

# LIVING ENVIRONMENT OF TORONTO CITY NEIGHBOURHOODS

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24 FEB 2020



# PROBLEM STATEMENT

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- In 2020 November, Canada announced a 3-year open work permit and immigration pathway for Hong Kong residents. The policy has drawn strong attention of Hong Kong youths who are desperate for an immediate move.
- This research aims to study the living environment of Toronto City, the most prominent metropolis of Canada.
- Target audience: Hong Kong residents who decided to make a hasty trip to Toronto but have not determined a suitable place to settle down.

# RESEARCH OBJECTIVES

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- Overview of the latest house price by house types and the price trend of Toronto City
- Population distribution of other ethnics in the 140 Toronto City neighbourhoods
- Exploration of livable neighbourhoods in terms of community environment and safety

# DATA SOURCE

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**Wikipedia** : listing of postal codes and neighbourhoods

**Geocode Python** : postal codes latitude and longitude coordinates

**Toronto Open Data Portal** :

- Toronto City's Neighbourhood geojson file
- Statistics of visible minority population

**Kaggle** :

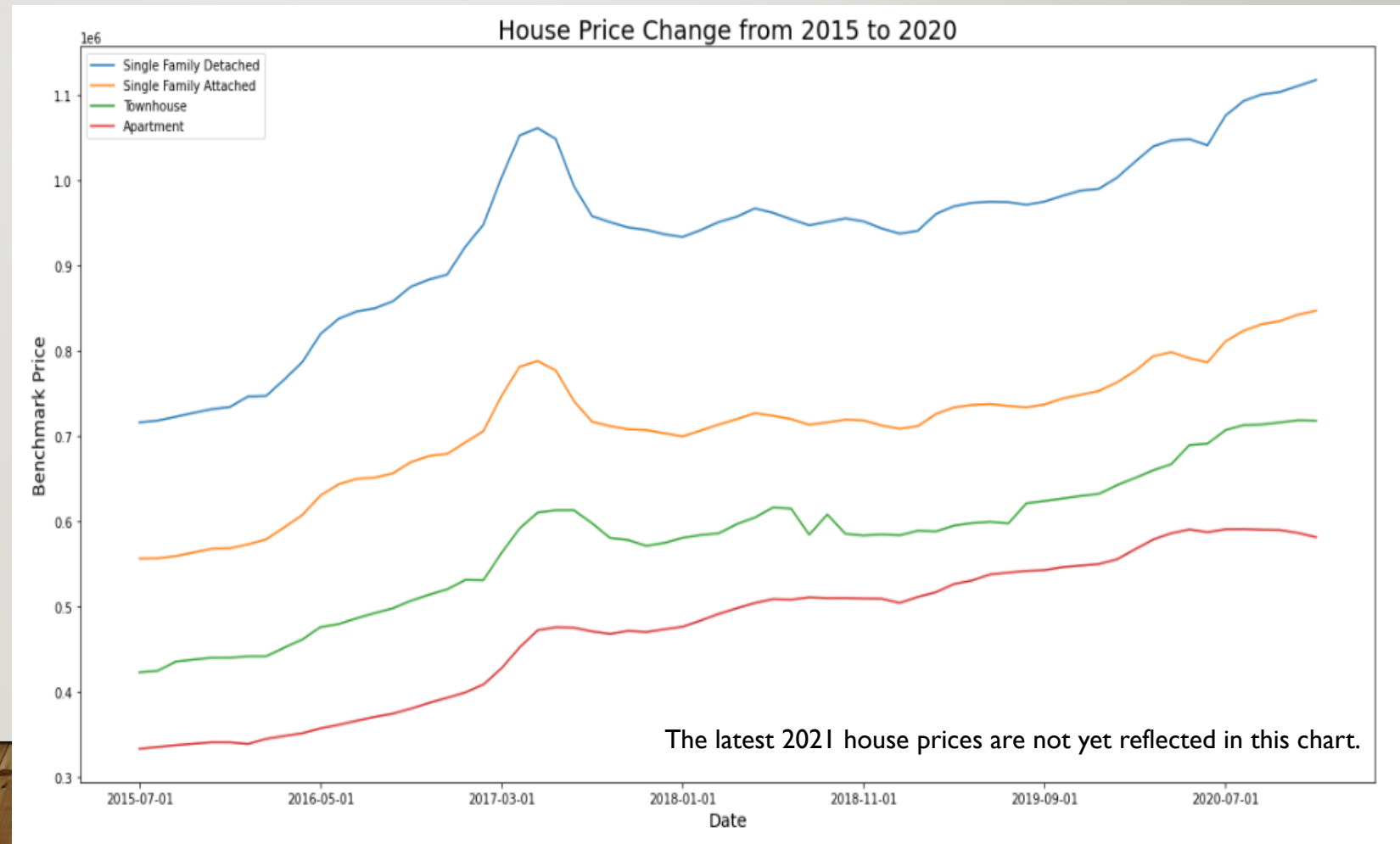
- Toronto House Price information originated from the TRREB

