Best Neighborhood for Ice cream Lovers

Search for a place in the greater Seattle area that has ice cream shops

Presentation Outline

Introduction 01

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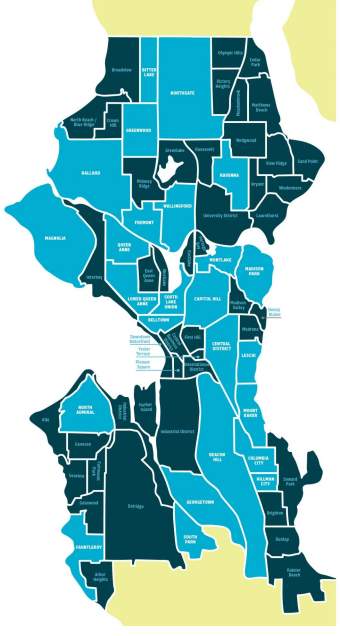
Introduction

Seattle is the Washington state's largest city with so many great neighborhoods to live



Where would be the best place for ice cream lovers?

Problem

Seattle has lots of coffee shops but not enough ice cream shops

Neighborhoods with coffee shops	Neighborhoods with ice cream shops
19 zip codes	**??**

More places are coming up for frozen treats

SEATTLE

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Data acquisition and cleaning

US zip codes database and geocoordinate data from the website called “simple maps”

Preprocessed and cleaned the data to contain only information about the King county and 2 features (zip code, geocoordinate)

Select zip codes in Washington state

select zipcodes in Washington State

[44]:
```
df_wa_zipcodes = df_us_zipcodes[df_us_zipcodes["State"] == "Washington"]
df_wa_zipcodes
```

[44]:

	PostalCode	Latitude	Longitude	City	State
32265	98001	47.30998	-122.26521	Auburn	Washington
32266	98002	47.30836	-122.21639	Auburn	Washington
32267	98003	47.30513	-122.31508	Federal Way	Washington
32268	98004	47.61884	-122.20595	Bellevue	Washington
32269	98005	47.61478	-122.16862	Bellevue	Washington
...	...	...	...	...	...
32856	99363	46.06652	-118.88846	Wallula	Washington
32857	99371	46.80678	-118.31679	Washtucna	Washington
32858	99401	46.08744	-117.25143	Anatone	Washington
32859	99402	46.19394	-117.14740	Asotin	Washington
32860	99403	46.37243	-117.25274	Clarkston	Washington

596 rows × 5 columns

Select zip codes in Seattle only

Total 38 zip codes

Select zipcodes in Seattle city in Washington State

[39]:
```
df_seattle_zipcodes = df_wa_zipcodes[df_wa_zipcodes["City"] == "Seattle"]

# reset index
df_seattle_zipcodes = df_seattle_zipcodes.reset_index(drop=True)
df_seattle_zipcodes
```

[39]:

	PostalCode	Latitude	Longitude	City	State
0	98101	47.61129	-122.33454	Seattle	Washington
1	98102	47.63632	-122.32213	Seattle	Washington
2	98103	47.67332	-122.34254	Seattle	Washington
3	98104	47.60169	-122.32849	Seattle	Washington
4	98105	47.66068	-122.28403	Seattle	Washington
5	98106	47.54349	-122.35434	Seattle	Washington
6	98107	47.66764	-122.37800	Seattle	Washington
7	98108	47.54126	-122.31295	Seattle	Washington
8	98109	47.63159	-122.34417	Seattle	Washington
9	98112	47.63394	-122.28885	Seattle	Washington
10	98115	47.68500	-122.28216	Seattle	Washington
11	98116	47.57397	-122.39507	Seattle	Washington
12	98117	47.68820	-122.38148	Seattle	Washington
13	98118	47.54249	-122.26883	Seattle	Washington
14	98119	47.63995	-122.37005	Seattle	Washington
15	98121	47.61541	-122.34669	Seattle	Washington
16	98122	47.61151	-122.29180	Seattle	Washington
17	98125	47.71636	-122.29815	Seattle	Washington
18	98126	47.54768	-122.37442	Seattle	Washington
19	98133	47.73995	-122.34421	Seattle	Washington
20	98134	47.57783	-122.33743	Seattle	Washington

Used geopy library for geocoordinate

Use geopy library to get the latitude and longitude values of Seattle, Washington.

