Denver Health Medical Center New Candidates
Places to Live
Things to Do Near Work

Report by: Melanie Johnson
Date: January 25, 2020

Introduction

Denver Health Medical Center recruits and hires health professionals from within and outside of Colorado. When recruiters contact potential applicants and/or offer candidates' positions within their organization, they are frequently asked about the best housing areas based on low crime rates. In addition, they are asked about popular restaurants and entertainment in the area surrounding the Denver Health Medical Center.

This type of information is useful to businesses and organizations who recruit candidates from outside of the Denver area and can also be used by hotels & conference centers to give their guests a list of the popular venues nearby.

Data Acquisition

The Denver crime data csv report was obtained for free from: https://www.denvergov.org/opendata/dataset/city-and-county-of-denver-crime and uploaded into the IBM Watson Studio. The crime data lists types of offenses reported as well as neighborhood location.

In addition to the crime data, the venue selection was obtained from Foursquare.com which incorporates API technology to search for venues nearby the Denver Health Medical Center address and list the type of business as well as the latitude and longitude coordinates for ease of searching for the location on search engines such as Google Maps.

Methodology

The csv dataset obtained from the Denver.org website includes data from 2015-2019 and contained 460,032 lines of data with 267 types of criminal offenses. This is a large amount of data, so the .csv data was filtered to only show 2019 crimes. In addition, many of the offenses were combined by like offenses and then further filtered to remove many fields, such as counterfeiting, forgery, and traffic incidents, while these are interesting, they are not as relevant to finding neighborhood housing options. The remaining criminal offense categories were reduced from 267 to the 20.

Once the dataset was uploaded to IBM Watson Studio, the data was then cleaned. First, the number of columns were reduced from 19 to 4. The remaining column headings were renamed

to Crime, Longitude, Latitude, and Neighborhood. The resulting dataset was reduced to 159,037 lines after dropping any rows with NaN values.

The data was then filtered to obtain the number of crimes per neighborhood and then further filtered to show the top and bottom five neighborhoods with the most and least reported crimes, respectively. In addition, the data was filtered to obtain the count of crimes per each offense type and then graphed on a bar chart for better visualization.

Using Folium, an interactive map of the Denver area is called up that allows user to zoom in and out and move the map around. Before the crime data was transposed to the map in an easy to view format, the crime data was reduced to 1,000 random crimes. Once mapped, the crime points were cluttered and difficult to get a real picture of the crime data in proportion to the Denver neighborhoods, so the 1,000 random crimes were grouped by clusters and shown by group markers. When zoomed in on the map, the group markers open to reveal the crime points and clicking on these points shows the crime type for that location.

Next, the five neighborhoods with the lowest crime rates were mapped and also shown using marker grouping.
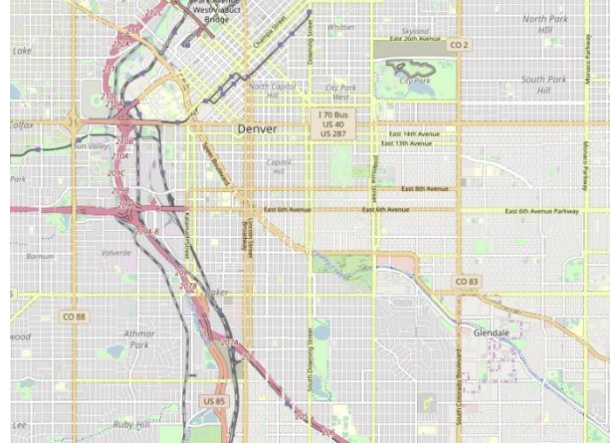
Next, the appropriate Python libraries were installed or loaded into the Jupyter notebook so enable the use of the Foursquare API technology to locate the venues around the Denver Health Medical Center using the address' geographical coordinates.

The next data group collected was obtained from Foursquare.com via Python and programmed to find 100 venues within a 1,000-meter radius around the Denver Health Medical Center address. The results were obtained in a json file format and then restructured into a usable list showing the Name of the venue, what type of business it is, and the latitude and longitude so that the location can easily be searched using platforms such as Google Maps.

Results

Denver is a large city with most of its population living near the city center in apartment buildings that are close to the business hub of the city. After data manipulation, there are 78 neighborhoods within the Denver City limits that have crimes reported to the Denver police department.
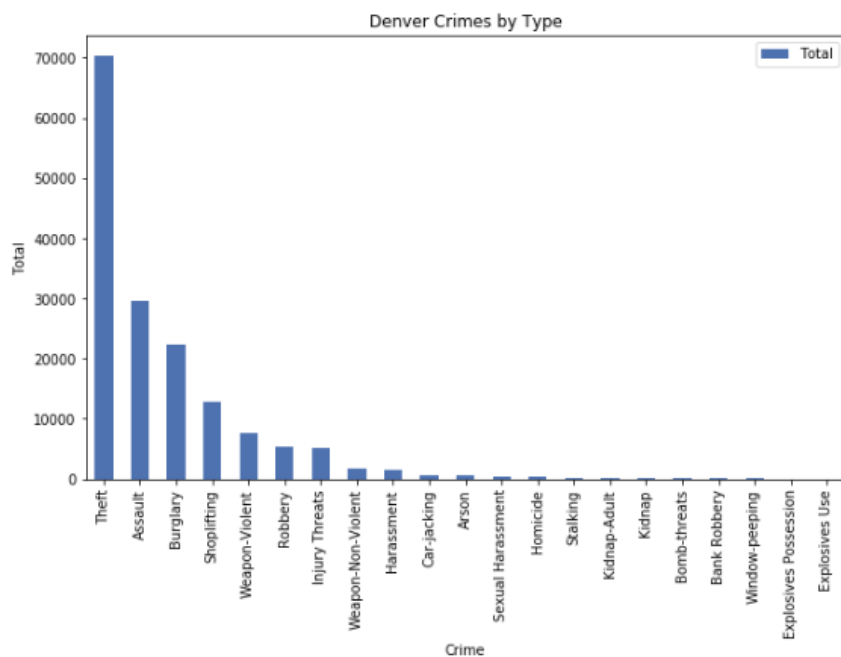

In 2019, 460,032 various crimes were reported and documented by the Denver police department. Of these crimes, this report will only cover the types of crimes most people look at when searching for housing. After data manipulation, the total number of crimes relevant to this report was reduced to 159,037 crimes.

The 2019 crime data shown on the left indicates that the most prevalent crimes in Denver are theft, assault, burglary, shoplifting, the violent use 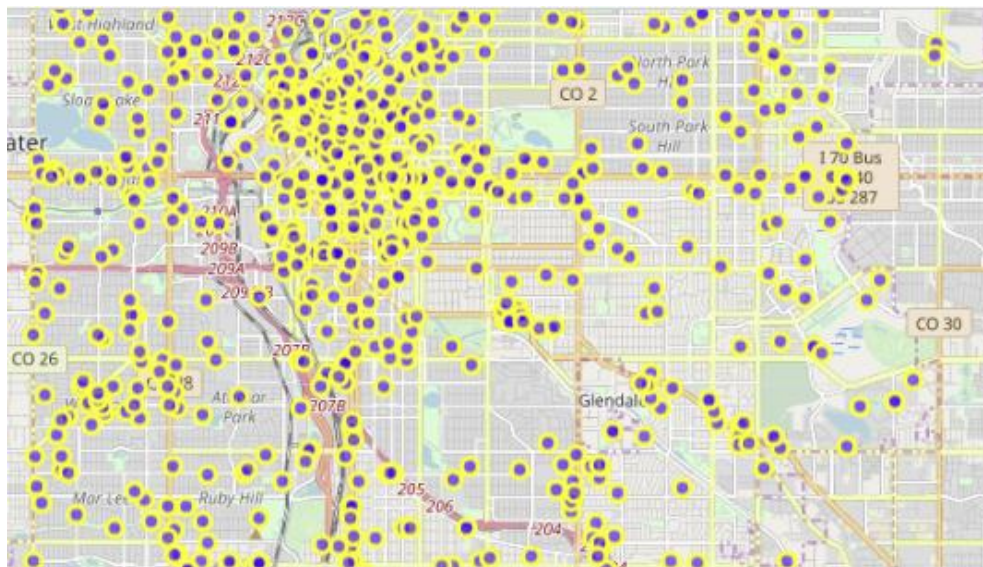of weapons, robbery, and injury threats. Thankfully homicide did not make the list of top crimes, but 272 homicide deaths seems a bit disturbing nonetheless. The bar chart below offers an easy visualization of the total crimes by the type of crime.

