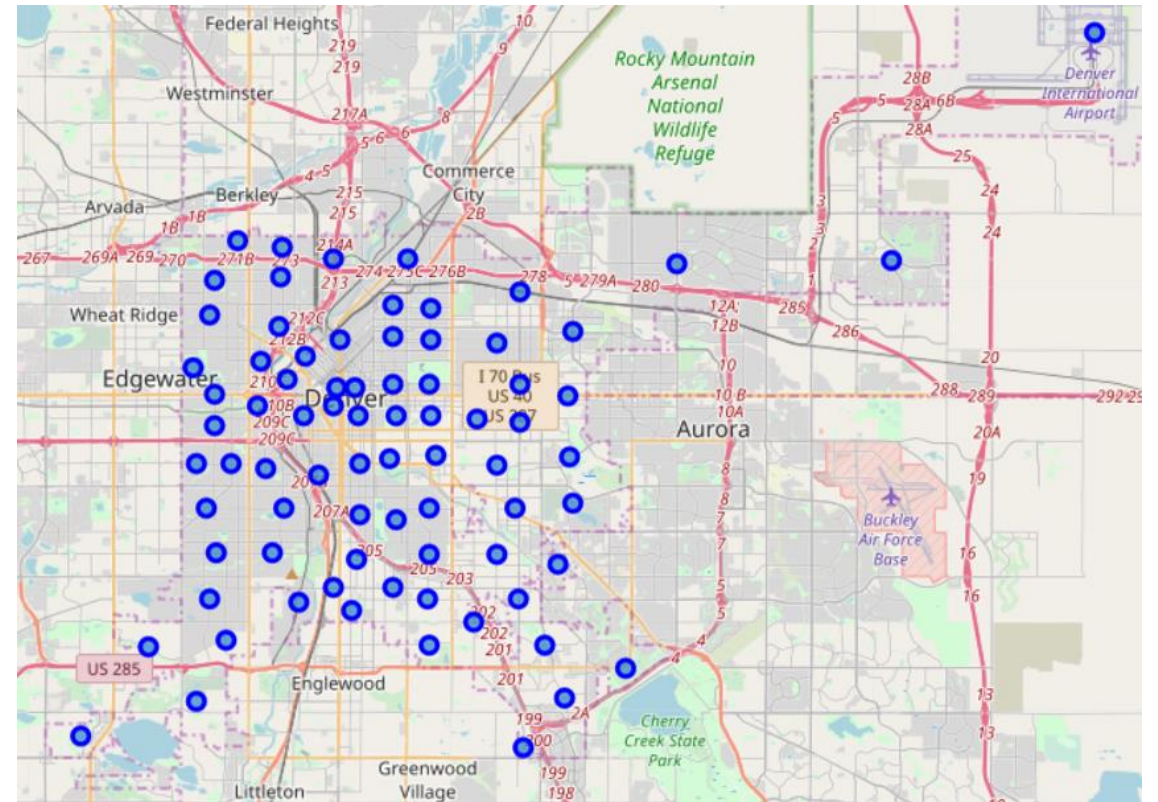# FINDING THE BEST NEIGHBORHOODS IN DENVER TO PLACE THE MOST "POPULAR" RESTAURANT TYPE

INTEREST

- Focusing on the city of Denver, Colorado

- Placing a new successful restaurant in a neighborhood depends on a few conditions (what kind of cuisine and its popularity, amount of competition, diversity of competition, and how busy a neighborhood is)

- By extracting these indexes through calculations, we can determine which neighborhoods would be the best candidate to open a restaurant of the most popular type of cuisine (popularity is determined by how many restaurants of a certain type there are in the city)

- This would provide actionable insights for stakeholders or aspiring business owners

