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**VISUALIZATION (DATA 2205)**

**ASSIGNMENT 2**

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## SUMMARY

This is a report on some incident datasets for 'Manitoba, Ontario, Quebec' gotten from [http://www.statcan.gc.ca/eng/subjects/crime\\_and\\_justice](http://www.statcan.gc.ca/eng/subjects/crime_and_justice). It contains national crimes from the various provinces for adult and youth.

The dataset contains multiple crimes from many cities and some Provinces experiencing high crime rate. For this report, we shall be looking at fraudulent activities. This will help the law (federal police) get a clear understanding of the affected areas and better prepare to counter fraudulent crimes.

## TOOL UTILIZED

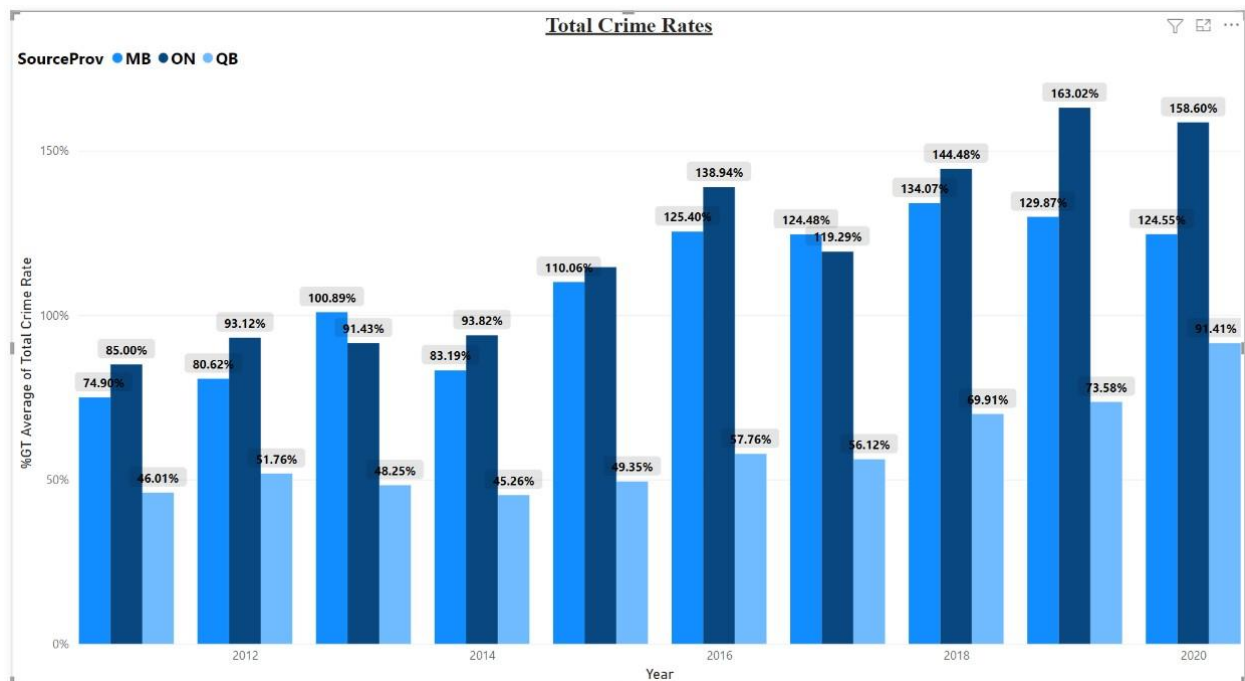
Giving the variety of tools available to conduct our analysis, we shall apply 'Power BI.' This is a great visualization tool created for data manipulation and story telling. It is easy to use when learned, has so many categories to chose from while trying to make sense of every data imported. Power BI also contains many Microsoft excel and word features to ease every task and stands as the best tool for data transformation as compared to Tableau and Excel.

## VISUALIZATION APPROACH

Selecting the right communication design, finding a relevant story before making the right visualization was mandatory.

- The first step was exploring the various datasets, later proceeded to transforming it by selecting just the necessary columns for better visualization.
- Later ensured all nulls removed from the dataset
- Adding the necessary columns for 'Year, City, Provinces,' and any needed variable.

