

In []:

In []:

In []: `import numpy as np # library to handle data in a vectorized manner

import pandas as pd # library for data analysis
pd.set_option('display.max_columns', None)
pd.set_option('display.max_rows', None)

!conda install -c conda-forge geopy --yes # uncomment this line if you haven't completed the Foursquare API lab
from geopy.geocoders import Nominatim # convert an address into latitude and longitude values

!conda install -c conda-forge folium=0.5.0 --yes # uncomment this line if you haven't completed the Foursquare API 1
ab
import folium # map rendering library

print('Libraries imported.')`

In [4]: `# Toronto Open Data Catalogue - Neighbourhood Profiles 2016 (CSV)
https://www.toronto.ca/city-government/data-research-maps/open-data/open-data-catalogue/#6c732154-5912-9afe-d6cd-ba3ffc813d5a

csv_path='https://www.toronto.ca/ext/open_data/catalog/data_set_files/2016_neighbourhood_profiles.csv'
df = pd.read_csv(csv_path,encoding='latin1')
print('Data loaded')`

In [5]: `df.head()`

Out[5]:

	Category	Topic	Data Source	Characteristic	City of Toronto	Agincourt North	Agincourt South-Malvern West	Alderwood	Annex	Banbury-Don Mills	Bathurst Manor	Bay Street Corridor
0	Neighbourhood Information	Neighbourhood Information	City of Toronto	Neighbourhood Number	NaN	129	128	20	95	42	34	76
1	Neighbourhood Information	Neighbourhood Information	City of Toronto	TSNS2020 Designation	NaN	No Designation	No Designation	No Designation	No Designation	No Designation	No Designation	No Designation
2	Population	Population and dwellings	Census Profile 98-316-X2016001	Population, 2016	2,731,571	29,113	23,757	12,054	30,526	27,695	15,873	25,797
3	Population	Population and dwellings	Census Profile 98-316-X2016001	Population, 2011	2,615,060	30,279	21,988	11,904	29,177	26,918	15,434	19,348
4	Population	Population and dwellings	Census Profile 98-316-X2016001	Population Change 2011-2016	4.50%	-3.90%	8.00%	1.30%	4.60%	2.90%	2.80%	33.30%

In [6]: `Neighbourhoods = list(df.columns.values)
Neighbourhoods = Neighbourhoods[5:]
print(Neighbourhoods)`

['Agincourt North', 'Agincourt South-Malvern West', 'Alderwood', 'Annex', 'Banbury-Don Mills', 'Bathurst Manor', 'Bay Street Corridor', 'Bayview Village', 'Bayview Woods-Steeles', 'Bedford Park-Nortown', 'Beechborough-Greenbrook', 'Ben dale', 'Birchcliffe-Cliffside', 'Black Creek', 'Blake-Jones', 'Briar Hill-Belgravia', 'Bridle Path-Sunnybrook-York Mills', 'Broadview North', 'Brookhaven-Amesbury', 'Cabbagetown-South St. James Town', 'Caledonia-Fairbank', 'Casa Loma', 'Centennial Scarborough', 'Church-Yonge Corridor', 'Clairlea-Birchmount', 'Clanton Park', 'Cliffcrest', 'Corso Italia-Davenport', 'Danforth', 'Danforth East York', 'Don Valley Village', 'Dorset Park', 'Dovercourt-Wallace Emerson-Junction', 'Downsview-Roding-CFB', 'Dufferin Grove', 'East End-Danforth', 'Edenbridge-Humber Valley', 'Eglinton East', 'Elms-Old Rexdale', 'Englemount-Lawrence', 'Eringate-Centennial-West Deane', 'Etobicoke West Mall', 'Flemington Park', 'Forest Hill North', 'Forest Hill South', 'Glenfield-Jane Heights', 'Greenwood-Coxwell', 'Guildwood', 'Henry Farm', 'High Park North', 'High Park-Swansea', 'Highland Creek', 'Hillcrest Village', 'Humber Heights-Westmount', 'Humber Summit', 'Humbermede', 'Humewood-Cedarvale', 'Ionview', 'Islington-City Centre West', 'Junction Area', 'Keeleesdale-Eglinton West', 'Kennedy Park', 'Kensington-Chinatown', 'Kingsview Village-The Westway', 'Kingsway South', 'Lambton Baby Point', 'L'Amoreaux', 'Lansing-Westgate', 'Lawrence Park North', 'Lawrence Park South', 'Leaside-Bennington', 'Little Portugal', 'Long Branch', 'Malvern', 'Maple Leaf', 'Markland Wood', 'Milliken', 'Mimico (includes Humber Bay Shores)', 'Morningside', 'Moss Park', 'Mount Dennis', 'Mount Olive-Silverstone-Jamestown', 'Mount Pleasant East', 'Mount Pleasant West', 'New Toronto', 'Newtonbrook East', 'Newtonbrook West', 'Niagara', 'North Riverdale', 'North St. James Town', 'Oakridge', 'Oakwood Village', 'O'Connor-Parkview', 'Old East York', 'Palmerston-Little Italy', 'Parkwoods-Donalda', 'Pelmo Park-Humberlea', 'Playter Estates-Danforth', 'Pleasant View', 'Princess-Rosethorn', 'Regent Park', 'Rexdale-Kipling', 'Rockcliffe-Smythe', 'Roncesvalles', 'Rosedale-Moore Park', 'Rouge', 'Runnymede-Bloor West Village', 'Rustic', 'Scarborough Village', 'South Parkdale', 'South Riverdale', 'St.Andrew-Windfields', 'Steeles', 'Stonegate-Queensway', 'Tam O'Shanter-Sullivan', 'Taylor-Massey', 'The Beaches', 'Thistletown-Beaumont Heights', 'Thorncliffe Park', 'Trinity-Bellwoods', 'University', 'Victoria Village', 'Waterfront Communities-The Island', 'West Hill', 'West Humber-Clairville', 'Westminster-Branson', 'Weston', 'Weston-Pelham Park', 'Wexford/Maryvale', 'Willowdale East', 'Willowdale West', 'Willowridge-Martingrove-Richview', 'Woburn', 'Woodbine Corridor', 'Woodbine-Lumsden', 'Wychwood', 'Yonge-Eglinton', 'Yonge-St.Clair', 'York University Heights', 'Yorkdale-Glen Park']

