Entertainment and Safety in Denver Neighborhoods

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Finding Spaces free from disruption

This analysis will be valuable for many people:
- minorities are in need of spaces that statistically show there is freedom to enjoy entertainment,
- many parents would prefer to reduce the chance their children witness crime or police in action
- business people seek to control the environment in which they conduct business.

These data sources will be needed to extract/generate the required information:

- neighborhood names will be obtained from **wiki**
- number of venues and their type and location in every neighborhood will be obtained using **Foursquare API**
- Police data from **denvergov.org** will be transformed into a dataframe containing type of activity, and location

The cleaned data will have neighborhood name location number of venues and police encounters.

Neighborhood Candidates

- We obtained neighborhood names from **wikipedia** and cleaned it
- We then used geolocator to obtain locations of those neighborhoods

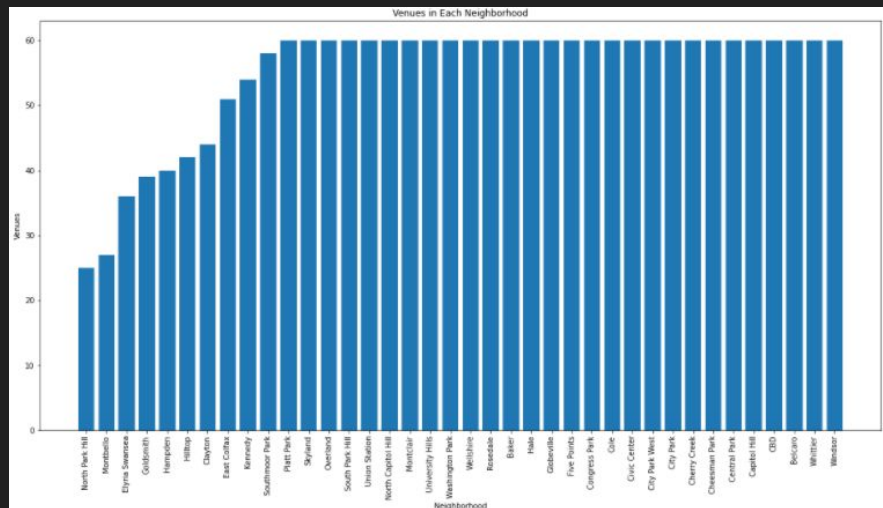|	NBHD_NAME	NEIGHBORHOOD	locationss	latitude	Longitude	city_coord
49	Union Station	Union Station, Denver, Co	(Union Station, 1701, Wynkoop Street, 16th Str...	39.753630	-105.000748	(39.75363, -105.0007481)
64	Windsor	Windsor, Denver, Co	(The Windsor, 1777, Larimer Street, Central Bu...	39.750865	-104.995794	(39.75086545, -104.99579430063064)
33	Overland	Overland, Denver, Co	(Overland Lake, Denver, Denver County, Colorad...	39.690508	-104.995185	(39.6905077, -104.99518474141124)

Crime data

- We used **Web Scraping** to obtain crime data from **denvergov.org**
- We used **pandas** to group frequency of **Police Encounters** by neighborhood

Note: The number of police encounters is designated by the term, "offense_code" in some Visualizations.
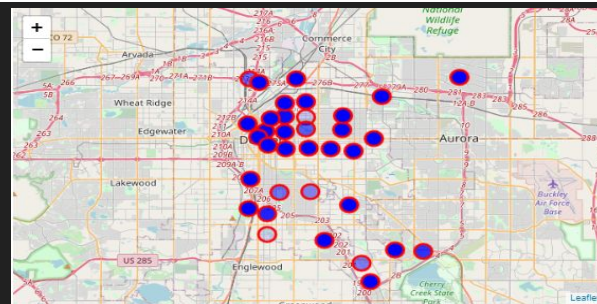
	OFFENSE_CODE	NEIGHBORHOOD	locationss	latitude	Longitude
Rosedale	1099.0	Rosedale, Denver, Co	(Rosedale, Denver, Denver County, Colorado, Un...	39.671901	-104.980499
Skyland	1291.0	Skyland, Denver, Co	(Skyland, Denver, Denver County, Colorado, Uni...	39.755713	-104.950224
Belcaro	1460.0	Belcaro, Denver, Co	(East Belcaro Drive, Denver, Denver County, Co...	39.702314	-104.947240
Southmoor Park	1725.0	Southmoor Park, Denver, Co	(Southmoor Park, Denver, Denver County, Colora...	39.651121	-104.907154
Washington Park	1736.0	Washington Park, Denver, Co	(Washington Park, Denver, Denver County, Color...	39.702081	-104.971034