## CRIME RATES BETWEEN MANITOBA, ONTARIO, QUEBEC



### 10 years crime rate for MANITOBA, ONTARIO, and QUEBEC

- Here we can see on an average, Ontario leading the way in fraudulent activities, which shows a loophole in the financial security system of Ontario. It sees an all-high average of 163.02% from 2019 to 2020. Does this show they are getting better at breaching financial security?
- Followed by Manitoba, the area slightly competes with Ontario along the years for a fraudulent spot. From 2012 to 2020, there is a vivid increase in fraud, seeing an average score of 74.90% to 125.40% in just 5 years. It does not end there, as the number in fraud increases thereby racking up their fraudulent score on average to 134.07% in 2018. Manitoba notices a drop in fraudulent activities from 129.87% in 2019, as compared to 134.07% in 2018. Fraudulent activities now face a 5.32% drop from 2019 to 2020.
- Furthermore, it is safe to say Quebec though with a lower rate in fraudulent activities as compared to the others, does not fail to raise the bar. 2011 to 2015 fluctuates from 46.01% to 49.35% fraudulent activities. As of 2016, things begin to get bad for victims of fraud as this bad crime faces an increase. In 2020, it reaches an all time high of 91.41% (a 42.06 increase)

## SOLUTION

Create an awareness system for the general population through advertisements, messages and more to awaken people from falling for various frauds. Enlighten population about the importance of securing passwords, banking, and personal national information.

We must strengthen our cyber security, credit checks and shopping habits of individuals in Ontario.