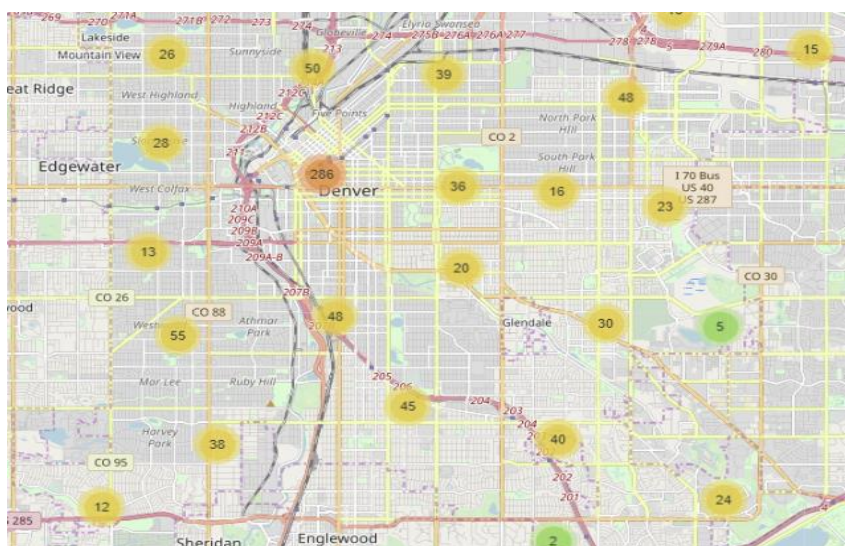|	Total
Theft	70288
Assault	29456
Burglary	22386
Shoplifting	12845
Weapon-Violent	7540
Robbery	5272
Injury Threats	5018
Weapon-Non-Violent	1841
Harassment	1572
Car-jacking	621
Arson	545
Sexual Harassment	341
Homicide	272
Stalking	237
Kidnap-Adult	199
Kidnap	165
Bomb-threats	156
Bank Robbery	135
Window-peeping	98
Explosives Possession	35
Explosives Use	15

Another surprise, there were more car-jackings than expected, so it's advised to keep the house and car doors locked while in occupancy!

In terms of pinning the crimes on the Denver map, the presentation would be rendered meaningless if all crime data points were pinned. Therefore, a random sample of 1,000 crimes from all neighborhoods was obtained. As seen below, it is difficult to visualize the area, because the crimes cover the majority of Denver. However, of important note, the majority of the crime is centered in the more congested areas of the city, so Denver Health Medical Center recommends that their candidates live in the suburbs and commute using the robust light-rail and bus system, especially given the fact that Denver Health Medical Center is just across the street from a light rail station!

While these maps are interactive if used on a website, this map is not visually appealing. Therefore, the crimes were grouped in clusters and shown on the new map below. It is again obvious that the majority

of crimes are located around the city center.

Discussion

Top Five Neighborhoods with the Lowest Crime Rates

Now we will focus on the top five neighborhoods with the lowest crime totals so that the Denver Health Medical Center can show their candidates moving into the Denver area the best neighborhoods with the lowest crime rates.

