A BETTER CITY FOR A NEW CHINESE RESTAURANT

- The density of Asian people

- The number of Chinese restaurant

- The percentage of Chinese restaurant in Asian restaurant and total venues

- The density of population in this two cities

- The growth rate of the population in two cities

- the next 10 years population in two cities

EVALUATION INDEX

New York city

Toronto

```
#Asia population
a_p=18804000*0.118
#Asia density
a_d=a_p/302.6
a_d
```

```
7332.6900198281555
```

```
#Asia population
a_p=6196731*0.34
#Asia density
a_d=a_p/243.3
a_d
```

```
8659.632305795314
```

<u>The density of Asian people (Toronto> NY)</u>

Toronto population is smaller, but the density of Asian population is more than New York city.

New York city

Toronto

```
[35]: ny_total=ny_onehot.sum(axis=0)
      ny=ny_total[['Chinese Restaurant','Jap
      ny
```

```
[35]: Chinese Restaurant       217
      Japanese Restaurant        89
      Korean Restaurant          68
      Thai Restaurant            90
      dtype: int64
```

```
[21]: t_total=tor.sum(axis=0)
      t_Asia=t_total[['Chinese Restaurant','Japanes
      t_Asia
```

```
[21]: Chinese Restaurant       35
      Japanese Restaurant      79
      Korean Restaurant         4
      Thai Restaurant          39
      dtype: int64
```

The number of Chinese restaurant (Toronto< NY)

Although the density of Asian population in Toronto is more than New York city, Toronto has less Chinese restaurant than New York city. It mean it has more opportunity to have more customs in Toronto.

New York city

Toronto


```
#Chinese/Asia

c_a=217/(217+89+68+90)
c_a

0.4676724137931034

#Chinese/Total
c_t=217/9819
c_t

0.02210001018433649
```



```
#Chinese/Asia

tc_a=35/(35+79+4+39)
tc_a

0.2229299363057325

#Chinese/Total
tc_t=35/4245
tc_t

0.008244994110718492
```

<u>The percentage of Chinese restaurant in Asian restaurant and total venues (Toronto< NY)</u>

Although the density of Asian population in Toronto is more than New York city, Toronto has less percentage of Chinese restaurants than New York city. It means it has more opportunity to have more customs in Toronto.

New York city

	Year	Population	Growth Rate	density
0	1960	14164000	0.0140	46807.666887
1	1965	15177000	0.0139	50155.320555
2	1970	16191000	0.0094	53506.278916
3	1975	15880000	-0.0039	52478.519498
4	1980	15601000	-0.0022	51556.510245
5	1985	15827000	0.0029	52303.370787
6	1990	16086000	0.0048	53159.286186
7	1995	16943000	0.0104	55991.407799
8	2000	17813000	0.0086	58866.490416
9	2005	18087000	0.0031	59771.976206
10	2010	18365000	0.0031	60690.680767
11	2015	18648000	0.0031	61625.908790
12	2020	18804000	-0.0001	62141.440846

Toronto

	Year	Population	Growth Rate	density
0	1960	1744328	0.0503	7169.453350
1	1965	2092902	0.0371	8602.145499
2	1970	2534788	0.0391	10418.364159
3	1975	2770072	0.0179	11385.417180
4	1980	3008032	0.0166	12363.468968
5	1985	3355459	0.0221	13791.446774
6	1990	3806957	0.0256	15647.172215
7	1995	4197157	0.0197	17250.953555
8	2000	4607142	0.0188	18936.054254
9	2005	5035232	0.0179	20695.569256
10	2010	5499233	0.0178	22602.683929
11	2015	5867292	0.0130	24115.462392
12	2020	6196731	0.0110	25469.506782

The density of population in this two cities (NY>Toronto)

New York city has more than two times density of population than Toronto. It means it may has more people need to eat outside .
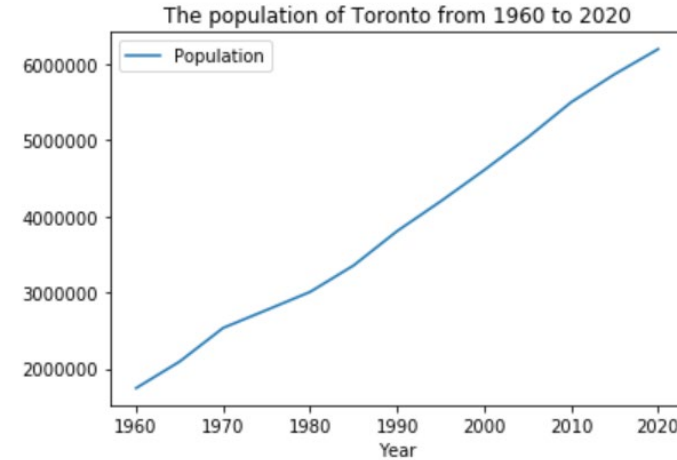
New York city