In [7]: `dfToronto = pd.DataFrame(index=Neighbourhoods, columns=["Population_2016","Income_2016"])
dfToronto.head()`

Out[7]:

	Population_2016	Income_2016
Agincourt North	NaN	NaN
Agincourt South-Malvern West	NaN	NaN
Alderwood	NaN	NaN
Annex	NaN	NaN
Banbury-Don Mills	NaN	NaN

In [8]: `# Income_2016 = Total income: Average amount ($)

for index, row in dfToronto.iterrows():
 dfToronto.at[index, 'Population_2016'] = df[index][2]
 dfToronto.at[index, 'Income_2016'] = df[index][2264]

dfToronto.sort_values('Income_2016')`

Out[8]:

	Population_2016	Income_2016
St.Andrew-Windfields	17,812	100,516
Edenbridge-Humber Valley	15,535	101,551
Lawrence Park North	14,607	111,730
Annex	30,526	112,766
Yonge-St.Clair	12,528	114,174
Bedford Park-Nortown	23,236	123,077
Leaside-Bennington	16,828	125,564
Kingsway South	9,271	144,642
Casa Loma	10,968	165,047
Lawrence Park South	15,179	169,203
Forest Hill South	10,732	204,521
Rosedale-Moore Park	20,923	207,903
Black Creek	21,737	25,989
Mount Olive-Silverstone-Jamestown	32,954	26,548
Oakridge	13,845	26,793
Glenfield-Jane Heights	30,491	27,984
Milliken	26,572	28,085
Flemington Park	21,933	28,054
Thorncliffe Park	21,108	28,875
Humbermede	15,545	29,528
Malvern	43,794	29,573
York University Heights	27,593	29,958
Eglinton East	22,776	30,033
Agincourt North	29,113	30,414
Taylor-Massey	15,683	30,430
Humber Summit	12,416	30,731
Mount Dennis	13,593	30,827
Woburn	53,485	30,878
Kennedy Park	17,123	30,974
Bridle Path-Sunnybrook-York Mills	9,266	308,010
Ionview	13,641	31,383
Dorset Park	25,003	31,692
West Humber-Clairville	33,312	31,771
Steeles	24,623	31,786
Rustic	9,941	31,800
Agincourt South-Malvern West	23,757	31,825
L'Amoreaux	43,993	31,826
Elms-Old Rexdale	9,456	32,012
Morningside	17,455	32,291
Brookhaven-Amesbury	17,757	32,483
North St. James Town	18,615	32,648
Westminster-Branson	26,274	32,724
Thistletown-Beaumont Heights	10,360	32,815
Scarborough Village	16,724	32,913
Weston	17,992	32,997
Bendale	29,960	33,256
Keeleesdale-Eglinton West	11,058	33,316
West Hill	27,392	33,323
Weston-Pelham Park	11,098	33,528
Beechborough-Greenbrook	6,577	33,829
Rockcliffe-Smythe	22,246	34,059
Downsview-Roding-CFB	35,052	34,168
Tam O'Shanter-Sullivan	27,446	34,200
Rexdale-Kipling	10,529	34,418
Regent Park	10,803	34,597
Briar Hill-Belgravia	14,257	34,768
Newtonbrook West	23,831	34,904
Wexford/Maryvale	27,917	35,047
Caledonia-Fairbank	9,955	35,112
South Parkdale	21,849	35,207
Victoria Village	17,510	35,786
Clairlea-Birchmount	26,984	36,232
Pleasant View	15,818	36,346