Skyland Neighborhood
Skyland is the first neighborhood called out to be mapped. This neighborhood's crime count was the highest of the five neighborhoods at 590 reported crimes in 2019.

Neighborhood	Crime	
skyland	Arson	4
	Assault	93
	Burglary	129
	Car-jacking	4
	Harassment	5
	Homicide	4
	Injury Threats	16
	Kidnap-Adult	1
	Robbery	24
	Sexual Harassment	2
	Shoplifting	1
	Theft	223
	Weapon-Non-Violent	4
	Weapon-Violent	80

The majority of crimes in the Skyland neighborhood are theft and burglary with assaults coming in as the third highest. In forth place is violent crimes with weapons.

While this neighborhood has a relatively low crime rate, the number of assaults and violent weapon crimes do not make this an ideal recommendation.

However, when zoomed out a little more, the neighborhood is close to the beautiful Denver Zoo, a golf course, and the city park.

Rosedale Neighborhood

Rosedale is the second highest crime rate of the five neighborhoods with 562 crimes reported in 2019.

The top crimes reported in Rosedale are theft, burglary, and assault. There are fewer violent weapons crimes, so

Neighborhood	Crime	
rosedale	Assault	82
	Bomb-threats	1
	Burglary	156
	Car-jacking	1
	Harassment	3
	Injury Threats	13
	Robbery	15
	Sexual Harassment	3
	Shoplifting	5
	Theft	278
	Weapon-Non-Violent	2
	Weapon-Violent	3

this neighborhood looks better than Skyland in that aspect. Roseland surrounds a golf course and park with a recreational facility.

Country-Club Neighborhood

The Country-Club neighborhood has the third highest crime rate of the five selected neighborhoods with 407 crimes reported in 2019. The top crimes for reported in the Country-Club neighborhood are again theft, burglary, and assault. However, as you can see the assaults are significantly at 13 compared with 82 in Rosedale. The Country-Club has a large park with a golf course and Cherry Creek running through the park.

Neighborhood	Crime	
country_club	Assault	13
	Burglary	150
	Car-jacking	1
	Harassment	1
	Injury Threats	9
	Robbery	7
	Shoplifting	12
	Stalking	2
	Theft	208
	Weapon-Non-Violent	1
	Weapon-Violent	3

Wellshire Neighborhood

The Wellshire Neighborhood has the second least crime reported in Denver with 255 reported in 2019. The crime rate is roughly 60% lower than the Country-Club neighborhood!

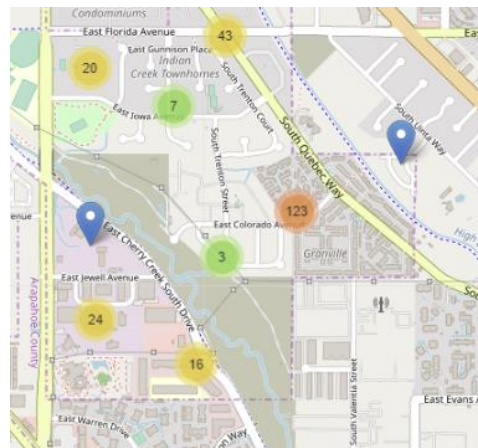| Neighborhood	Crime	
wellshire	Assault	17
	Burglary	72
	Car-jacking	1
	Harassment	3
	Injury Threats	5
	Robbery	1
	Sexual Harassment	1
	Shoplifting	1
	Stalking	1
	Theft	149
	Weapon-Violent	3
	Window-peeping	1

As with the other neighborhoods, Wellshire's crime tends toward theft and burglary with a slightly higher rate of assaults than the Country-Club neighborhood. This neighborhood has two golf courses close by. The commute is further to Denver Health Medical Center but the neighborhood is close to light rail stations.

Indian-Creek Neighborhood

The Indian-Creek Neighborhood has the lowest crime rate in Denver with 245 crimes reported in 2019. This is only 10 crimes less than Wellshire, so both neighborhoods are highly desirable locations.

Like the rest of the neighborhoods, the majority of crimes are theft, burglary and assault. It is unfortunate that the assault rates are higher in this neighborhood than Wellshire and Country-Club.

Neighborhood	Crime	
indian_creek	Assault	25
	Burglary	44
	Harassment	6
	Homicide	1
	Injury Threats	2
	Robbery	5
	Sexual Harassment	1
	Theft	155
	Weapon-Non-Violent	1
	Weapon-Violent	5

This neighborhood is close to the Cherry Creek Country Club and Golf Course as well as Cherry Creek State Park the has a lake, marina, swim beach, dog park, and a shooting range in addition to multiple bike and walking paths. While this neighborhood is the furthest from Denver Health, the light rail station is close by and easy to access.

Venues Close to the Denver Health Medical Center

The results of the Foursquare API venue search provided a list of venues which includes trails, exercise, restaurants, fast-food restaurants, stores, barbershops/salons, and even a couple of after-hours entertainment opportunities.

The River	Yoga Studio	39.735743	-104.992752
CorePower Yoga	Yoga Studio	39.720805	-104.987781
MAX's Wine Dive Denver	Wine Bar	39.727093	-104.984499
Cherry Creek Trail	Trail	39.728968	-104.989567
The Wizard's Chest	Toy / Game Store	39.723668	-104.987847
Su Teatro	Theater	39.727843	-104.998884
Bronzed Denver	Tanning Salon	39.736169	-104.992698
Tacos Tequila Whiskey	Taco Place	39.727476	-104.984587
Torchy's Tacos	Taco Place	39.733490	-104.987822
Red Ginger	Sushi Restaurant	39.725264	-104.986981
Stoney's Bar and Grill	Sports Bar	39.734274	-104.986280
Studio; A Collective Of Stylists	Spa	39.734519	-104.990445
The Station Hair Studio	Spa	39.734216	-104.992604
Eden Day Spa	Spa	39.733642	-104.988458
Illuzion Glass	Smoke Shop	39.720131	-104.987351
evo	Ski Shop	39.730269	-104.987025
ZEPS Epiq Sandwiches	Sandwich Place	39.735006	-104.987839
Jersey Mike's Subs	Sandwich Place	39.725090	-104.988101
Parsley	Sandwich Place	39.733958	-104.991829
City Bakery Cafe	Sandwich Place	39.727803	-104.985999
Proper Barbershop	Salon / Barbershop	39.729119	-104.984858
Namaste An Aveda Concept Salon	Salon / Barbershop	39.718802	-104.987671
Zandi K Denver Central	Salon / Barbershop	39.725550	-104.997440
Adorn Salon Denver	Salon / Barbershop	39.720191	-104.987518
Cap City Tavern	Pub	39.736288	-104.990525
Cosmo's Pizza	Pizza Place	39.725069	-104.983255
Pizzeria Locale	Pizza Place	39.725250	-104.987170
Cow Sculpture at Denver Art Museum	Outdoor Sculpture	39.735930	-104.988719
Noodles & Company	Noodle House	39.725376	-104.987020
The Church	Nightclub	39.735245	-104.985891

Conclusion

In conclusion, the report provides robust crime data for the city of Denver for 2019. The data and mapping provided the answers requested by the Denver Health Medical Center to recommend neighborhoods within Denver that have the lowest crime rates.

In addition, using Foursquare API technology a list of the 30 different businesses and parks closest to the Denver Health Medical Center along with their geographical coordinates for easy searching on mobile platforms such as Google Maps.

While this data was specifically prepared for the Denver Health Medical Center, the neighborhoods showing the least crime rates could be useful to real estate companies, schools, and other businesses assisting with employee relocation.

The Foursquare API data can be easily used by any business by inputting their address.