[46]:
```
address = 'Seattle, Washington'

geolocator = Nominatim(user_agent="seattle_explorer")
location = geolocator.geocode(address)
latitude = location.latitude
longitude = location.longitude
print('The geograpical coordinate of Seattle, Washington are {}, {}.'.format(latitude, longitude))
```

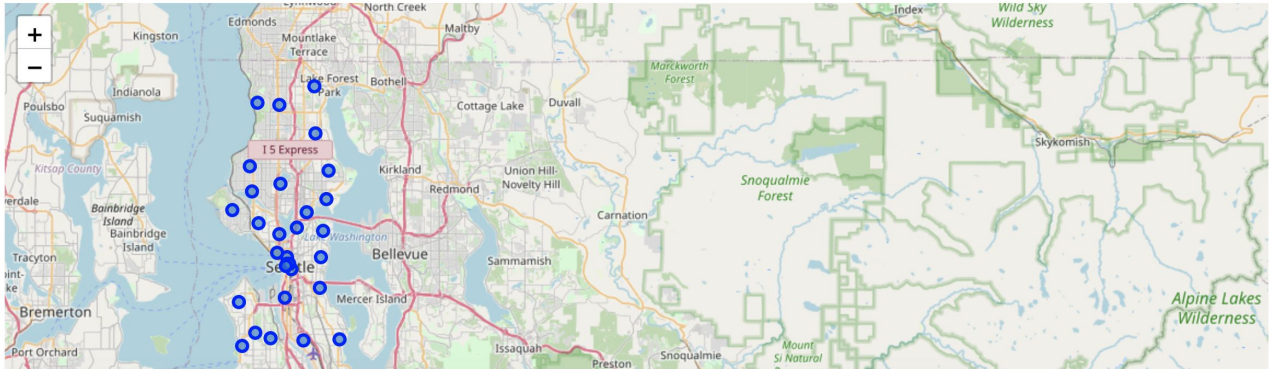
```
The geograpical coordinate of Seattle, Washington are 47.6038321, -122.3300624.
```

Create a map of Seattle

Create a map of Seattle, Washington with neighborhoods superimposed on top.

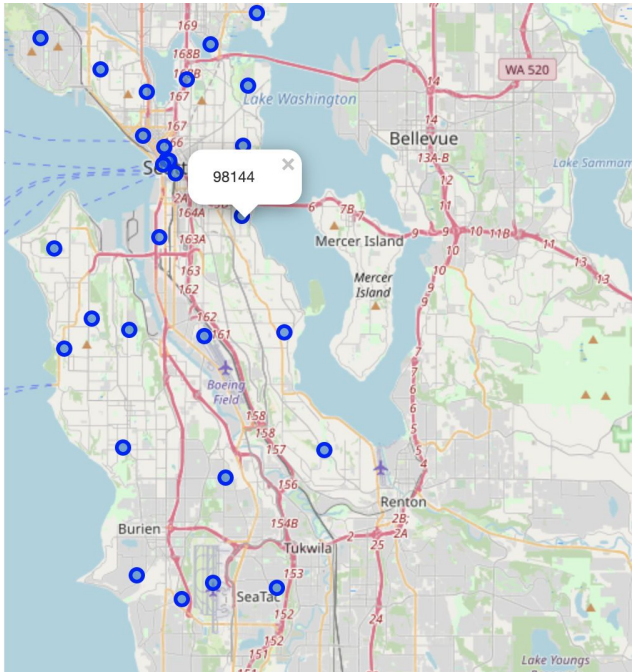
[49]:
```
# create map of Seattle using latitude and longitude values
map_seattle = folium.Map(location=[latitude, longitude], zoom_start=10)

# add markers to map
# add markers to map
for latitude, longitude, postal_code in zip(df_seattle_zipcodes['Latitude'], df_seattle_zipcodes['Longitude'], df_seattle_zipcodes['PostalCode']):
    label = '{}'.format(postal_code)
    label = folium.Popup(label, parse_html=True)
    folium.CircleMarker(
        [latitude, longitude],
        radius=5,
        popup=label,
        color='blue',
        fill=True,
        fill_color='#3186cc',
        fill_opacity=0.7,
        parse_html=False).add_to(map_seattle)

map_seattle
```

