GTA Housing

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FOR SALE

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Project Introduction

What factors contribute to housing prices within the different regions of GTA?

People always say that buying a house is a good investment. The GTA housing market has always been optimistic, even during COVID. With the rapid increase in population, more and more people are worried about housing issues.

- How population density is influencing dwelling numbers?
- Are housing supplies and demands in balance?
- Will school ranking be an effect for housing prices?

# Scope of the Project and Data Limitation

Scope:

- **Region:** Greater Toronto Area
  - Durham, York, Peel, City of Toronto, Halton

- **Years**:
  - Price, Supply, and Demand: 2018-2021
  - School: 2018-2020
  - Population and Dwelling: 2016-2021 Census

- **Type of house:**
  - Detached, Semi-Detached, Condo Apt, Town House

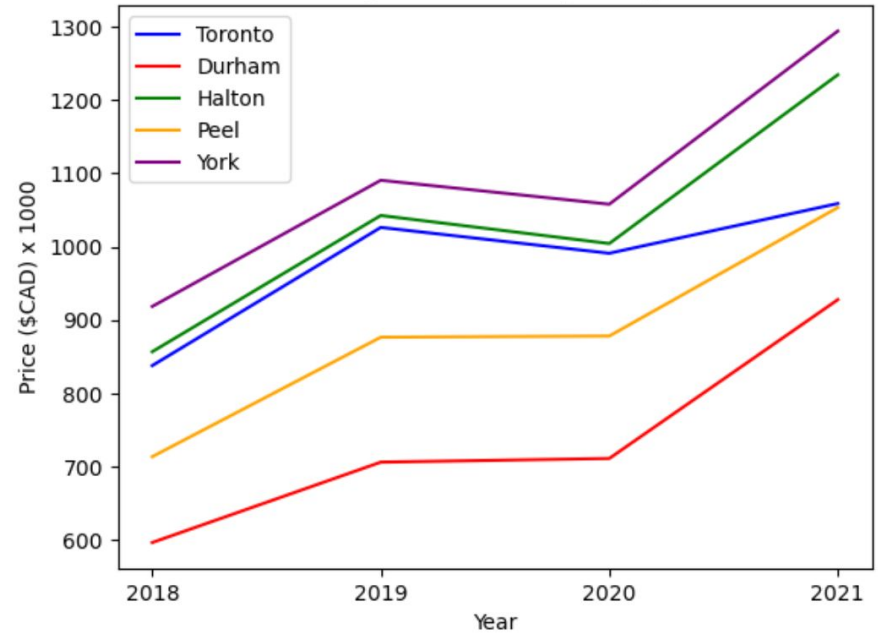- **Schooling:** Elementary School

Limitations:

- API expensive
- Schooling: Fraser Institute, only had data until 2020
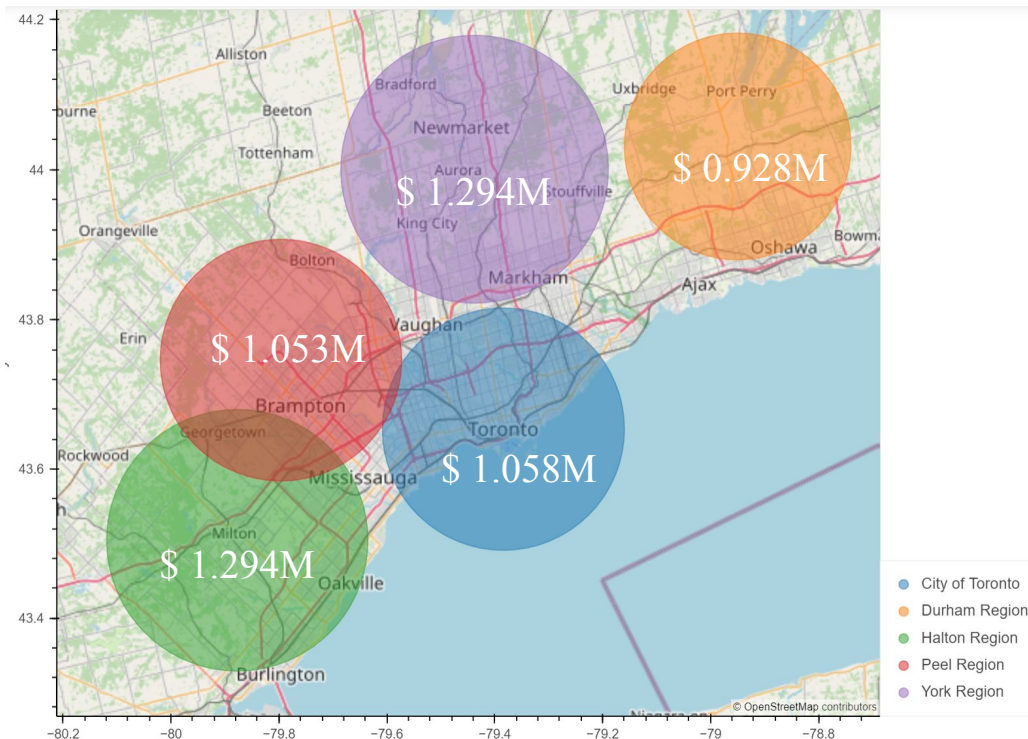
2018-2021 Housing Price
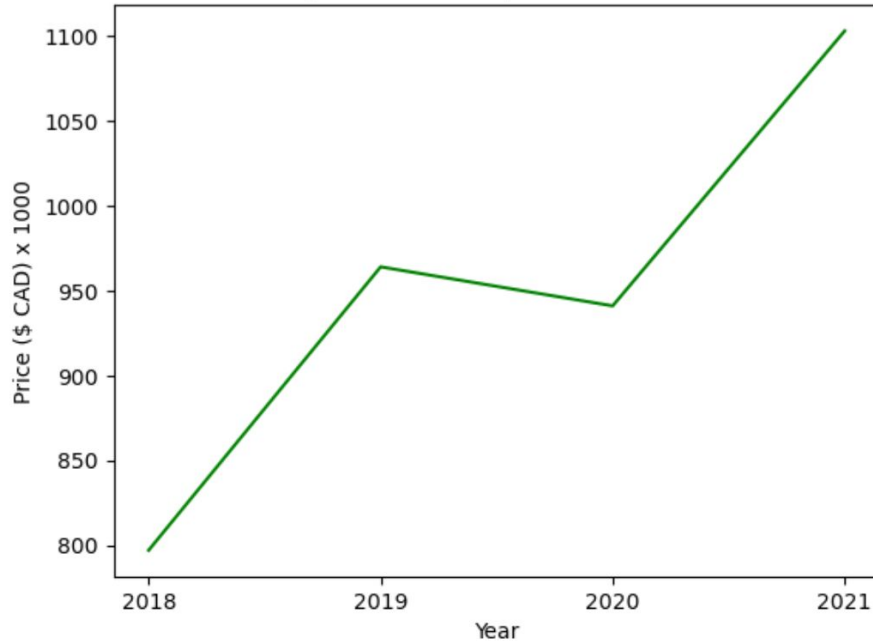
Housing Price 2021

Source: UReach Toronto

| Region	City
Durham Region	Pickering, Ajax, Oshawa, Uxbridge, Brock, Scugog, Clarington
York Region	Vaughan, Richmond Hill, Markham, Aurora, Whitchurch-Stouffville, King, Newmarket, East Gwillimbury, Georgina
City of Toronto	There are 44 districts
Peel Region	Caledon, Brampton, Mississauga
Halton Region	Halton Hills, Milton, Oakville, Burlington

Population Density vs Dwelling Numbers

	Population_Change	Dwelling_Change
Municipality		
Durham	7.9	7.1
York	5.7	9.7
Toronto	2.3	6.3
Peel	5.0	5.4
Halton	8.8	8.2