**Foursquare API** : explore neighbourhoods' nearby venues

# HOUSE PRICE TREND (2015 – 2020)

## Insights:

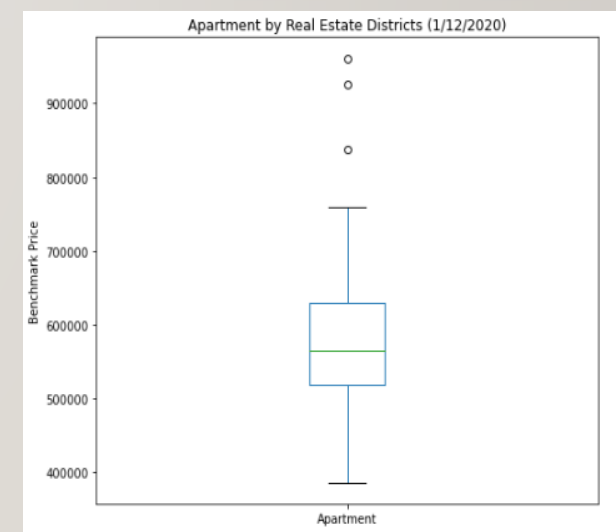
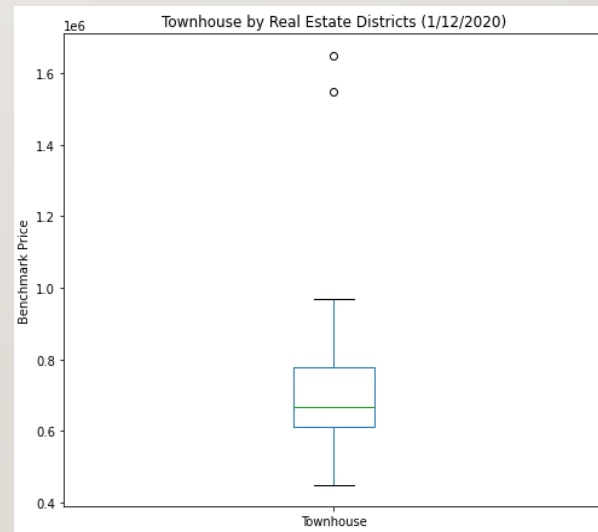
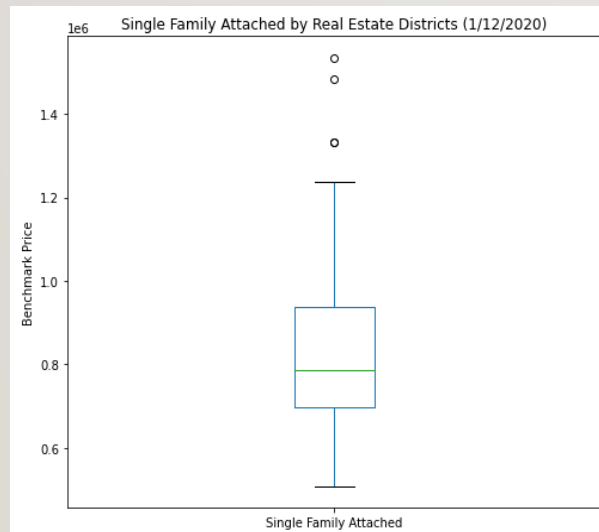
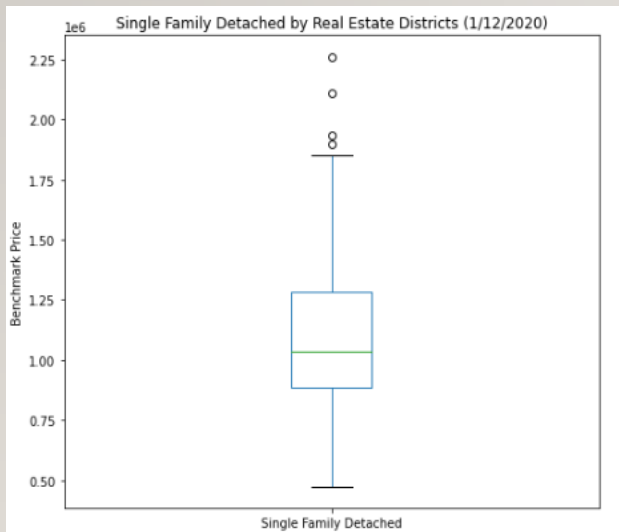
- Overall uptrend in past 5 years.
- Apartment appears to have a downward tendency in 2020.
- Townhouse's uptrend is flattening.