[49]:



Create a map of Seattle

Superimposed neighborhoods on top



Get venues given geocoordinate data

[52]:
```
def getNearbyVenues(names, latitudes, longitudes, radius=500):
    venues_list=[]
    for name, lat, lng in zip(names, latitudes, longitudes):
        url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&ll={},{}&radius={}&limit={}'.format(
            CLIENT_ID,
            CLIENT_SECRET,
            VERSION,
            lat,
            lng,
            radius,
            LIMIT)
        results = requests.get(url).json()["response"]['groups'][0]['items']
        venues_list.append([(
            name,
            lat,
            lng,
            v['venue']['name'],
            v['venue']['location']['lat'],
            v['venue']['location']['lng'],
            v['venue']['categories'][0]['name']) for v in results])

    nearby_venues = pd.DataFrame([item for venue_list in venues_list for item in venue_list])
    nearby_venues.columns = ['Neighborhood',
                  'Neighborhood Latitude',
                  'Neighborhood Longitude',
                  'Venue',
                  'Venue Latitude',
                  'Venue Longitude',
                  'Venue Category']

    return(nearby_venues)
```

Find zip codes with ice cream shop

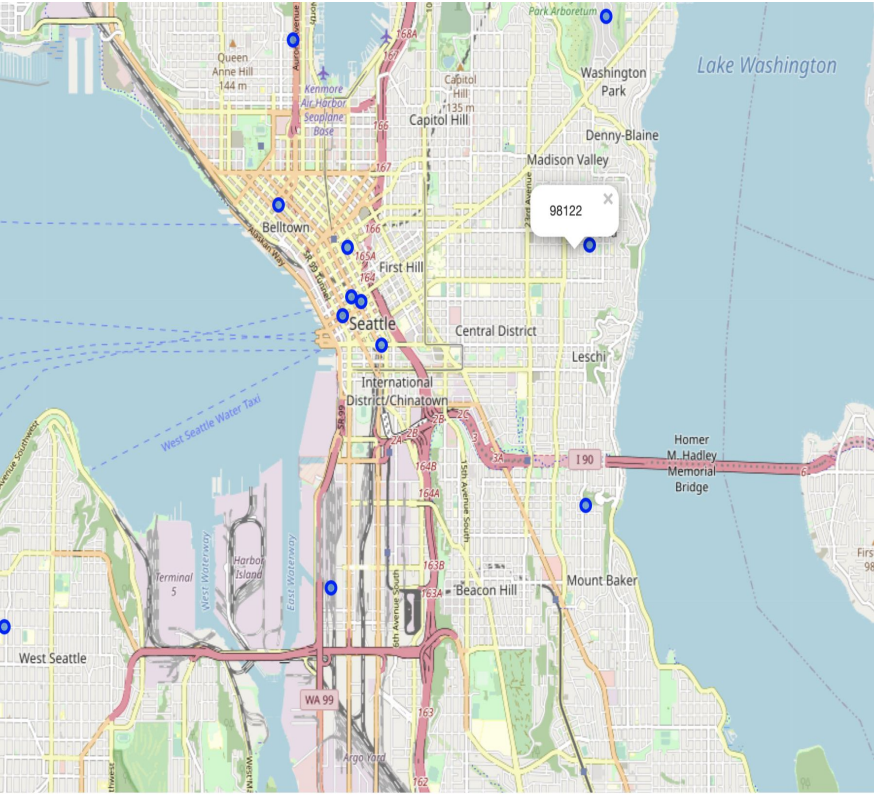
Show zipcode neighborhood with Ice Cream Shop