#### CRIME RATES FOR TOP 3 CITIES PER THEIR PROVINCES.

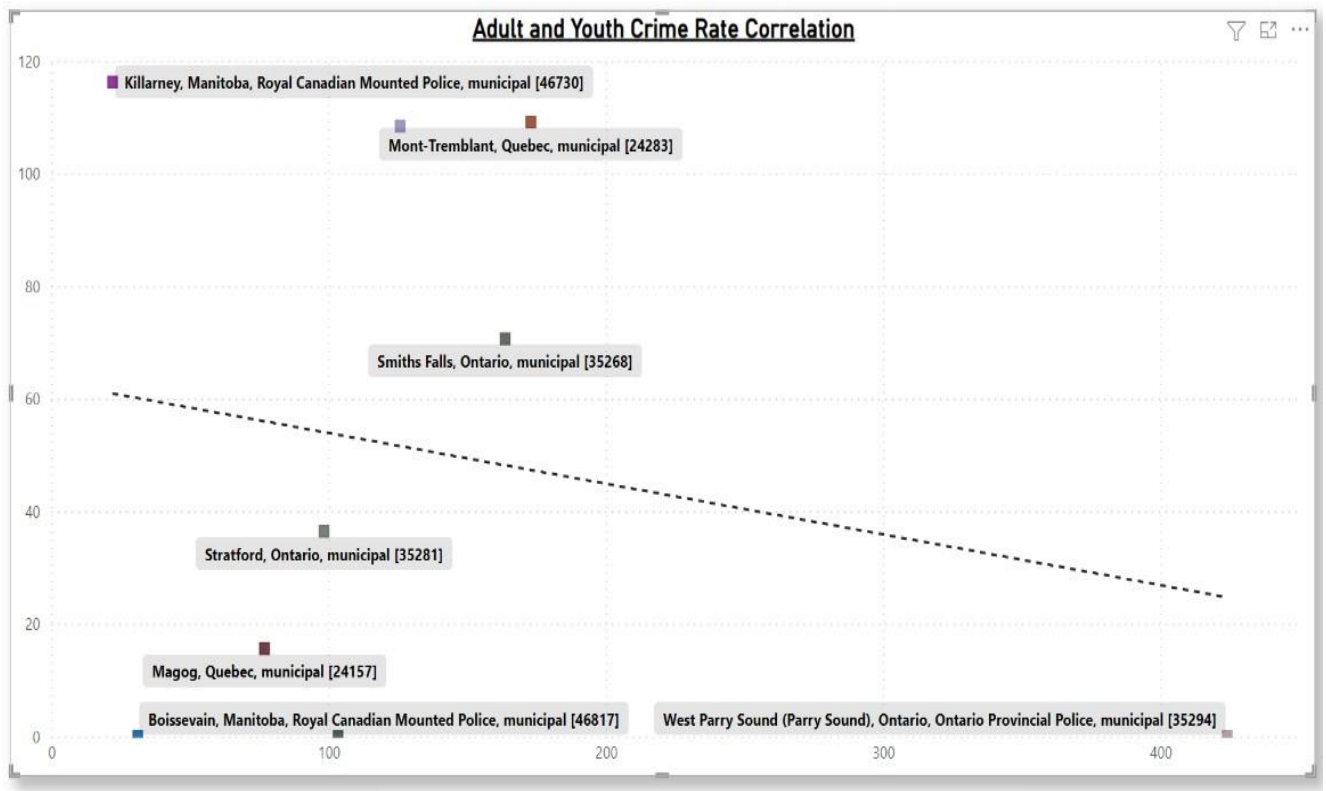
SourceProv	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
<b>MB</b>											
Killarney, Manitoba, Royal Canadian Mounted Police, municipal [46730]	319.34	224.62	264.08	336.98	635.32	1,342.28	2,568.42	1,847.29	1,183.19	1,095.33	981.69
Boissevain, Manitoba, Royal Canadian Mounted Police, municipal [46817]	125.63	371.52	245.70	121.65	181.60	721.59	1,441.44	1,547.62	1,084.34	537.96	637.91
Swan River, Manitoba, Royal Canadian Mounted Police, municipal [46770]	555.56	583.16	504.16	401.10	275.48	538.16	410.13	782.97	767.14	767.52	558.54
<b>Total</b>	<b>333.51</b>	<b>393.10</b>	<b>337.98</b>	<b>286.58</b>	<b>364.13</b>	<b>867.34</b>	<b>1,473.33</b>	<b>1,392.63</b>	<b>1,011.56</b>	<b>800.27</b>	<b>726.04</b>
<b>ON</b>											
West Parry Sound (Parry Sound), Ontario, Ontario Provincial Police, municipal [35294]									1,125.11	1,046.09	1,085.60
Stratford, Ontario, municipal [35281]	252.23	281.52	292.00	356.35	434.12	2,398.86	1,186.33	1,247.28	600.52	503.39	755.26
Smiths Falls, Ontario, municipal [35268]	445.94	528.76	553.09	512.71	835.62	1,558.67	946.34	455.96	667.10	643.12	714.73
<b>Total</b>	<b>349.09</b>	<b>405.14</b>	<b>422.55</b>	<b>434.53</b>	<b>634.87</b>	<b>1,978.77</b>	<b>1,066.34</b>	<b>851.62</b>	<b>797.58</b>	<b>730.87</b>	<b>766.87</b>
<b>QB</b>											
Mont-Tremblant, Quebec, municipal [24283]	539.81	635.75	476.34	452.54	533.61	472.18	342.95	735.00	589.74	409.91	518.78
Uashat Mak Mani-Utenam, Quebec, municipal [24177]	176.55	375.81	329.60	126.22	155.96	319.90	160.05	353.47	381.07	344.72	272.34
Magog, Quebec, municipal [24157]	212.03	242.10	259.13	211.42	249.81	273.82	192.05	299.58	238.06	335.69	251.37
<b>Total</b>	<b>309.46</b>	<b>417.89</b>	<b>355.02</b>	<b>263.39</b>	<b>313.13</b>	<b>355.30</b>	<b>231.68</b>	<b>462.68</b>	<b>402.96</b>	<b>363.44</b>	<b>347.50</b>

#### Highest crime rates in the past 10 years

From top to bottom, we shall look at MANITOBA, ONTARIO, and QUEBEC. Red mark shows low rate, yellow for mid range, while green for high fraud as compared to the other years and cities.

- For the top three (3) fraudulent cities in Manitoba, as time progresses, fraudulent activities stay increasing. In 2011, the top city recorded at 319.34 in fraud. Moving on to 2017 and 2018, killarney increased to fraudulent activities to 2,568.42 and 1,847.29, respectively. Averaging 981.69.
- The top cities of Ontario face no fraudulent activities from 2011 to 2018. But record in 2019 to 2020 with a total of 1,085.60. the second highest fraud city comes at all time high of 2,398.86 in 2016.
- Finally giving a look at Quebec on this chart, Mon-Tremblant does not loose guard.
  - In 2011 fraud stood at 539.81 and increased to 635.75 in 2012.
  - It keeps trending to burst an increased average again in 2018 to 735.00 and 589.74 in 2019.