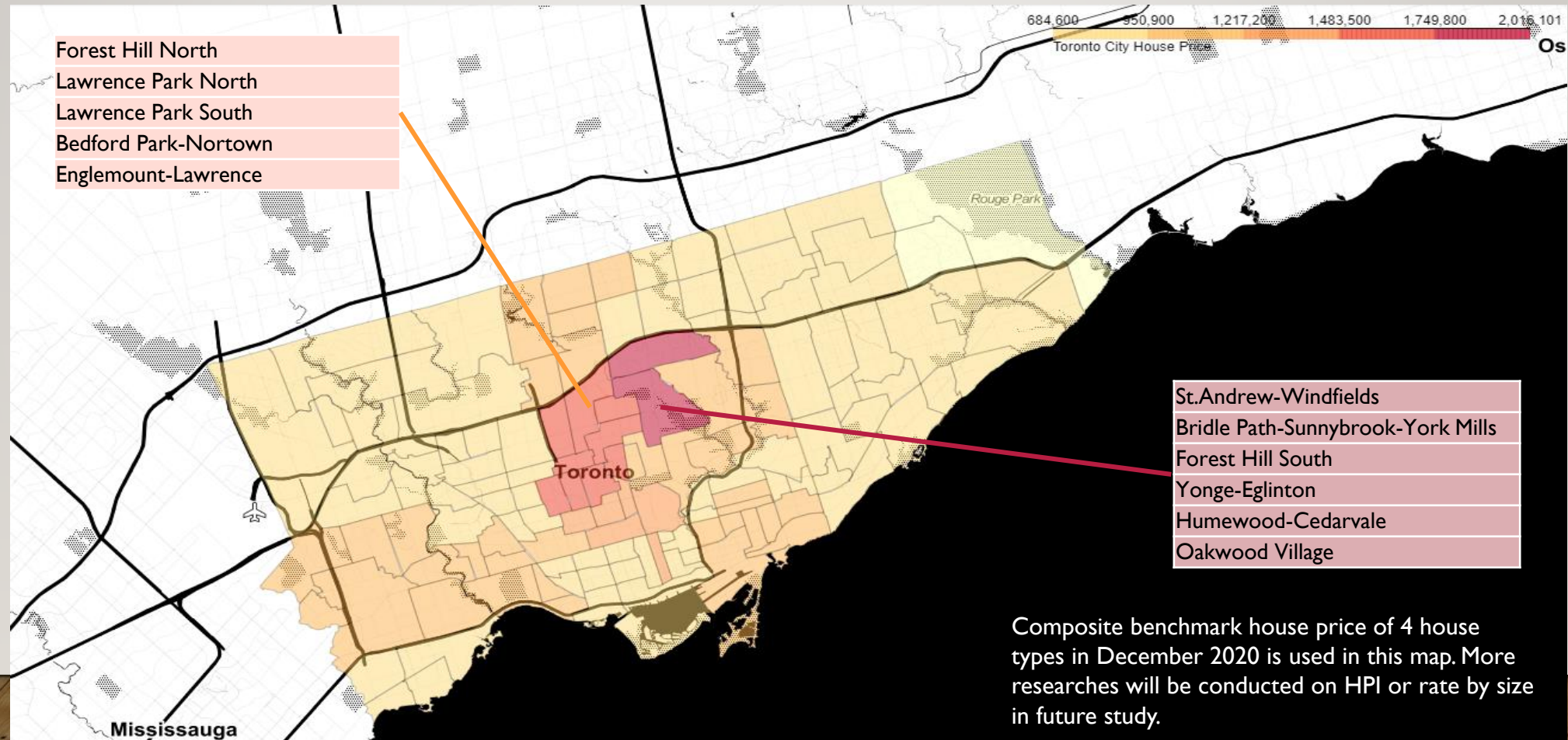


# HOUSE PRICE BY TYPE (AS OF DEC 2020)

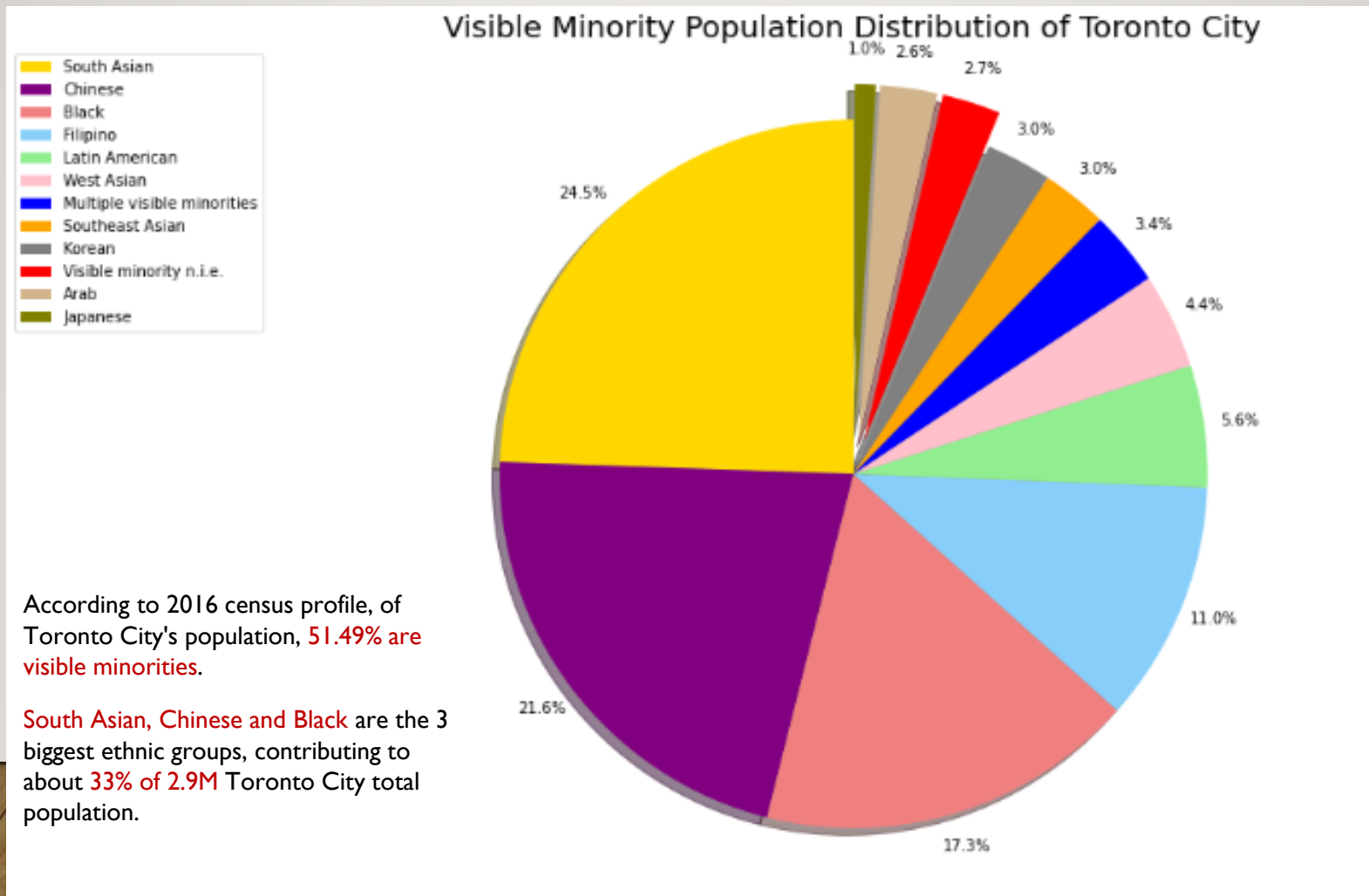
House Type	Mean Price (CAD)	Standard Deviation from Mean (CAD)
Single Family Detached	1,117,861	362,338
Single Family Attached	847,203	231,099
Townhouse	718,222	216,818
Apartment	581,382	117,570



# HOUSE PRICE BY NEIGHBOURHOODS (DEC 2020) - CHOROPLETH MAP

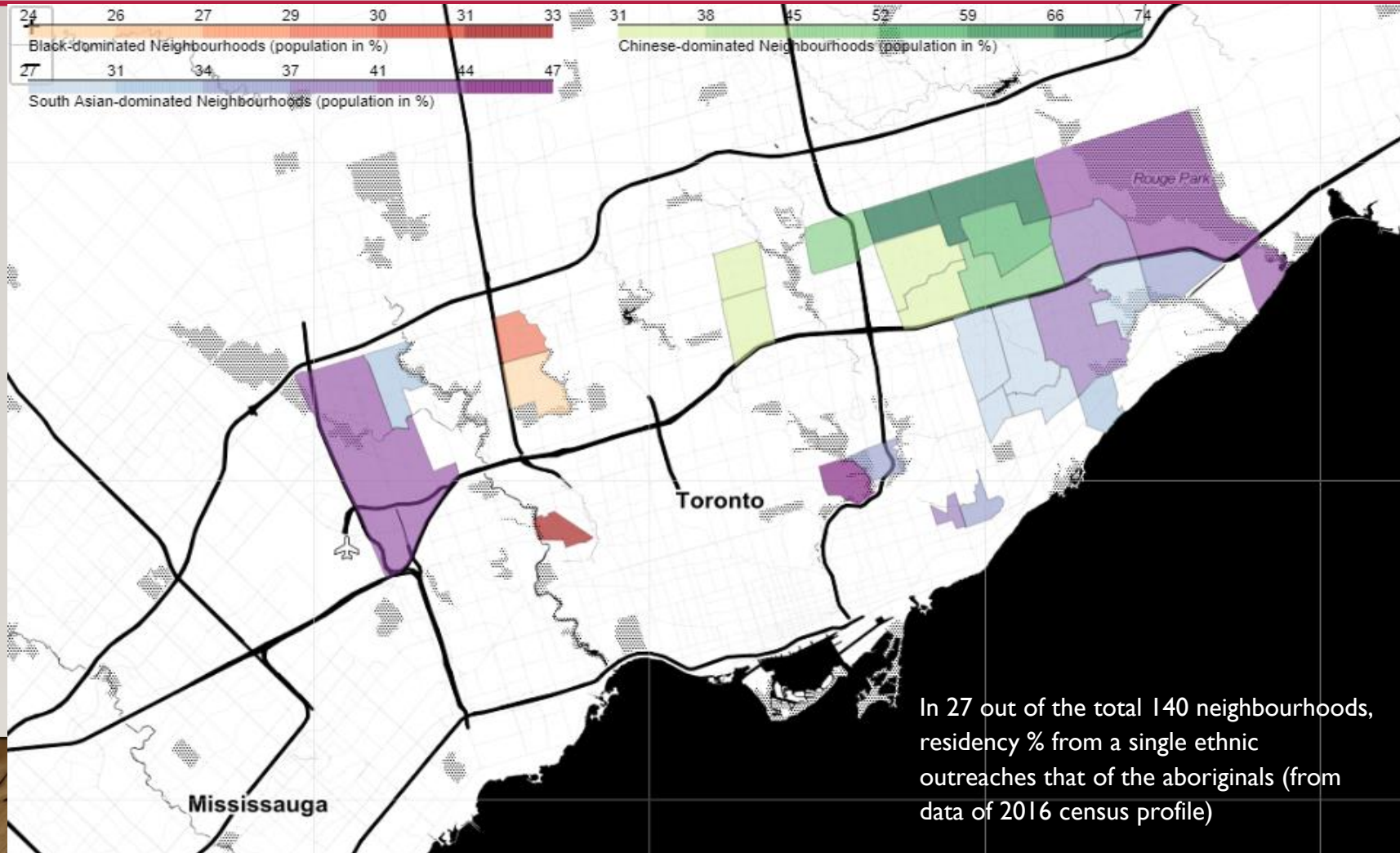


# ETHNICS POPULATION

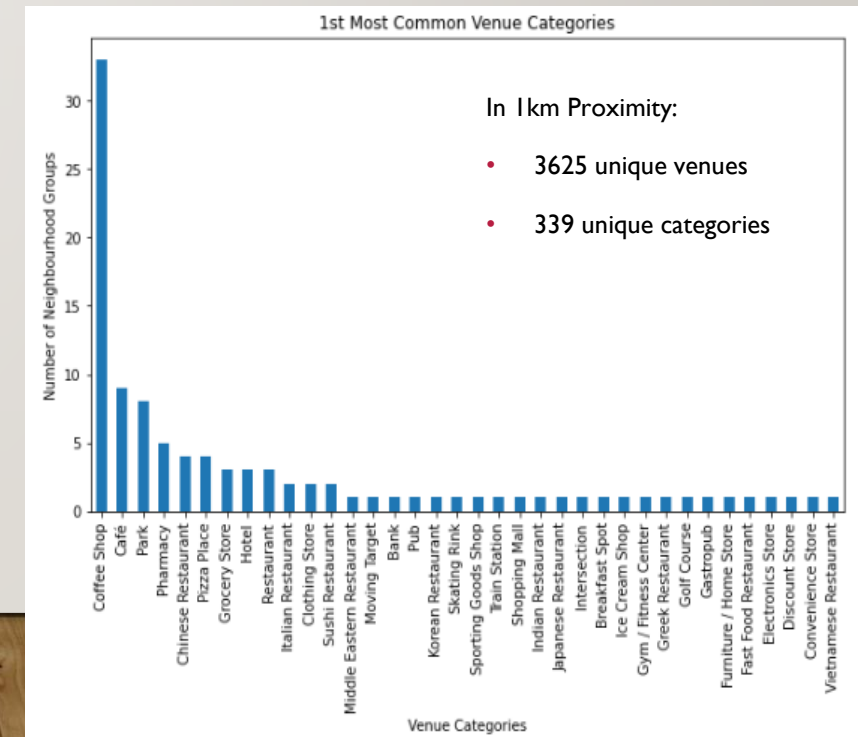
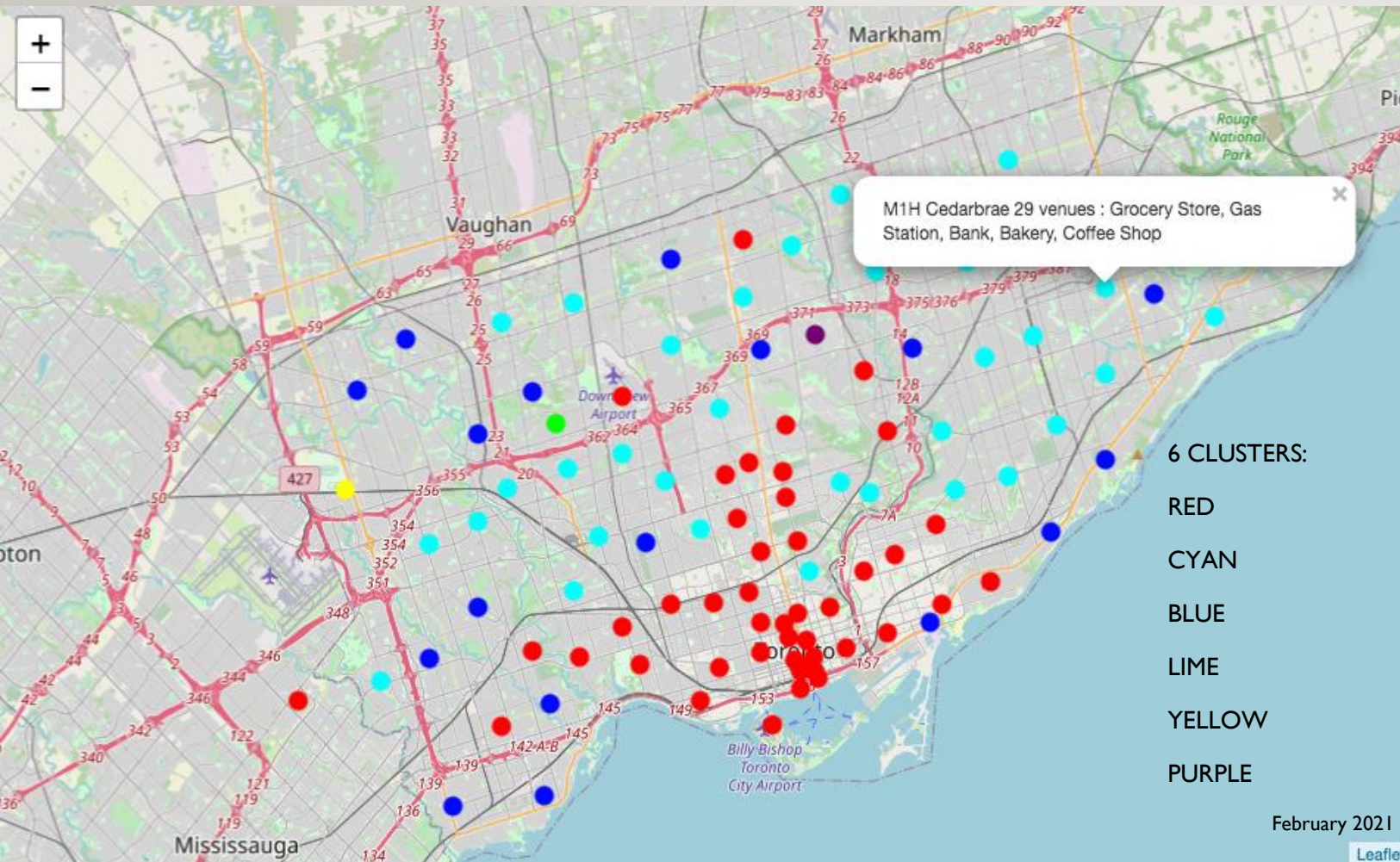




# MINORITY DOMINATED NEIGHBOURHOODS - CHOROPLETH MAP



# NEIGHBOURHOODS K-MEAN CLUSTERING (BY VENUES CATEGORIES) - FOLIUM MAP





# MAJOR NEIGHBOURHOODS CLUSTERS

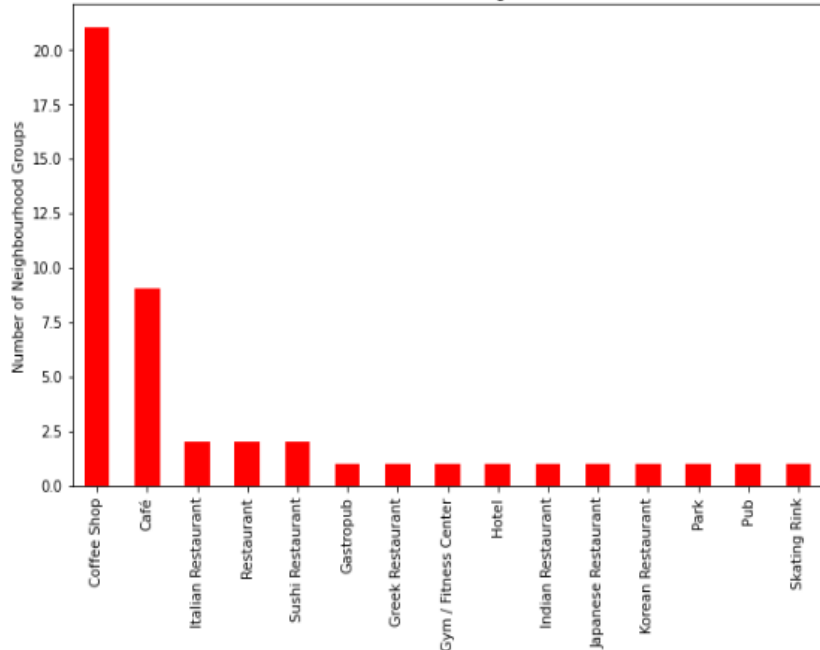
## RED CLUSTER

Coffee shop and cafe are highly centralized and largely located along Yonge Street.

Wide variety of international cuisines.