Foursquare API

Now that we have our Neighborhood and Encounter data, we will use Foursquare API to get number of venues in each neighborhood. We will also group them to ensure there are 10 types of venues in each neighborhood and abundance.
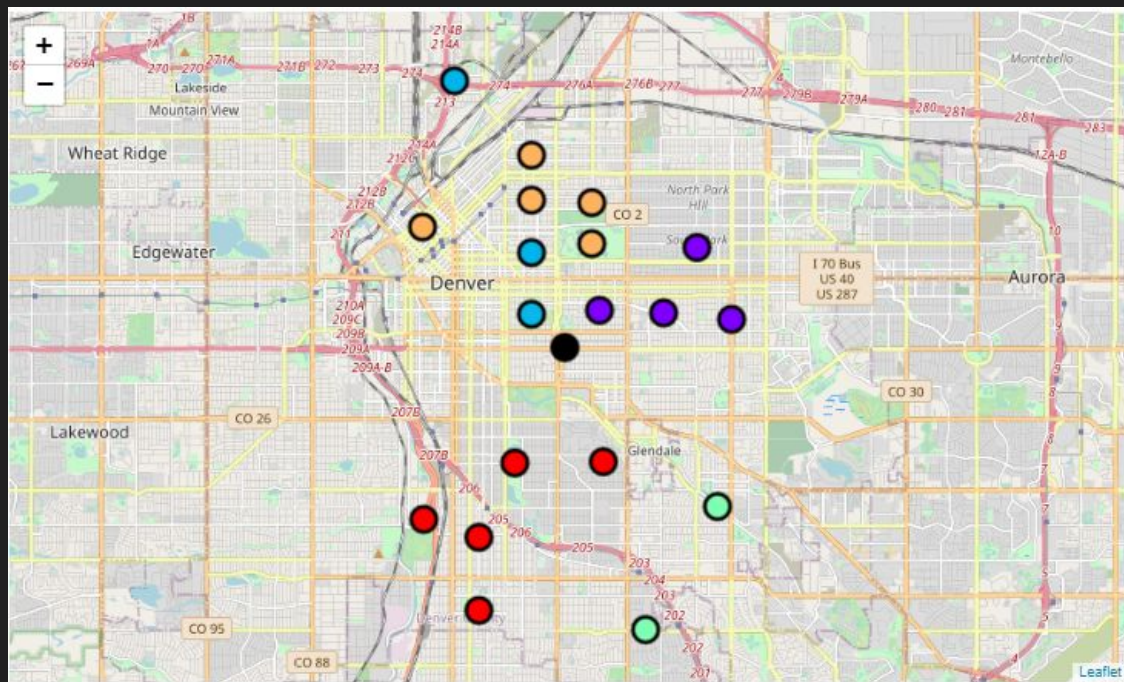