Private dwellings occupied by usual residents

Population Density vs Dwelling Numbers

Private Dwellings-Occupied by Population Density
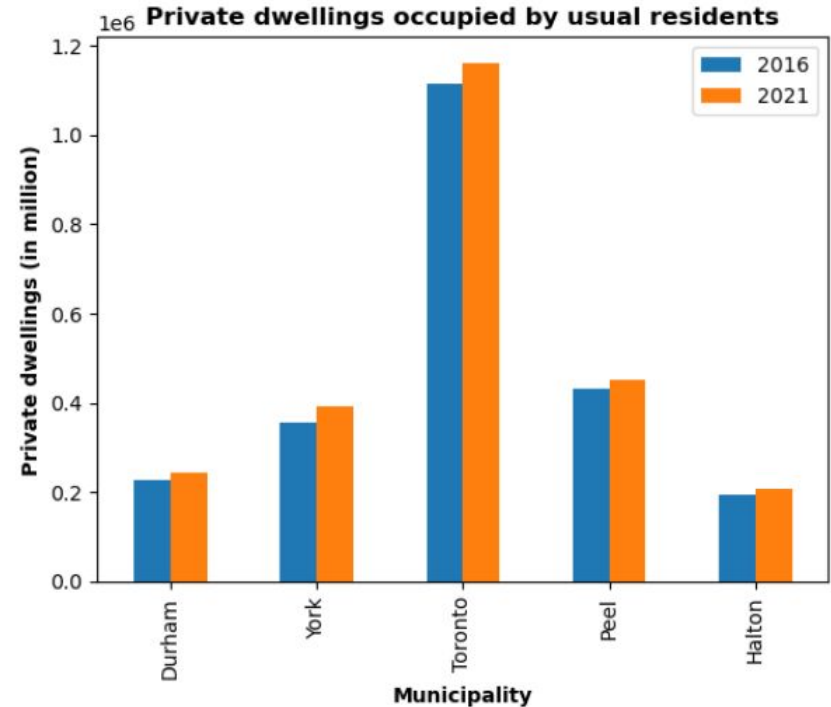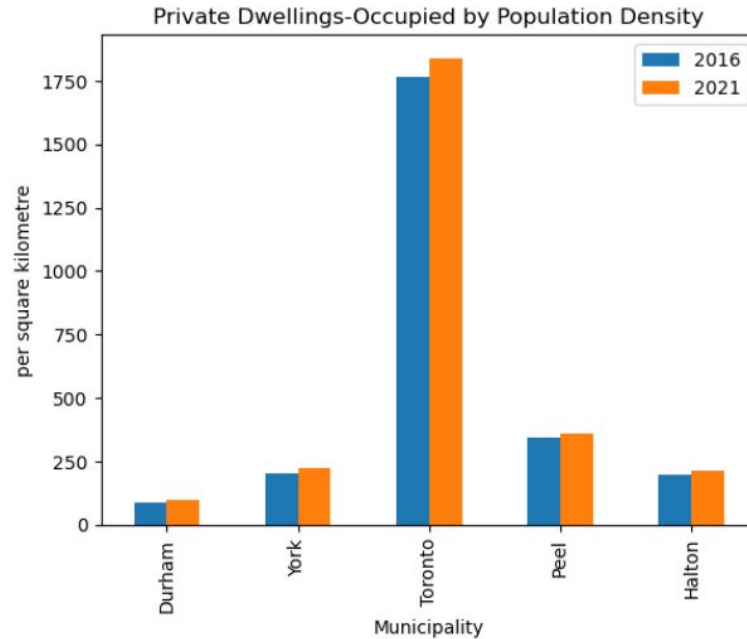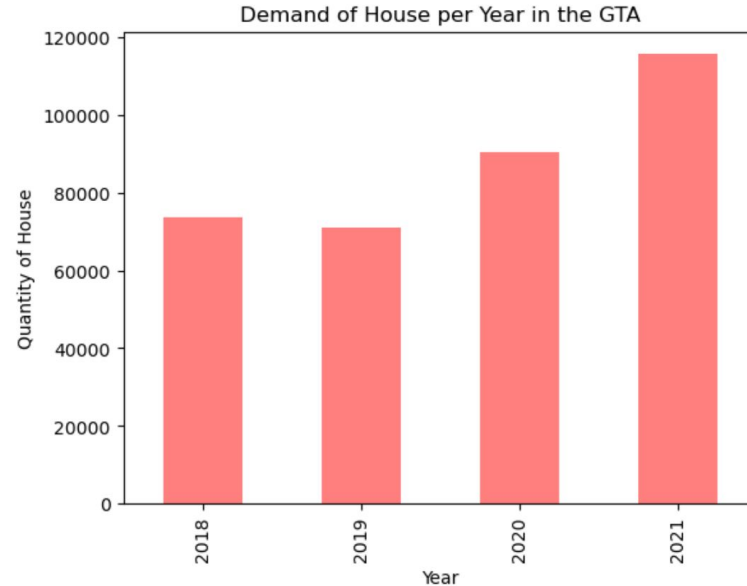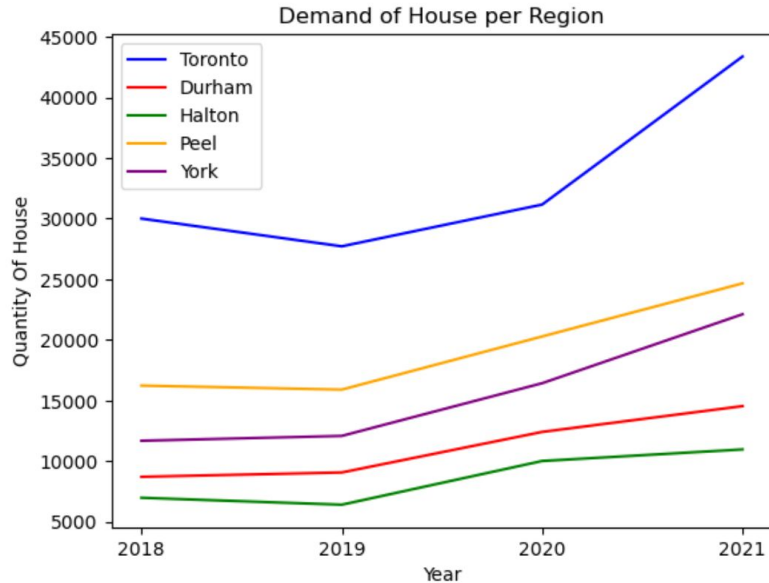
* using 2021 land area in square kilometres