- People might want to know information on restaurants of Denver to increase quality of life
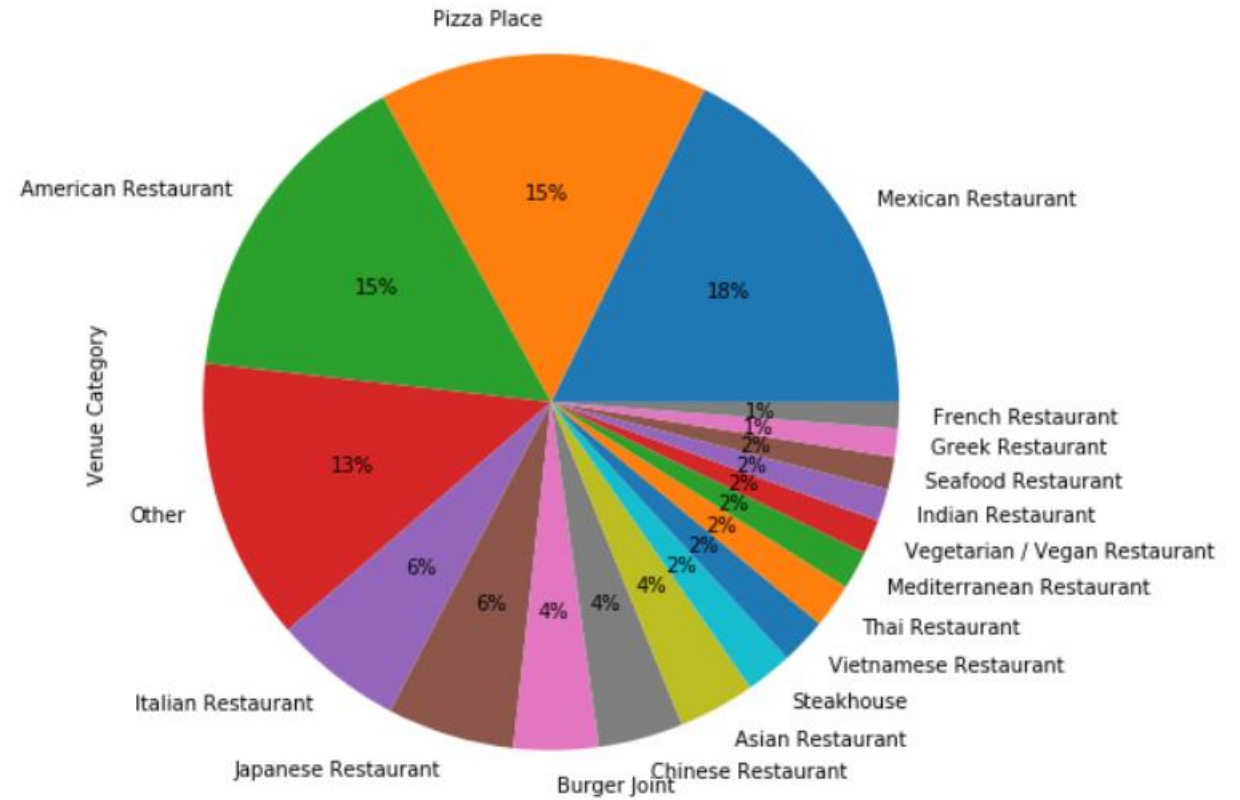
DATA SOURCES

- Used a csv file from the official City of Denver site to gather names and ID of official neighborhoods of Denver at:
https://www.denvergov.org/media/gis/DataCatalog/statistical_neighborhoods/csv/statistical_neighborhoods.csv

- Used google API to approximate latitudes and longitudes of the center of each official neighborhood

- Used FourSquare API to gather information on all venues within a 1200 meter radius from center of each neighborhood

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Number of Restaurants per Category
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Mexican Restaurant                189
Pizza Place                       163
American Restaurant               162
Other                             140
Italian Restaurant                 64
Japanese Restaurant                63
Burger Joint                       42
Chinese Restaurant                 42
Asian Restaurant                   38
Steakhouse                         23
Vietnamese Restaurant              23
Thai Restaurant                    22
Mediterranean Restaurant           19
Vegetarian / Vegan Restaurant      17
Indian Restaurant                  16
Seafood Restaurant                 16
Greek Restaurant                   14
French Restaurant                  13
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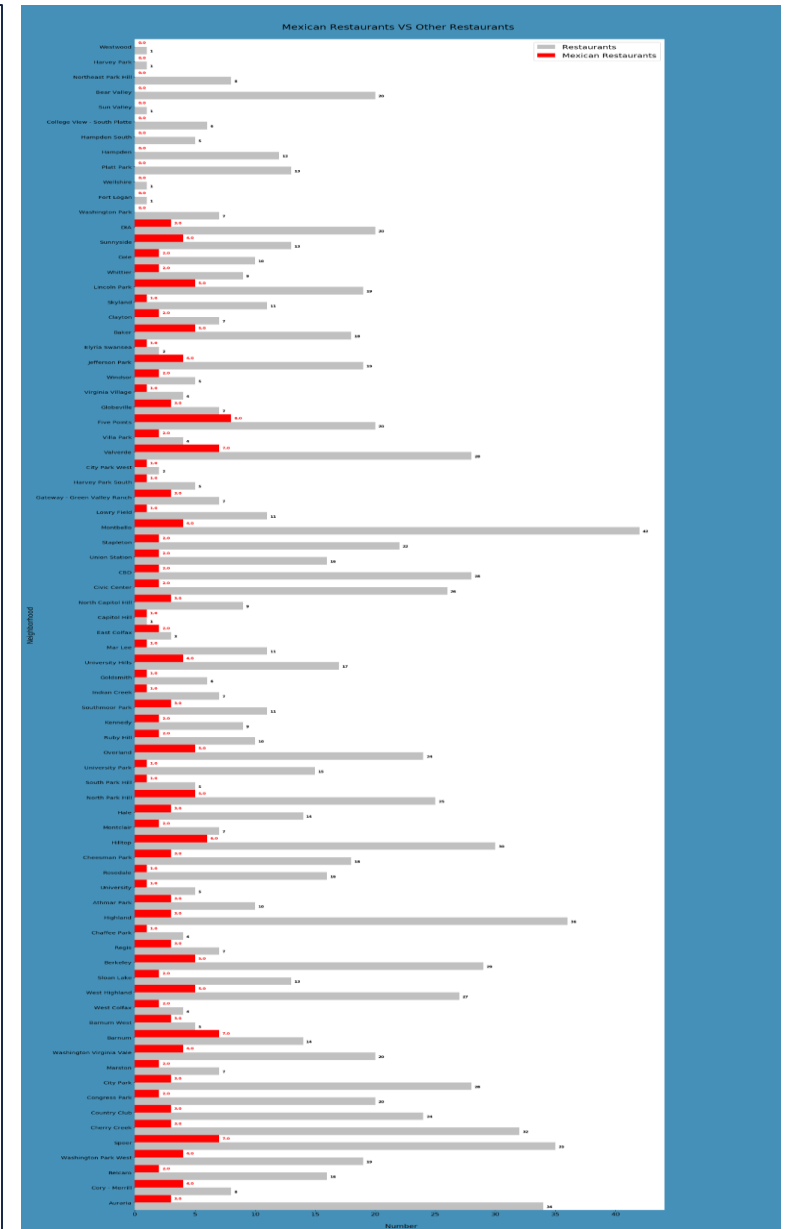

Restaurant Types by Proportion

- Mexican restaurants make up 18% of all restaurant types in Denver (189) and are the most "popular" type
- "Other" category consists of all restaurant types with 9 or less restaurants of that type (140)
- Pizza Places and American restaurants were second (163) and third (162)

- 12 of 78 neighborhoods had no Mexican restaurants

- Five Points has the highest amount of Mexican restaurants (8), but Barnum has the highest frequency ratio (0.5 or 7/14 restaurants) for competitive restaurants (10+ in neighborhood)

- Amount of restaurants in neighborhood does not determine restaurant type diversity

- Restaurant type diversity does not determine amount of restaurants in a neighborhood either

- These specifications have underlying reasons that cannot be determined by the values produced by the project

CONDITIONS FOR CANDIDATE NEIGHBORHOODS
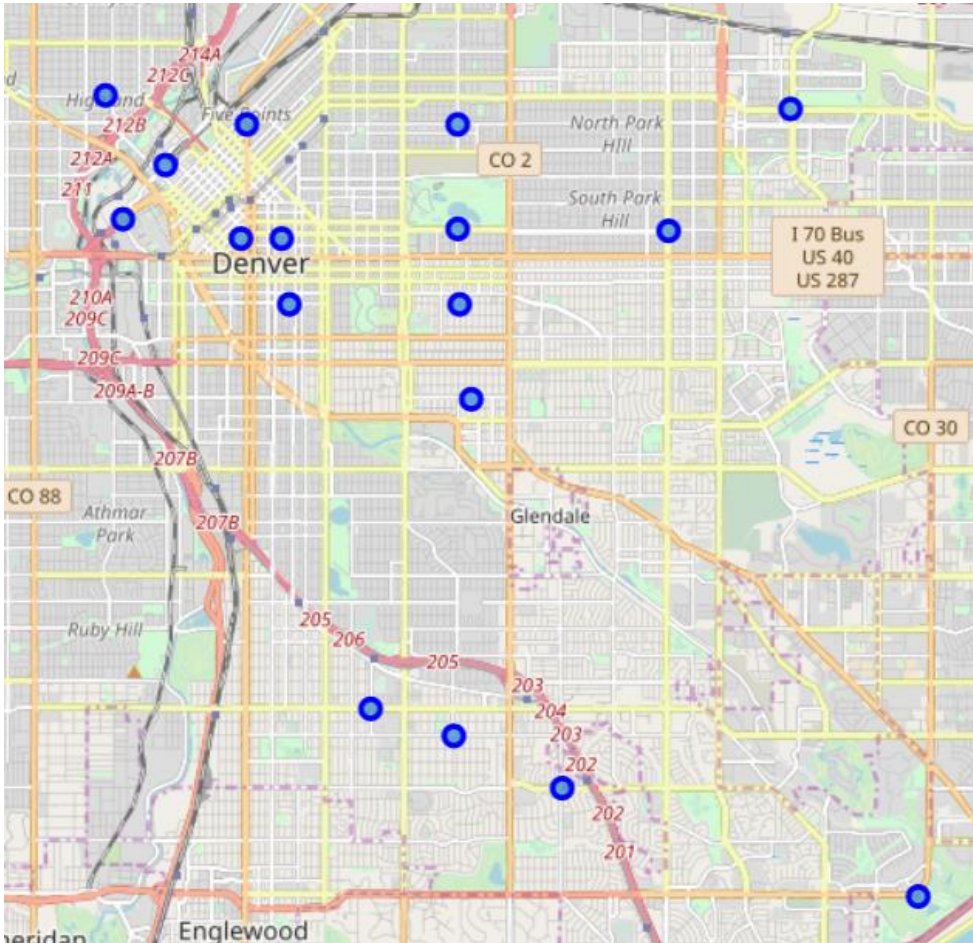
A candidate neighborhood:
- Cannot have the most common type of restaurant in it be the most popular type
- Must have a frequency ratio of the most popular type lower than 12.5
- Must have more than 10 restaurants in a 1200 meter radius from its center
- Should have adequate restaurant type diversity to ensure a viable integration