Toronto


```
hyp.plot(kind='line',x='Year',y='Population')
plt.title('The population of United States from 1960 to 2020')
plt.show()
```
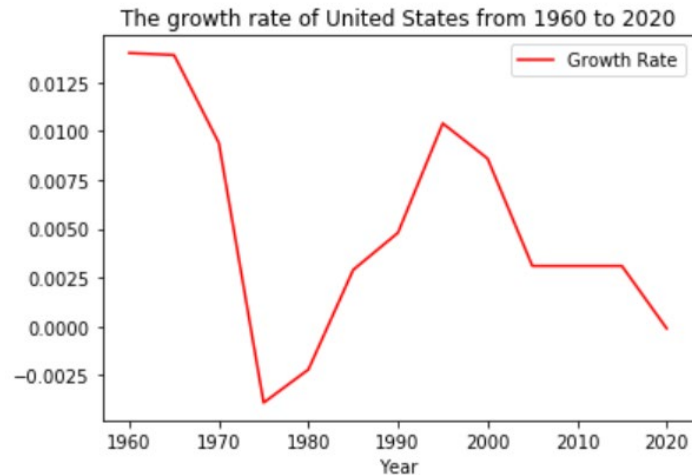
The population of United States from 1960 to 2020

```
plt.title('The population of Toronto from 1960 to 2020')
plt.show()
```
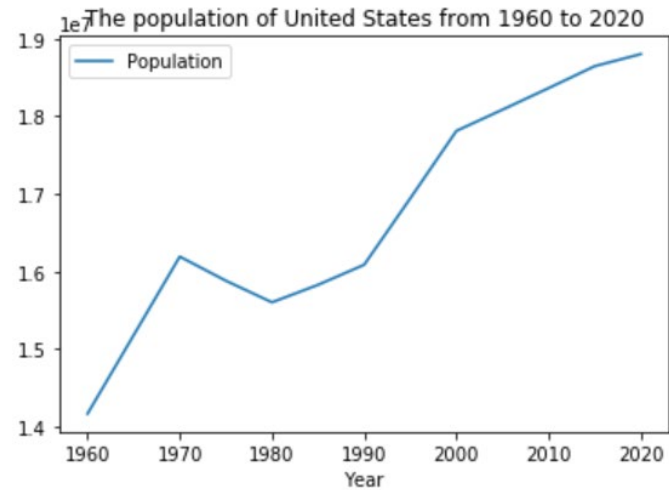
The population of Toronto from 1960 to 2020

The population of two cities change from 1960 to 2020

New York city

```
[50]: nyp.plot(kind='line',x='Year',y='Growth Rate', color='r')
      plt.title('The growth rate of United States from 1960 to 2020')
      plt.show()
```
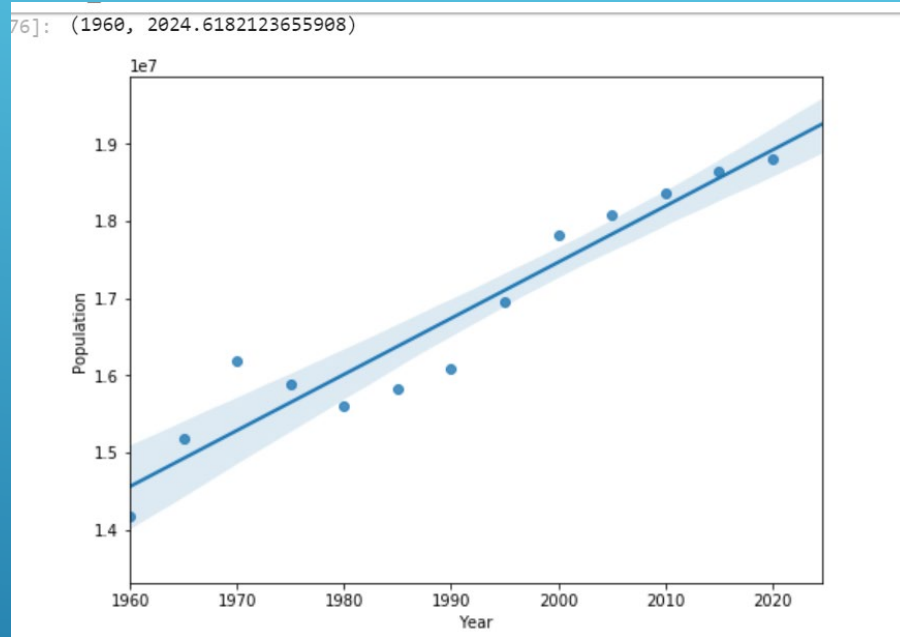

