

Is living in a big city affordable for a young person?

1. Background:

A friend of mine, who is Turkish, is coming to Canada as an immigrant and is thinking to choose a city to live and work and asked me for help. She wants to know if it is a good idea to come to Toronto. She is 29 years old and has studied art and would like to continue the same field in Canada.

To help her making decision, I decided to analyse the living cost in Toronto and if it is affordable for a young person.

2. Introduction

Toronto is a multicultural city that continues to attract a big number of expats from different countries in the world.

Toronto has a lot of opportunities for a young person to live; study and work, but to decide to move to Toronto or start to live alone there, needs some consideration.

It comes as no surprise that living in Toronto is expensive. But have you ever stopped to think about just how expensive it really is?

According to a new report from *LowestRates.ca*, it cost \$2,740.48 a month to simply make ends meet in 2018 for a person in age of 18 to 34.

According to "daily live" estimated breakdown of the cost of living in Toronto, If you're in your 30s living alone, is month. That means you would need to make a minimum annual salary of \$47,500 before taxes in order to bring home a monthly income of \$3,093.00 after taxes, CPP, and EI.

To reach this amount, *LowestRates.ca* (which is an online tool that compares financial products and provides users with the best and most affordable rate), took these 6 expenses as what many consider to be the basics of a modern life:

1-housing

2- Phone and internet

3- Transportation

4- Groceries

5-entertainment

6-Fitness and insurance

The report found that the average cost of living has risen significantly since 2017, even with the province's efforts to make the city more affordable. The average cost of living increased nearly \$400 a month since last year.

Here's the breakdown of what it's going to cost a millennial to live in Toronto in 2018:

Housing: \$1,672.13

Phone and Internet: \$127.50

Transportation: \$176.25

Groceries: \$283.60

Entertainment: \$354

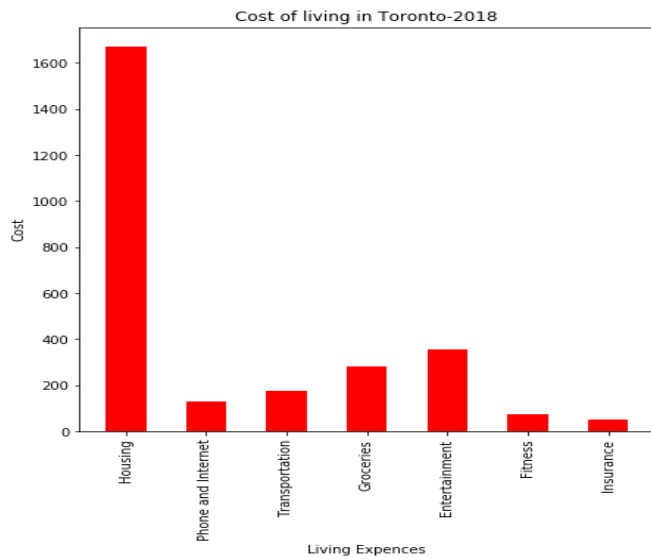
Fitness: \$75

Insurance: \$52

Grand Total: \$2,740.48/month

Or \$32,885 annually

The scary thing is, this breakdown doesn't even include the cost of clothing or personal products, tuition, or, perhaps the largest expense that most young people are dealing with: debt repayment.



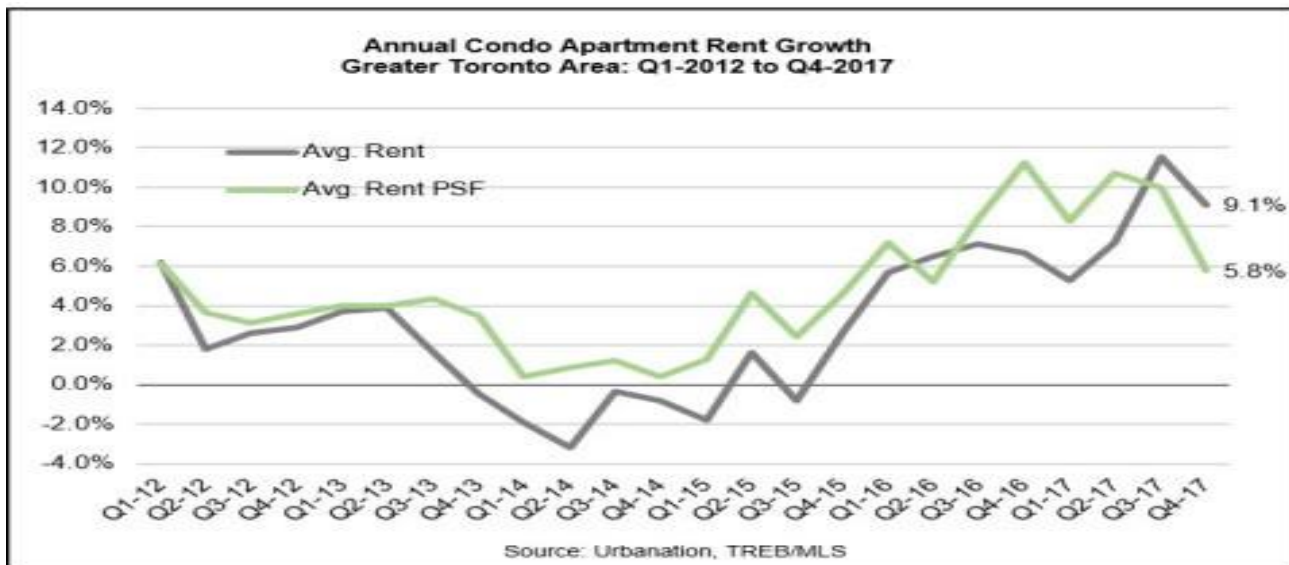
The above numbers, showing us, more than %60 of the monthly incomes goes for housing. This expense could be mortgage or rent of an apartment or house. So we go to more detail about renting an apartment in Toronto.

Renting an apartment

According to rental website PadMapper (<https://blog.padmapper.com/canadian-rent-trends>), Toronto has been trailing Vancouver closely since 2016. Toronto's spike in rent went up \$20 past Vancouver, making it the most expensive city in Canada for rent. Here is a table of comparison for renting prices of one-bedroom and two-Bedroom apartment in different cities in Canada..

Pos.	+/-	City	1 Bedroom			2 Bedrooms		
			Price	M/M %	Y/Y %	Price	M/M %	Y/Y %
1	▲ 1	Toronto	\$2,020	2.5%	15.4%	\$2,520	2.4%	14.5%
2	▼ -1	Vancouver	\$2,000	0.5%	5.3%	\$3,200	3.2%	0.6%
3	■ 0	Burnaby	\$1,430	5.1%	2.1%	\$2,150	0.5%	15.6%
4	■ 0	Montreal	\$1,310	3.1%	15.9%	\$1,580	2.6%	12.9%
5	▼ -1	Barrie	\$1,260	-0.8%	15.6%	\$1,610	-2.4%	15.8%
6	■ 0	Victoria	\$1,200	-0.8%	-9.8%	\$1,510	1.3%	11.0%
7	■ 0	Kelowna	\$1,130	-1.7%	15.3%	\$1,600	-0.6%	14.3%
8	■ 0	Ottawa	\$1,120	3.7%	6.7%	\$1,340	-0.7%	3.1%
9	■ 0	Calgary	\$1,070	2.9%	2.9%	\$1,360	4.6%	6.3%
9	■ 0	Oshawa	\$1,070	2.9%	5.9%	\$1,250	4.2%	0.0%
11	▲ 1	Hamilton	\$1,050	2.9%	14.1%	\$1,300	3.2%	13.0%
12	▼ -3	Kitchener	\$1,040	0.0%	15.6%	\$1,310	1.6%	13.9%
12	▲ 1	St Catharines	\$1,040	5.1%	8.3%	\$1,290	0.8%	13.2%
14	▲ 2	Kingston	\$920	-2.1%	-1.1%	\$1,270	5.0%	11.4%
15	▼ -1	Halifax	\$900	-5.3%	1.1%	\$1,100	-2.7%	0.9%
15	▼ -1	Regina	\$900	-5.3%	-4.3%	\$1,150	-5.0%	0.0%
15	▲ 3	Winnipeg	\$900	1.1%	0.0%	\$1,150	4.5%	4.5%
18	▼ -1	London	\$890	-1.1%	11.3%	\$1,100	4.8%	10.0%
19	■ 0	Edmonton	\$860	-2.3%	-3.4%	\$1,140	-0.9%	1.8%
20	■ 0	Abbotsford	\$850	1.2%	7.6%	\$960	2.1%	3.2%
21	■ 0	St John's	\$800	0.0%	3.9%	\$840	0.0%	-1.2%
22	▲ 2	Sherbrooke	\$770	2.7%	14.9%	\$850	1.2%	10.4%
23	▼ -2	Quebec	\$760	-5.0%	-5.0%	\$1,000	-4.8%	-9.1%
24	▼ -1	Saskatoon	\$750	-5.1%	-6.3%	\$1,050	5.0%	14.1%
25	■ 0	Saguenay	\$700	1.4%	12.9%	\$760	0.0%	15.2%
26	▼ -1	Windsor	\$690	0.0%	-15.9%	\$860	-4.4%	-12.2%

The “UrbanNation” (<https://www.urbanation.ca/news/204-gta-condo-rents-rise-9-fourth-quarter>) released a report showing the condo rental market rising by as much as 9.1% at the end of 2017 in downtown Toronto. The report listed the average cost of a condo rental at \$2,166. It's not looking good. So for millennial looking to live alone, that monthly average is certainly more than \$3,000 per month.



3-Data acquisition and cleaning

3.1. Data acquisition

For the first part of the Analysis, I got Data form “Daily Hive” website which is a leading digital publication with a hyper-local focus.

The second part of data is from *Kaggle* dataset, <https://www.kaggle.com/rajacsp/toronto-apartment-price>. This data contains data from rental apartment in Toronto and contains:

- 1-The number of Bedrooms
- 2-The number of Bathrooms
- 3-The number of Den
- 4-Address
- 5-Latitude
- 6-Longlitude
- 7-Price

3.2: Data Cleaning

For the first set of data, does not need cleaning as it was just information about the “living expenses” in Toronto.

For the second part, some cleaning was made as there was some data for cities other than Toronto and also, there was some rent prices were so low or high and were out of range and could incorrectly affect the result. So I cleaned the data and removed incorrect data from the table.

3.3 Feature selection

The column "Address" was dropped as all the data is for city of Toronto and this column was not necessary in analysis.

4. Exploratory Data Analysis and Question

At the beginning I explored the data and by using a bar chart, I saw the expenses are approximately the same, except for "housing" and the cost of housing deducts up to 60% of the income. So the main problem to be solved is reducing the amount of rent.

Looking at the bar chart of number of bedrooms, shows that most of the apartments have one bedrooms and the rent prices has normal distribution and most of the apartments has been rented for price around \$2000.00.

We need to make sure if it is correct and the renting prices are obeying the typical theoretical assumptions.

In other word, by using this dataset and train a model of Machine Learning, can we predict the price of a not-seen apartment correctly?

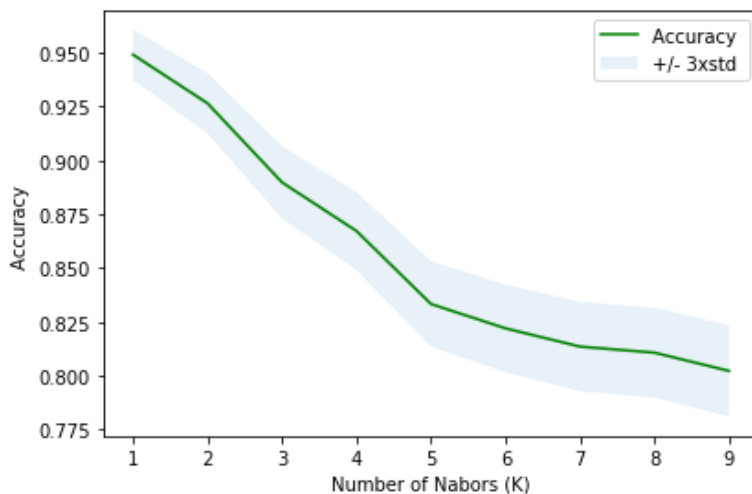
5. ML algorithms and evaluation

5.1. K-Nearest Neighbors

I chose KNN because it is a non- parametric techniques and it means that it does not make any assumptions on the underlying data distribution and the model structure is determined from the data.

First I found the best K and by looking at the plot, the elbow point is 5, so I used k=5.

I divided the data to train and test and trained the Train set and then predicted the test set.



5.2. Evaluation of the model

I used accuracy score from Sklearn-Metrics library to evaluate the model and it shows that the model accuracy is almost 83% which means that model can predict correctly by 83%.

6. Answer to Question

Now it is the time to answer our earlier Question: “Is the renting prices are obeying the typical theoretical assumptions?”