RESULTING DATAFRAME

	Neighborhood	Latitude	Longitude	Number of Mexican Restaurants	Number of Restaurants	Number of Categories	1st Most Common Restaurant	Mexican Restaurant Frequency
0	Auraria	39.7451	-105.0095	3.0	34	17	American Restaurant	0.088235
5	Cherry Creek	39.7207	-104.9476	3.0	32	15	American Restaurant	0.093750
7	Congress Park	39.7336	-104.9496	2.0	20	12	Italian Restaurant	0.100000
8	City Park	39.7438	-104.9501	3.0	28	14	American Restaurant	0.107143
19	Highland	39.7620	-105.0125	3.0	36	16	American Restaurant	0.083333
22	Rosedale	39.6785	-104.9653	1.0	16	11	Pizza Place	0.062500
29	University Park	39.7437	-104.9125	1.0	15	10	Pizza Place	0.066667
37	Mar Lee	39.6675	-104.9316	1.0	11	9	Japanese Restaurant	0.090909
41	Civic Center	39.7337	-104.9799	2.0	26	13	American Restaurant	0.076923
42	CBD	39.7427	-104.9812	2.0	28	13	American Restaurant	0.071429
44	Stapleton	39.7427	-104.9885	2.0	22	11	American Restaurant	0.090909
45	Montbello	39.7527	-105.0017	4.0	42	19	American Restaurant	0.095238
46	Lowry Field	39.7603	-104.8908	1.0	11	9	Pizza Place	0.090909
60	Skyland	39.7581	-104.9499	1.0	11	9	American Restaurant	0.090909
69	Platt Park	39.6748	-104.9508	0.0	13	10	Japanese Restaurant	0.000000
70	Hampden	39.6528	-104.8684	0.0	12	8	American Restaurant	0.000000
74	Bear Valley	39.7581	-104.9874	0.0	20	12	Other	0.000000

CONCENTRATIONS OF NEIGHBORHOODS IN BUSINESS DISTRICT

- 17 candidate neighborhoods were found based on the conditions

- Majority of candidate neighborhoods were concentrated around Capitol Hill, the business district of Denver

- More than half are situated in Central Denver and span towards East Denver

- Four candidate neighborhoods were found in South/Southeast Denver

CONCLUSION & FUTURE DISCUSSIONS

- Model is based on venues collected by FourSquare within a 1200 meter radius from center of each neighborhood
- Popularity of restaurant types was determined by total number of restaurants of a certain type collected by FourSquare
- Frequency was determined the number of restaurants of a certain type in a neighborhood divided by the total number of restaurants in that neighborhood
- Model accurately functions to determine final dataframe of candidate neighborhoods for the instance of venues collected by FourSquare on February 12th, 2020
- Model could be restructured in the future to automatically determine final dataframe and has room for improvement
- Improvement could include calculating the final dataframe automatically based on the results from running FourSquare API rather than having to manually observe results to determine which type is most popular
- Could also adjust viability of candidate neighborhoods with further knowledge of socio-economic dynamics of a neighborhood