2018-2021 Housing Demand

- Demand was measured based on the number of houses sold per month
- Housing demand dropped in 2019 by 3.42% except for Durham and York Region
  - Prime rate went from 3.70% in 2018 to 3.95% in 2019.
- Overall increase of 36.34%

Average Price: 1. York Region   2. Halton Region   3. City of Toronto   4. Peel Region   5. Durham Region

Housing Demand

The correlation between both factors is 0.42
The r-value is: 0.17

Average Price vs Demand (2018-2021)

y = 30.31x +721109.15
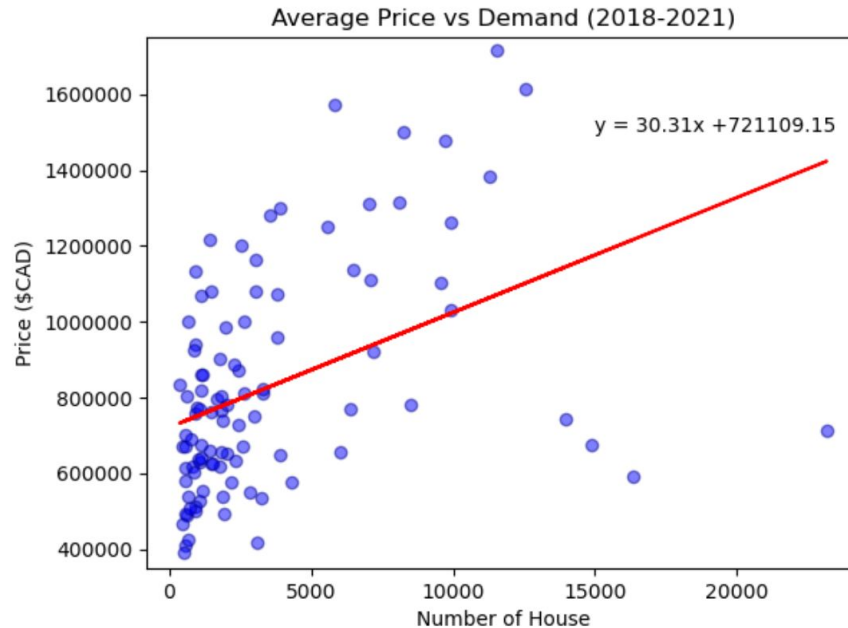
- The demand does have somewhat of a positive correlation and affects the price, but a low correlation
- R-squared shows that the data is a weak fit for this regression model