Others - park and hotel

1st Most Common Venue Categories of Cluster 3



## CYAN CLUSTER

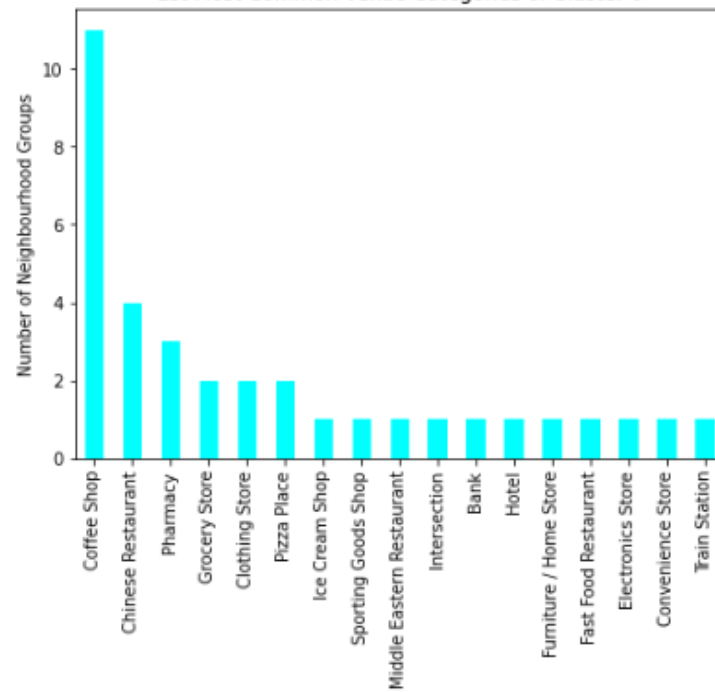
Coffee shop is still the 1<sup>st</sup> most common venue

Fair variety of dining options among which chinese restaurant stands out.

Wide variety of merchandizes including pharmacy, grocery store, clothing store, furniture store, electronics store, convenience store.

Others – bank, hotel, train station, intersection

1st Most Common Venue Categories of Cluster 0



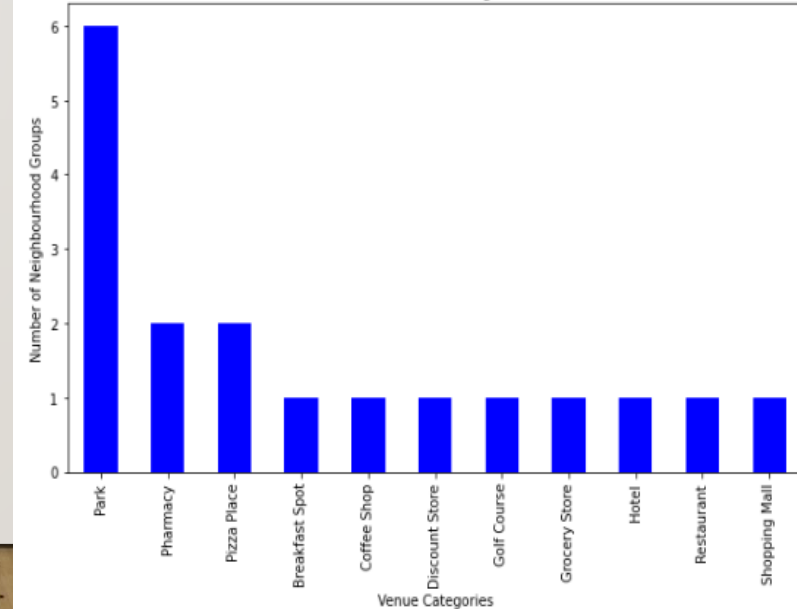
## BLUE CLUSTER

An abundance of parks

Large leisure venues - discount store, shopping mall and golf course

Others - hotel

1st Most Common Venue Categories of Cluster 4



# OUTLIER NEIGHBOURHOODS

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- 3 clusters comprise of only one neighbourhood each
- Only 3 to 4 venues are discovered