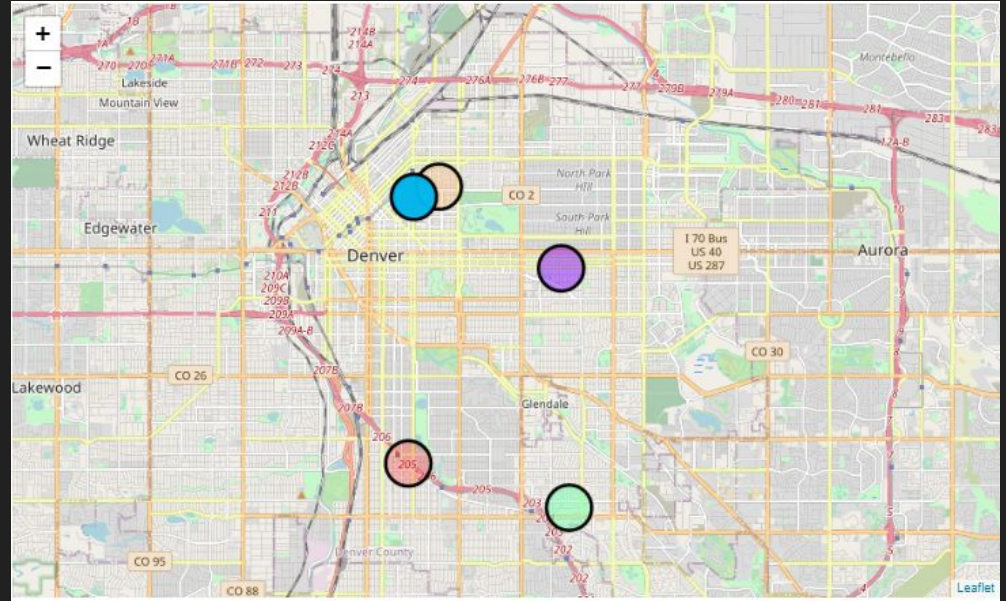| Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Baker	Bar	Marijuana Dispensary	American Restaurant	Mexican Restaurant	Breakfast Spot	Art Gallery	Salon / Barbershop	Clothing Store	Thrift / Vintage Store	Coffee Shop
Belcaro	Coffee Shop	American Restaurant	Sandwich Place	Ice Cream Shop	Bookstore	Italian Restaurant	Marijuana Dispensary	Fast Food Restaurant	Mexican Restaurant	Gym / Fitness Center
CBD	Brewery	Bar	Coffee Shop	New American Restaurant	Beer Garden	Seafood Restaurant	BBQ Joint	Burger Joint	Gastropub	Marijuana Dispensary

Modeling Using *k*-means for Neighborhoods

After cleaning we ran k-means to group neighborhoods into 5 clusters.

	NEIGHBORHOOD	OFFENSE_CODE	latitude	Longitude	Labels
14	Overland	3379.0	39.690508	-104.995185	4
15	Cherry Creek	3648.0	39.693088	-104.916852	2
16	Globeville	4434.0	39.780732	-104.986972	1
17	City Park West	4944.0	39.745376	-104.966577	1
18	Cheesman Park	5244.0	39.732814	-104.966455	1

Results

Labels	OFFENSE_CODE	latitude	Longitude
0	2246.0	39.755182	-104.965884
1	1976.2	39.690717	-104.974892
2	2787.5	39.736282	-104.928622
3	4874.0	39.752974	-104.973335
4	3218.5	39.680431	-104.926443

We can see the proximity of cluster three and zero. We took a look at these groups and determined that the police encounters were not identical enough to make one cluster.