## ADULT AND YOUTH CORRELATION



0.30

Adult and Youth Crime Correlation

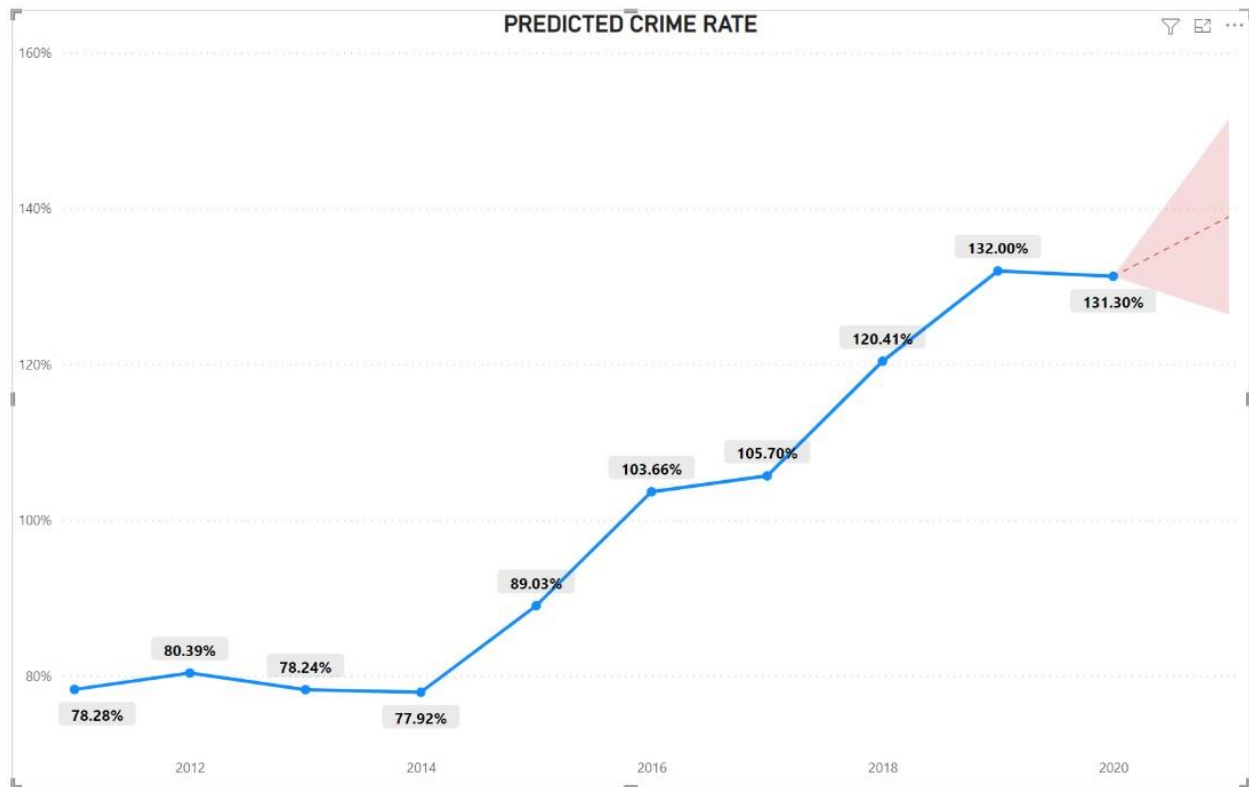
*Adult and youth crime rate correlation per highest crime rate cities*

There is no correlation between Adult and Youth crime rate. The trend line can be seen cutting through in a downward sloping manner, indicative of a strong negative correlation

This can also be since; more fraudulent crimes are committed by the adult population and not the youth. An increase in one variable, leads to a decrease in another variable

The calculated measure shows 0.30 correlation for both age groups. Extremely low as seen on the chart.

## CRIME RATE FOR NEXT YEAR



*Crime rate forecast for Manitoba, Ontario, and Quebec*

A clean and clear trend line increase has been forecasted for the years to come, showing a drastic increase in fraudulent activities from 77.92% in 2014 to 131.30% in 2020. An average 53.38% increase in crime and fraud to be specific.

## CONCLUSION

**Fraudulent activities are rapidly increasing in Canada, and the need to put the right tools in place to combat these fraudsters cannot be overstated. Increased training in fraud, raising awareness, ensuring the right algorithms and systems are in place to make these three provinces great. Fraud must be eradicated to the bare minimum; anyone could be next.**