Toronto

```
: top.plot(kind='line',x='Year',y='Growth Rate', color='r')
  plt.title('The growth rate of Toronto from 1960 to 2020')
  plt.show()
```


The growth rate of the population in two cities (Toronto > NY)

Although growth rate of the population in two cities are both decrease, the growth rate of the population in Toronto still above 0.1%, the growth rate of the population in New York city already near 0. It means the population in Toronto still increase, but the population of New York city is already flat.

New York city

Toronto
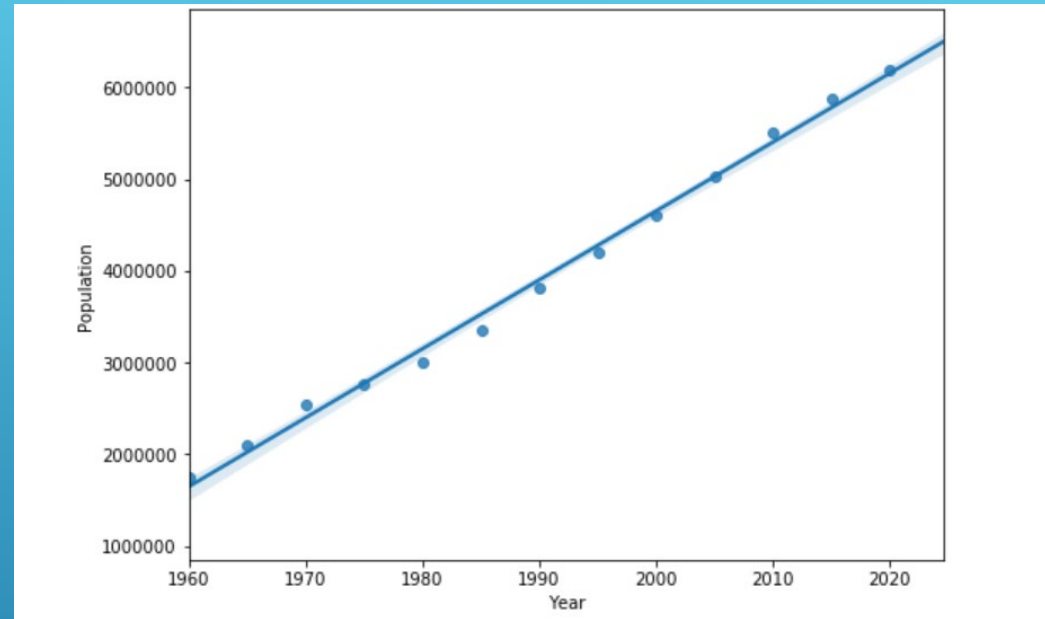
Predict the next 10 years population in two cities (Linear resgression)

New York city

Toronto


```
[3]: #PREDICT 2025
     p25=2025*pre_ny.coef_+pre_ny.intercept_
     p25

[3]: array([19277846.15384614])

[5]: #PREDICT 2030
     p30=2030*pre_ny.coef_+pre_ny.intercept_
     p30

[5]: array([19640769.23076922])
```

```
[35]: #PREDICT 2025
      p25=2025*pre_to.coef_+pre_to.intercept_
      p25

[35]: array([6527315.23076922])

[36]: #PREDICT 2025
      p30=2030*pre_to.coef_+pre_to.intercept_
      p30

[36]: array([6902477.57142857])
```

<u>the next 10 years population in two cities (Toronto > New York city)</u>

The number of growth population in the next 10 years in Toronto is more than New York city.

Toronto (better)

- ➤ **The density of Asian people**
- • **The number of Chinese restaurant**
- • **The percentage of Chinese restaurant in Asian restaurant and total venues**
- • **The growth rate of the population in two cities**
- • **the next 10 years population in two cities**

New York city (better)

- • **The density of population in this two cities**

CONCLUSION

TORONTO WOULD BE THE BETTER CHOICE FOR A NEW CHINESE RESTAURANT