- The median is 1875 houses, with average median price of $765,373
- Min: 358 houses, $391,033
- Max: 23,710 houses, $1,717,482

2018-2021 House Supply

Supply of House per Region


Supply of House per Year in the GTA
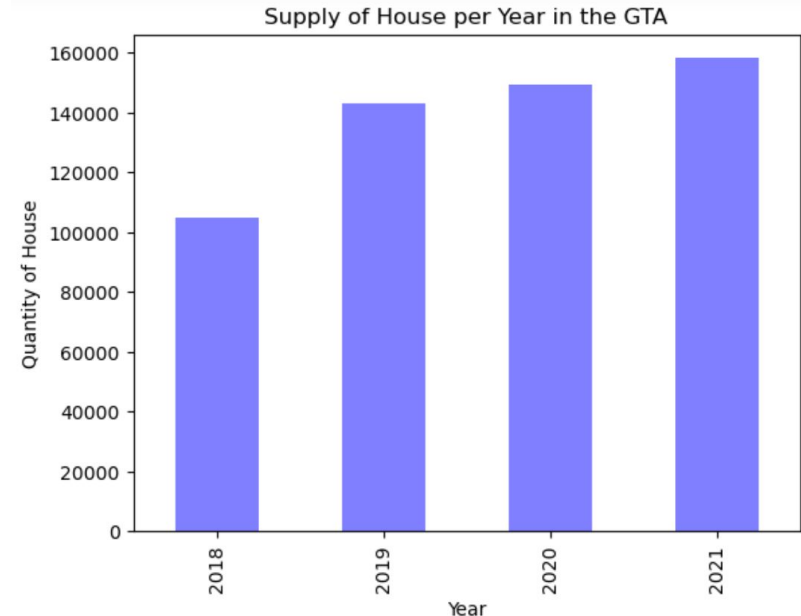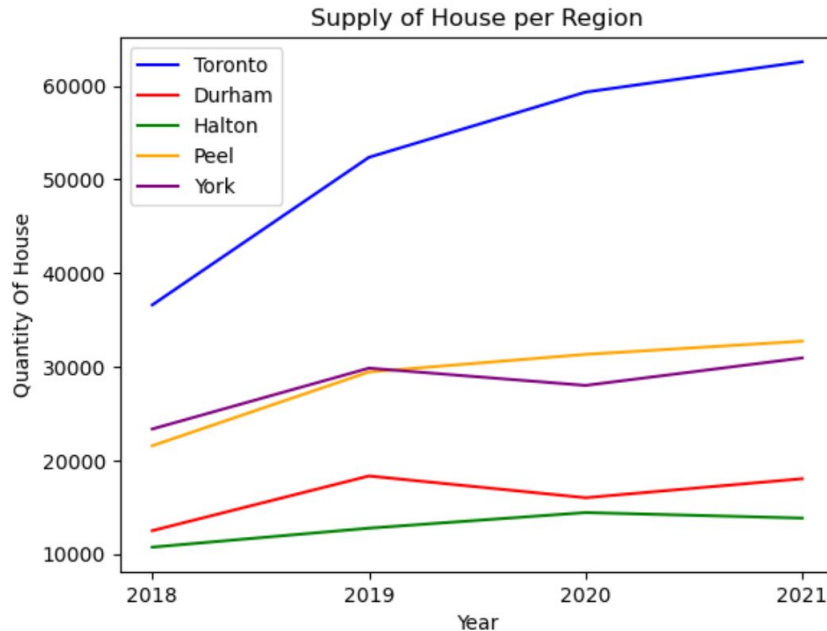
- Supply was measured by the number of new listings per month
- Housing supply drop in 2020 for Durham and York Region
  - Covid contributed to some of the increase
- Overall increase of 33.7%