**LIME NEIGHBOURHOOD** 2 Vietnamese restaurant, 1 Baseball Field, 1 Restaurant

**PURPLE NEIGHBOURHOOD** 1 Pool, 3 Parks

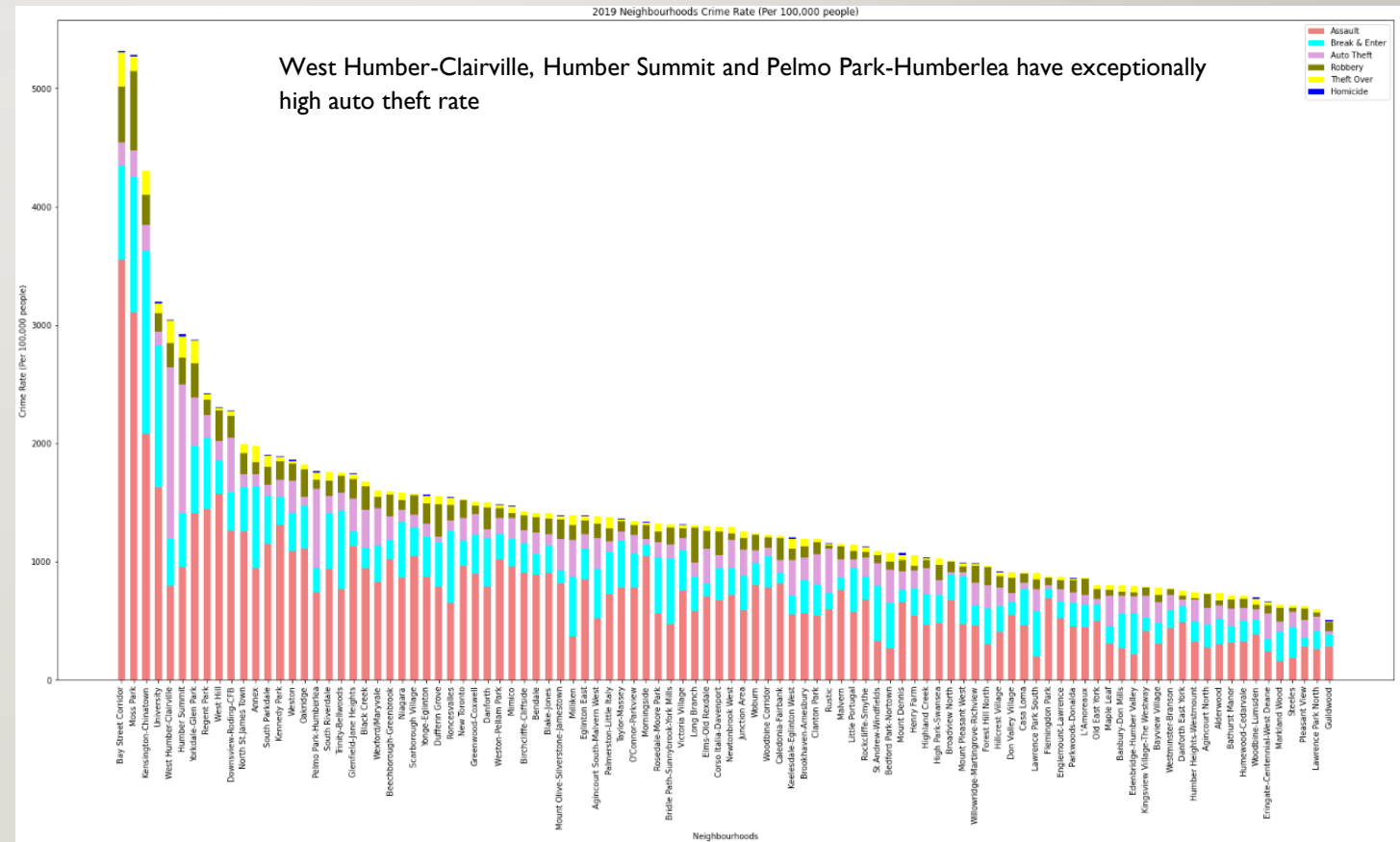
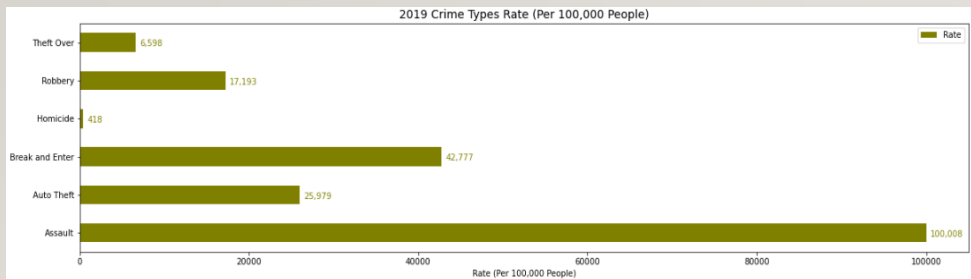
**YELLOW NEIGHBOURHOOD** 1 Coffee Shop, 1 Lounge, 1 Moving Target



# CRIME RATE (BY TYPES & NEIGHBOURHOODS)

In 2019, from high to low crime rate:

1. Assault
2. Break and Enter
3. Auto Theft
4. Robbery
5. Theft Over
6. Homicide



# HIGH CRIME RATE NEIGHBOURHOODS - FOLIUM MAP

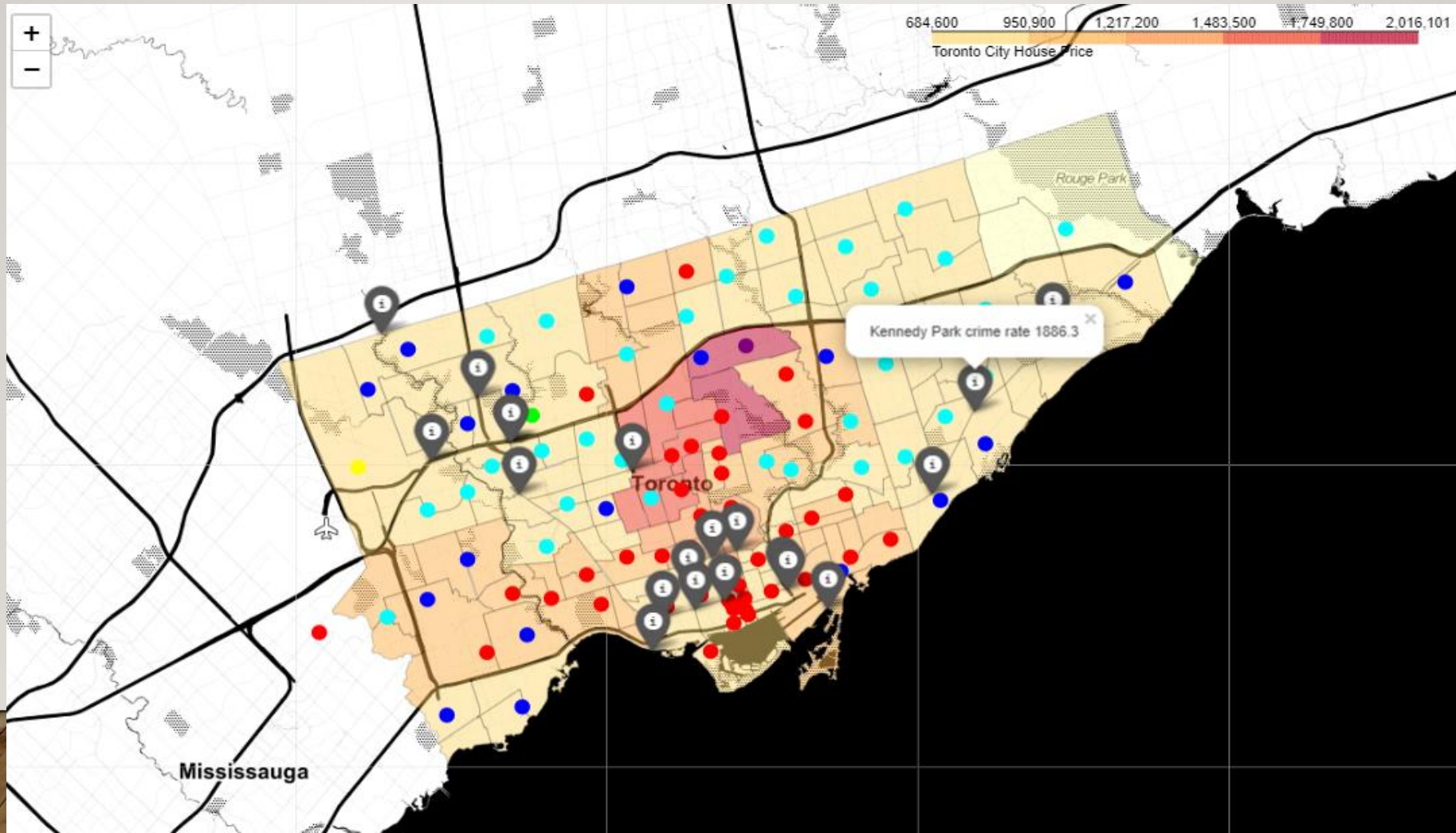
## 20 NEIGHBOURHOODS OF HIGHEST CRIME RATE IN 2019