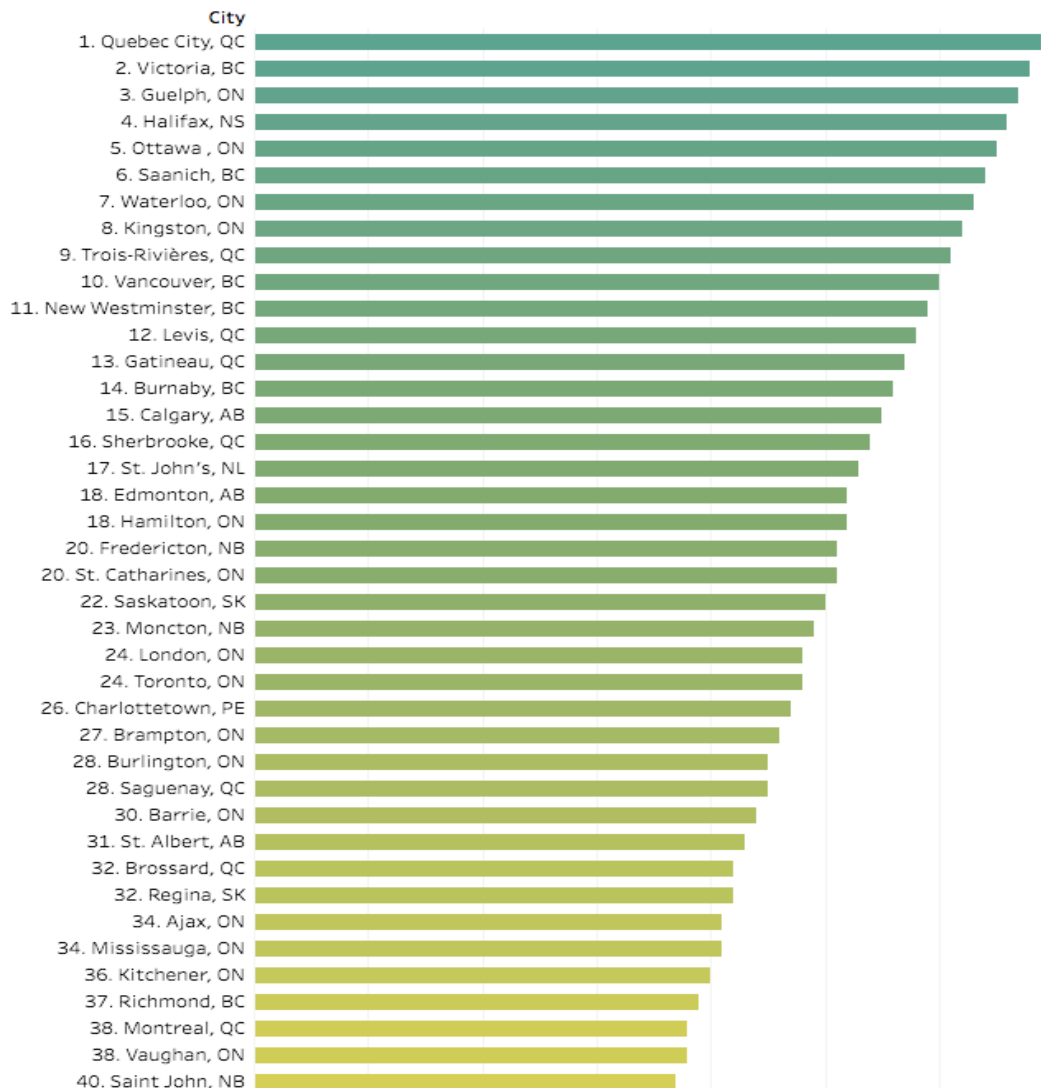
The answer is yes.

Therefore there is not a way to reduce the rent price as most of the rent prices follow the same path .Then we need to find other ways of reducing the expenses and specially “rent” in order to afford our expenses.

7. Some advice and recommendation

It is always good to search more and find alternatives. There are also other cities to think of.

According to “Daily Hive” here is a list of the hottest cities for millennial in 2018:



Let's think one more time and compare Toronto with one of the city in the list.

The first city in the list is Quebec City. The language might be a problem so we skip this one and choose the second city in the list, Victoria, BC.

Using **Foursquare API**, I chose to set Search quarry as “Turkish” in order to find places more familiar for my friend's background.

I got a list of Venues and their categories and some more information. I have done the same process and got information regarding the Venues in Victoria, BC.

Toronto- Categories
Art Gallery
Art Museum
Arts & Crafts Store
Bakery
Bar
Breakfast Spot
Bubble Tea Shop
Café
Chinese Restaurant
Coffee Shop
Concert Hall
Japanese Restaurant
Jazz Club
Middle Eastern Restaurant
Miscellaneous Shop
Neighborhood
Opera House
Park
Plaza
Poke Place
Ramen Restaurant
Seafood Restaurant
Smoke Shop
Sushi Restaurant
Tapas Restaurant
Tea Room
University
Vegetarian / Vegan Restaurant

Victoria - Categories
Bakery
Breakfast Spot
Café
Coffee Shop
Comic Shop
Farmers Market
French Restaurant
Gaming Cafe
Gym
Hotel
Indian Restaurant
Italian Restaurant
Lounge
Modern European Restaurant
Restaurant
Sandwich Place
Sporting Goods Shop
Sushi Restaurant
Tapas Restaurant
Tea Room
Vegetarian / Vegan Restaurant

Conclusion

By looking at the result and considering my friend study and interest to Art, I recommended Toronto to her.

If she takes my advice and move to Toronto, she still can bring the cost down by doing the following:

- Renting with friends or a co-worker- Consider finding a roommate to slash your rent by 50% or more.
- Avoid the flashy areas– In most large cities, the rental opportunities are endless. And since they are in-demand, they are likely to cost more. Try to avoid those “flashy” areas and try to find a place that’s a few blocks away.