Average Price: 1. York Region   2. Halton Region   3. City of Toronto   4. Peel Region   5. Durham Region
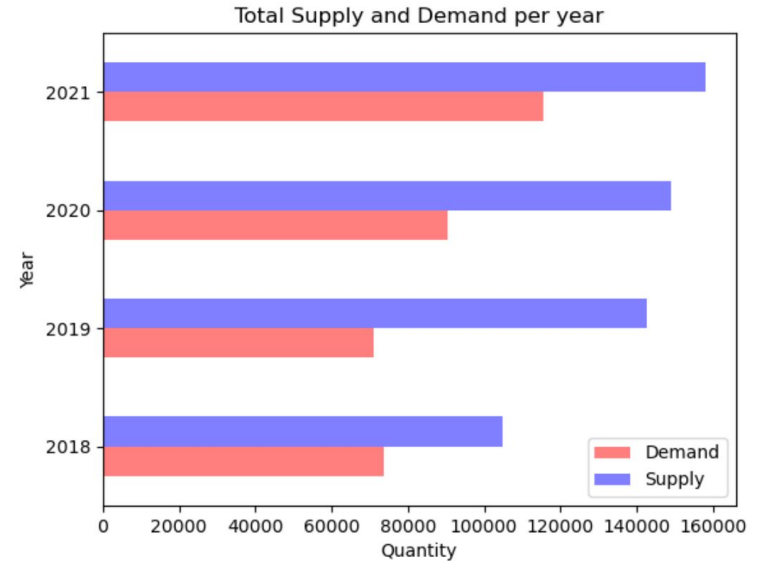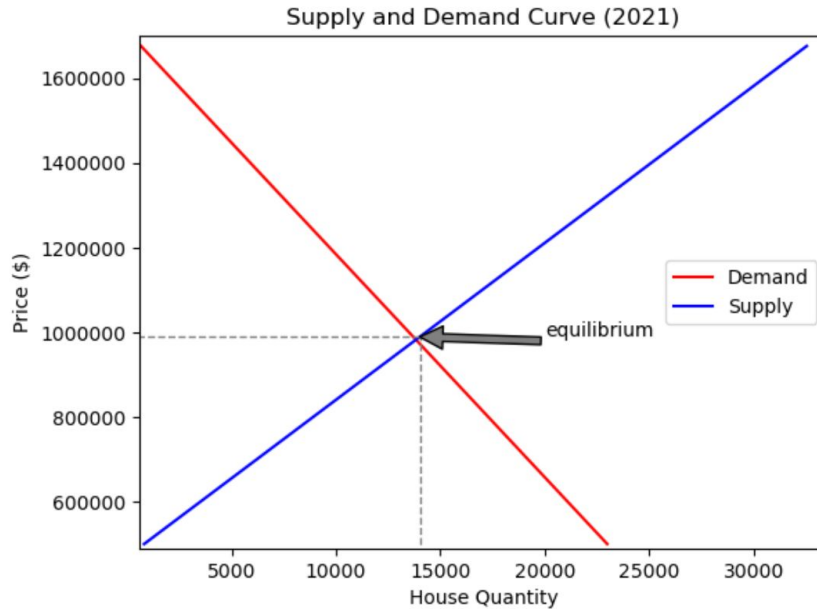
Housing Supply

The correlation between both factors is 0.44
The r-value is: 0.2

Average Price vs Housing Supply (2018-2021)