Bay Street Corridor, Moss Park, Kensington-Chinatown, University, West Humber-Clairville, Humber Summit, Yorkdale-Glen Park, Regent Park, West Hill, Downsview-Roding-CFB, North St. James Town, Annex, South Parkdale, Kennedy Park, Weston, Oakridge, Pelmo Park-Humberlea, South Riverdale, Trinity-Bellwoods, Glenfield-Jane Heights

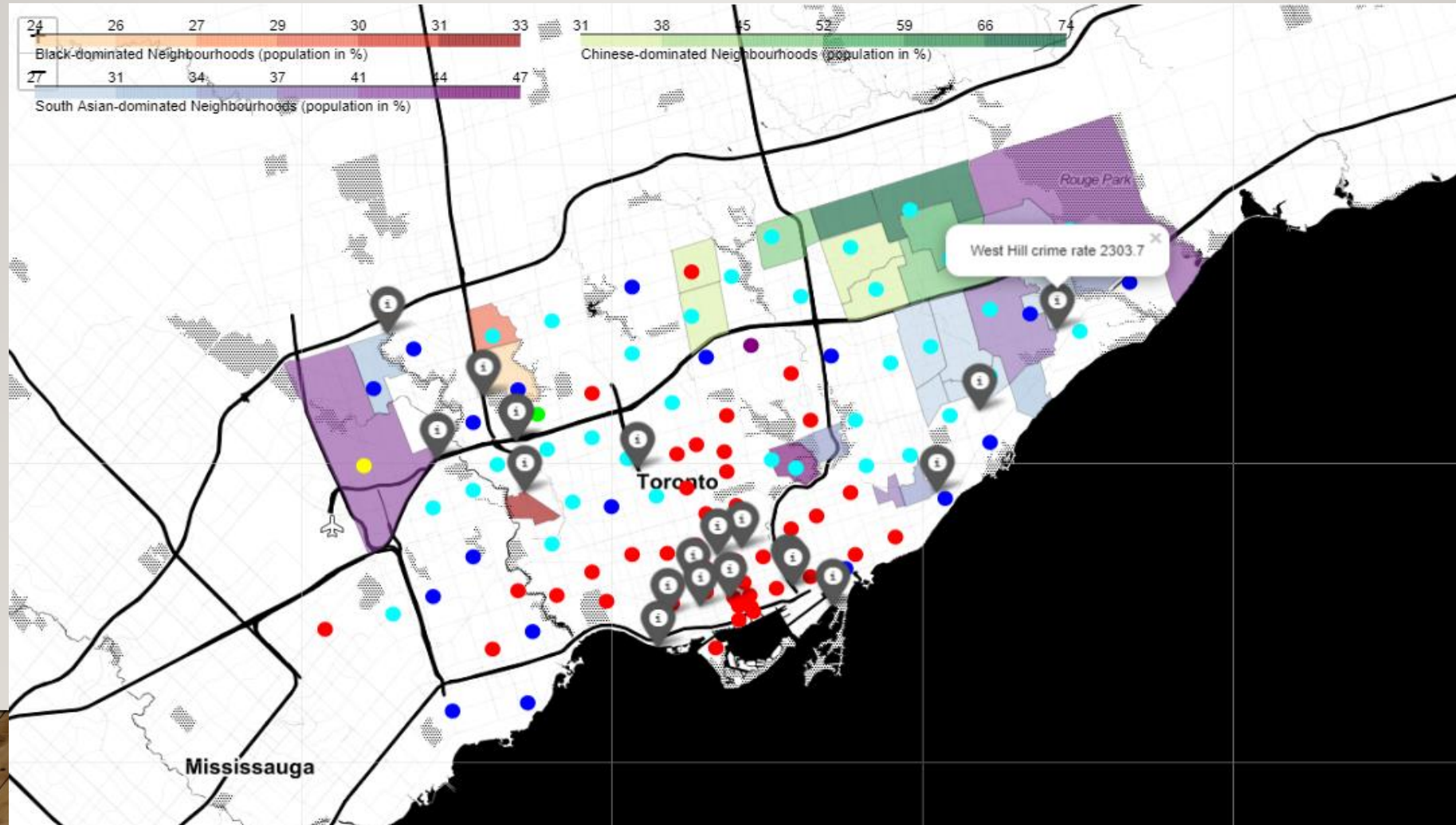




# CONSOLIDATED PRICE LEVEL MAP - CLUSTERS & SAFETY ADD-ONS



# CONSOLIDATED MINORITY DOMINATED MAP - CLUSTERS & SAFETY ADD-ONS





# CONCLUSION

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CYAN cluster neighbourhoods are more favorable for living. These neighbourhoods are found to be featured with multi-functional venues around, fair house price and less crimes. While whether ones prefer to stay close to specific ethnics' zone is a highly personal consideration.

Recommendations:

- Further deepen statistical house price research by HPI or factoring in house size
- Explore alternative algorithm or data source on neighbourhood venues analysis
- Extend research to other factors e.g. general living costs, job opportunities and educations etc.