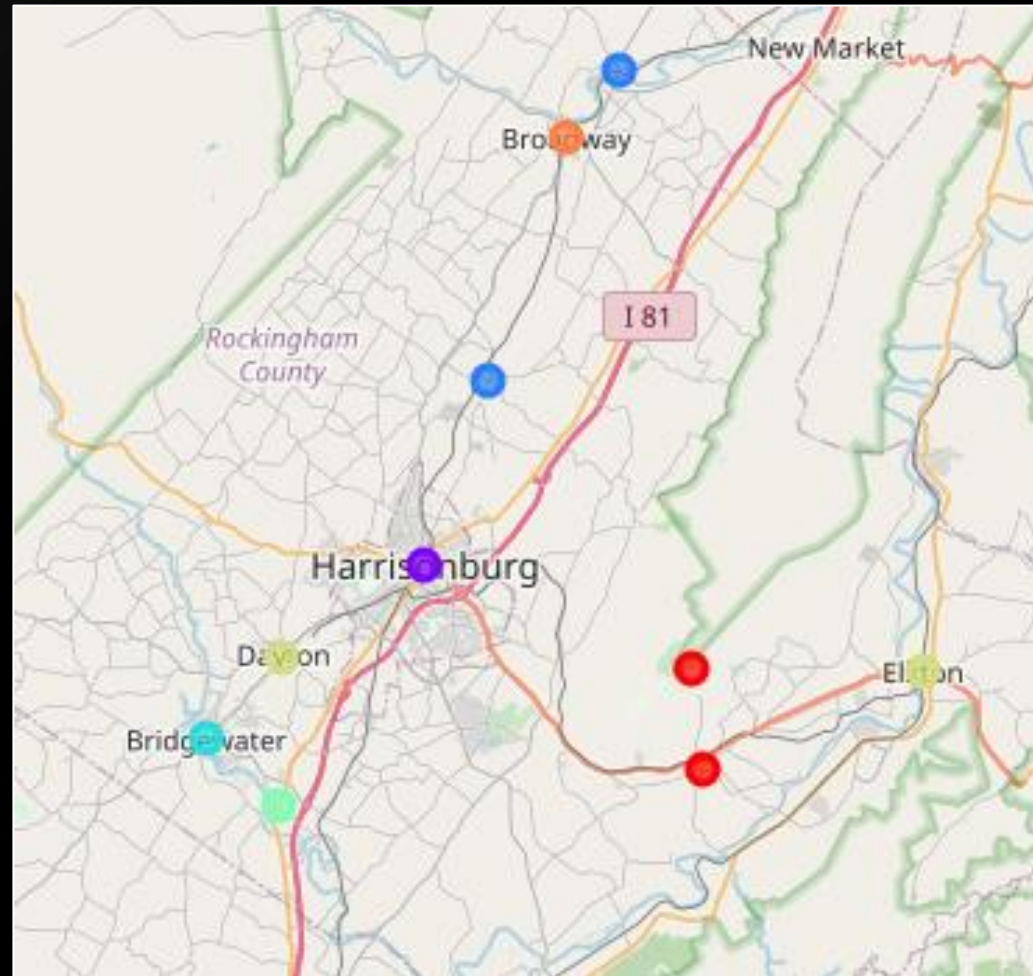 - 3 remaining clusters have 1 city each

Clustering of Cities with Alike Ranked Metrics

- Find appropriate number of clusters for cities with alike ranks by utilizing the elbow method.

- Elbow's sharpest point is at 7 clusters.

Clustering of Cities with Alike Ranked Metrics

- 7 clusters of cities with alike ranked metrics:
  - 3 clusters contain 2 cities each
  - 4 remaining clusters contain 1 city each

Sum Ranked Metrics

City	Latitude	Longitude	Population	Avg_Household_Income	Real_Estate_Tax	Food_Tax	Crime_Rate	Cluster Labels	Sum
Broadway	38.6132	-78.7989	8	3	9	7	9	6	36
Massanutten	38.4096	-78.7378	5	10	3	7	6	0	31
Bridgewater	38.3821	-78.9767	9	8	1	2	8	3	28
McGaheysville	38.3711	-78.7326	4	7	3	7	6	0	27
Timberville	38.6390	-78.7739	6	4	6	7	4	2	27
Mount Crawford	38.3571	-78.9409	1	9	9	7	0	4	26
Dayton	38.4138	-78.9389	3	5	7	3	7	5	25
Elkton	38.4079	-78.6236	7	6	6	1	3	5	23
Linville	38.5204	-78.8375	2	1	3	7	2	2	15
Harrisonburg	38.4496	-78.8689	10	2	0	1	1	1	14

- Broadway has the highest total sum of ranked city metrics.

Recommendations | Conclusions

- New Restaurant
  - Broadway
    - Will ensure the lowest cost to business owner with having the lowest base real estate tax, food tax, and lowest crime rate.
    - Most common venues for Broadway (farmer's market, cafes, wine shops) are great complimentary venues for a restaurant to coincide with.
    - 1st best ranked city overall in city metrics.
- New Building Contractor
  - McGaheysville
    - Most diverse sort of venues, ensuring a multitude of different services needed to build.
    - More diversity in venues needs more contractors to meet growth needs of businesses in city.
    - 4th best ranked city overall in city metrics.