$y = 19.36x + 720056.26$
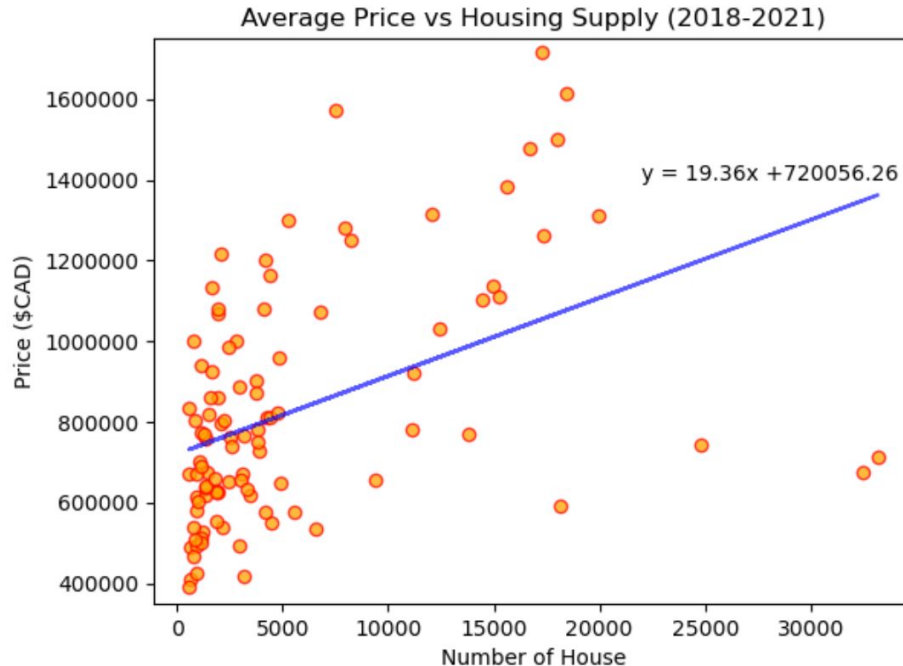
- The supply does have somewhat of a positive effect on the price, but a low correlation
- R-squared shows that the data is somewhat of a fit for this regression model and explains some of the variation in the data
- The median is 2898 houses, with average median price of $765,373
- Min: 559 houses, $391,033
- Max: 33,182 houses, $1,717,482

Excess Supply - Surplus

- Surplus in the housing market for 2021.
- Supply and demand curve, we used the max and min point for both supply and demand
- Equilibrium point is supply and demand at 14,007 houses at a price point of $989,172
- Seller's market = $\frac{\text{\# of house on the market}}{\text{\# of house sold last month}}$ = < 5 (seller's market)
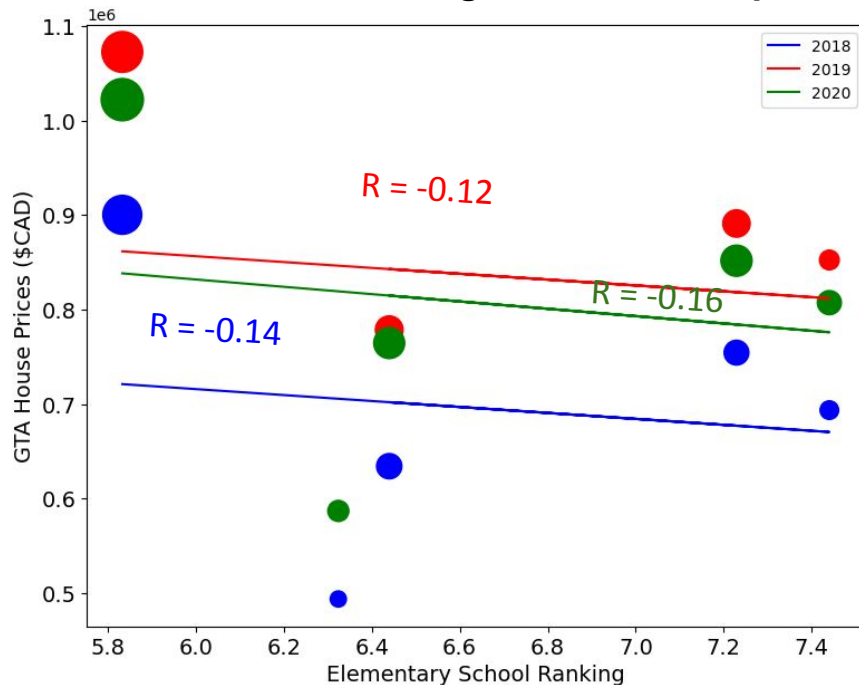
School Ranking