[63]:
```
seattle_ice_cream = seattle_grouped[["Neighborhood", "Ice Cream Shop"]]
seattle_ice_cream
```

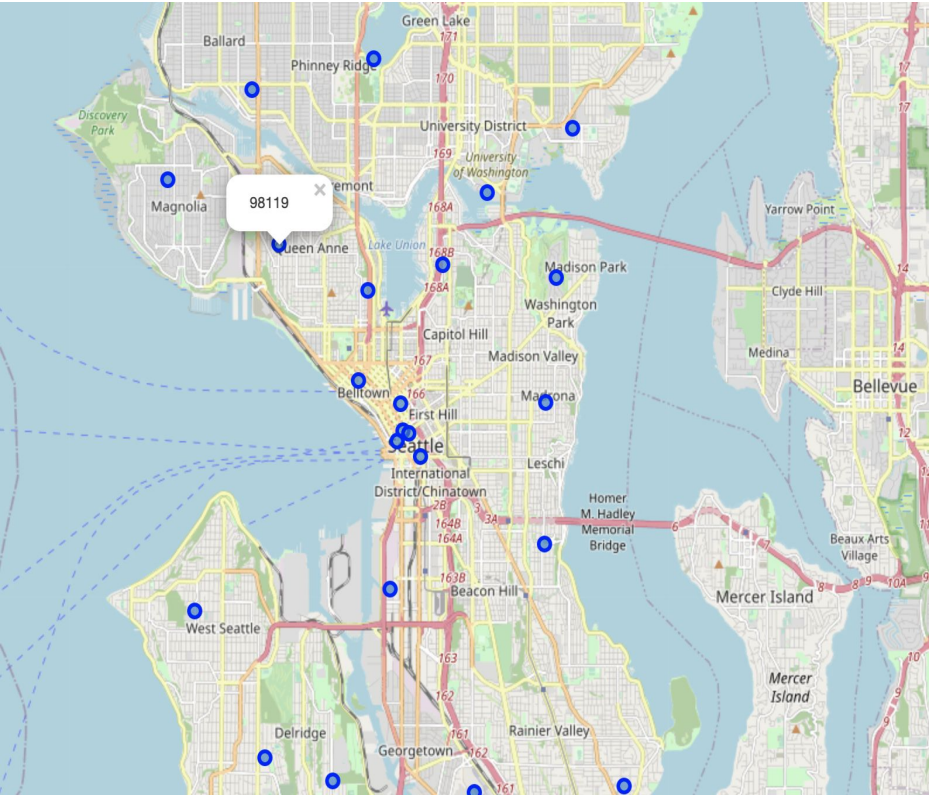
[63]:

	Neighborhood	Ice Cream Shop
0	98101	0.000000
1	98102	0.000000
2	98103	0.000000
3	98104	0.000000
4	98105	0.000000
5	98106	0.000000
6	98107	0.000000
7	98108	0.000000
8	98109	0.000000
9	98112	0.000000
10	98115	0.000000
11	98117	0.000000
12	98118	0.000000
13	98119	0.076923
14	98121	0.000000
15	98122	0.038462
16	98125	0.000000
17	98126	0.000000
18	98133	0.000000
19	98134	0.000000
20	98136	0.000000
21	98144	0.000000
22	98146	0.000000

Madison park area (WA 98112)



Queen Anne area (WA 98119)



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Conclusion

Compare to coffeeshops, there were only **two** zip codes where they had registered ice cream shops from Foursquare

Madison park (WA 98112) and **Queen Anne (WA 98119)** area would be a good place to live for ice cream aficionado in the Seattle area