We also took into account Data in the top quartile that we removed early. Data that showed an abnormally large number of police encounters happened downtown and therefore we removed these clusters because of their proximity to downtown.
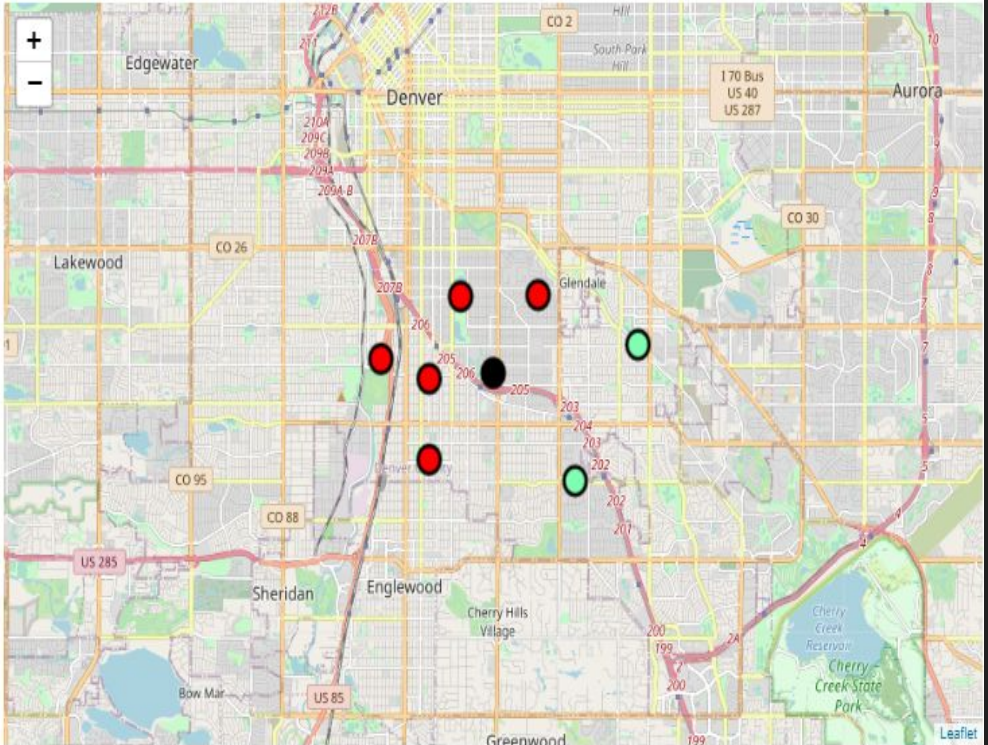
Inspecting the map we decided to remove the purple cluster because of its lack of access. Also you would have to travel through a high risk area. With that we are left with two clusters.

Skyland		1291.0	39.755713	-104.950224
City Park		1816.0	39.747340	-104.950285
Whittier		2306.0	39.756363	-104.966558
Windsor		3067.0	39.750865	-104.995794
Cole		2750.0	39.765630	-104.966557

City Park West		4944.0	39.745376	-104.966577
Globeville		4434.0	39.780732	-104.986972
Cheesman Park		5244.0	39.732814	-104.966455

Final Neighborhoods

NEIGHBORHOOD	OFFENSE CODE	latitude	Longitude	Labels
University Hills	2789.0	39.667773	-104.936034	2
Cherry Creek	3648.0	39.693088	-104.916852	2
Overland	3379.0	39.690508	-104.995185	4
Platt Park	2207.0	39.686780	-104.980501	4
Washington Park	1736.0	39.702081	-104.971034	4
Belcaro	1460.0	39.702314	-104.947240	4
Rosedale	1099.0	39.671901	-104.980499	4

Discussion

The data analysis indicates the South Denver neighborhoods are the most desired location for safety. Rosedale is an exceptional choice for an outing, with the lowest police encounters at 1100. Rosdale also has a abundance of restaurants choices and plenty of coffeeshops to start your day off right. Another top choice is Washington Park. Washington Park is specifically a strong candidate for somewhere to live, as it has more grocery stores and gyms. Downtown Denver neighborhoods have an unpredictable environment for entertainment or business. Take the neighborhood of Five Points for example, where per capita every person in Five Points has 2 police encounters every month. While Rose Dale has .4 police encounters per resident each month.

Conclusion

- Denver has wide range of venue types spread throughout each neighborhood
- choosing a particular neighborhood to spend leisure time or the conducting of business depends on your preferences
- It is clear that downtown Denver is a hotbed of police activity.
- south Denver has the variety and environment most suitable to meeting our goal of limited interactions with law enforcement.