Elementary school ranking distributions in GTA
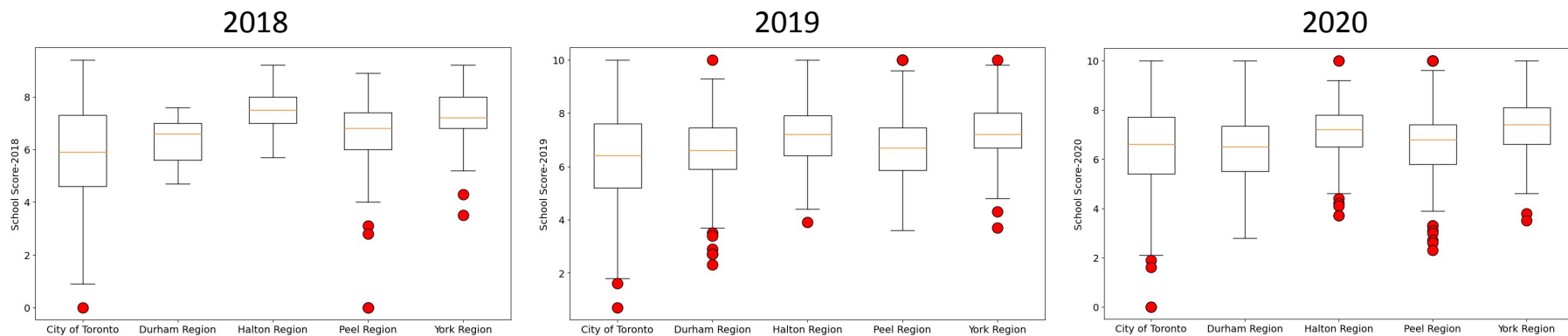
- Widest school ranking distributions were observed in the main Toronto region from 2018 to 2020

- The best rankings were observed in Halton and York regions from 2018 to 2020

- The overall ranking distributions across the GTA regions were quite similar from 2018 to 2020

School Ranking

Mean school ranking vs Mean sales price

- Very weak negative correlations, mainly due to the outliers coming from the Toronto, Peel and Durham regions

- Trend Index = (School Rank × Sale Price × Sale Volume) / Normalizing Factor

  ○ Computes the size of trend bubbles

  ○ Greater preference for houses are in Toronto, Peel and Durham regions despite lower school rankings

Conclusions

- <mark>Population growth</mark> and <mark>regional demand</mark> affects the GTA housing prices the most.

- A notable trend shows highest average price in York and the lowest in Durham.

- There was fluctuation across demand, supply, and average price between 2019 - 2020. York region is the only area that responded to the average price fluctuation.

- 2021 indicated that it was a seller's market. It was likely an affordability issue rather than a shortage

- Despite lower school rankings and higher prices, there is a greater interest in purchasing houses in the Toronto, Peel, and Durham regions.

- We infer that there could be other factors such as proximity to amenities, employment opportunities or access to culture and communities that contribute to the rising housing prices.

Data Sources

- Census 2021 - CD CSD - Population and Dwellings

  https://data.peelregion.ca/datasets/RegionofPeel::census-2021-cd-csd-population-and-dwellings/about

- GTA Housing price between 2018-2021 (Toronto Real Estate Board)
  - https://trreb.ca/index.php/market-news/mls-home-price-index/mls-home-price-index-archive

- GTA Elementary school ranking 2018-2020
  - https://www.fraserinstitute.org/sites/default/files/ontario-secondary-school-rankings-2018.pdf
  - https://www.fraserinstitute.org/sites/default/files/ontario-elementary-school-rankings-2019-12659.pdf
  - https://www.fraserinstitute.org/sites/default/files/ontario-elementary-school-rankings-2020-13385.pdf