Henry Farm	15,723	36,359
Kingsview Village-The Westway	22,000	36,674
Maple Leaf	10,111	37,108
Don Valley Village	27,051	37,379
Kensington-Chinatown	17,945	37,422
Etobicoke West Mall	11,848	38,255
Yorkdale-Glen Park	14,804	38,527
Pelmo Park-Humberlea	10,722	39,003
Rouge	46,496	39,556
Dovercourt-Wallace Emerson-Junction	36,625	39,740
Oakwood Village	21,210	39,803
Hillcrest Village	16,934	40,442
Dufferin Grove	11,785	40,588
Highland Creek	12,494	40,972
Corso Italia-Davenport	14,133	41,717
Parkwoods-Donalda	34,805	42,516
O'Connor-Parkview	18,675	43,907
New Toronto	11,463	44,101
Willowridge-Martingrove-Richview	22,156	44,177
Broadview North	11,499	44,557
Willowdale West	16,936	44,576
Cliffcrest	15,935	44,718
Newtonbrook East	16,097	45,212
Willowdale East	50,434	45,326
Humber Heights-Westmount	10,948	45,615
Little Portugal	15,559	45,737
Bathurst Manor	15,873	45,936
Greenwood-Coxwell	14,417	46,206
Eringate-Centennial-West Deane	18,588	47,002
Bayview Woods-Steeles	13,154	47,246
Long Branch	10,084	47,384
Alderwood	12,054	47,709
Woodbine-Lumsden	7,865	47,710
Englemount-Lawrence	22,372	48,134
Blake-Jones	7,727	48,511
Junction Area	14,366	49,709
Roncesvalles	14,974	50,580
Trinity-Bellwoods	16,556	50,694
University	7,607	50,757
Clanton Park	16,472	51,181
Danforth East York	17,180	51,846
Bayview Village	21,396	52,035
Islington-City Centre West	43,965	52,787
Guildwood	9,917	53,203
Old East York	9,233	53,315
Church-Yonge Corridor	31,340	53,583
South Riverdale	27,876	53,803
Centennial Scarborough	13,362	54,045
East End-Danforth	21,381	54,324
Birchcliffe-Cliffside	22,291	54,360
Mimico (includes Humber Bay Shores)	33,964	54,438
Wychwood	14,349	54,460
Woodbine Corridor	12,541	55,199
Danforth	9,666	55,225
Bay Street Corridor	25,797	56,526
Mount Pleasant West	29,658	57,039
High Park North	22,162	57,465
Palmerston-Little Italy	13,826	58,071
Moss Park	20,506	58,915
Markland Wood	10,554	62,378
Cabbagetown-South St. James Town	11,669	63,012
Stonegate-Queensway	25,051	64,140
Humewood-Cedarvale	14,365	65,274
Banbury-Don Mills	27,695	67,757
Waterfront Communities-The Island	65,913	70,600
Niagara	31,180	70,623
Playter Estates-Danforth	7,804	70,831
High Park-Swansea	23,925	71,204
Runnymede-Bloor West Village	10,070	71,888
Lansing-Westgate	16,164	72,371
North Riverdale	11,916	73,253
Lambton Baby Point	7,985	76,629
Forest Hill North	12,806	85,099
Mount Pleasant East	16,775	85,340
Yonge-Eglinton	11,817	89,330
The Beaches	21,567	92,580
Princess-Rosethorn	11,051	99,055

In []: