INTRODUCTION

We have a dataset that pertains to robbery rates in three Canadian provinces, from 2011 to 2021. This study can help you understand how crime rates change during different times. We create graphs and charts in Power BI to uncover important insights and make further predictions about future events.

JUSTIFICATION FOR THE VISUALIZATION TOOL

We will be using the Microsoft Power BI tool to create the dashboard and other visualizations for the project. This tool can help you get a great deal of valuable information from any type of data. The ability to easily transform and cleanse data makes data visualization a breeze. Despite the abundance of reporting tools, Power BI Desktop is truly great at visual data exploration because it makes data visualization quick and easy to understand.
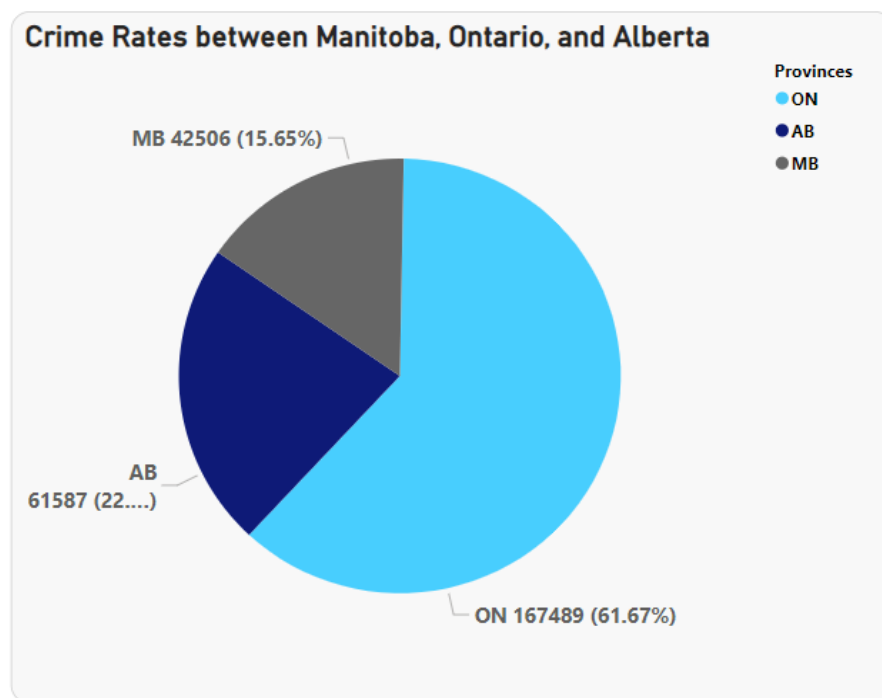
EXPLANATION OF DATA ANALYSIS / VISUALIZATION APPROACH

Firstly, for each dataset, we'll be identifying which column is telling what (i.e., reading the Meta Data). Then we'll be cleansing the data and making it more useful, for that we've used Power Query. Basically, Power Query is an effective tool for connecting to numerous different data sources and formatting the data as needed. After analyzing the data, we have removed columns that are not necessary for this report and have created new columns which helped us to make more useful Charts and Insights. As the data is very vast so we have filtered the column for years, for this project we only need the last 10 years of data. Also, we have ignored null values to make our report more efficient and accurate.

REPORT FINDINGS

For this report, we are answering four questions. For that, we have created visualizations and have given insights into the same.

- **Compare the crime rates between Manitoba, Ontario, and Alberta in the last 10 years.**

For the above question, we have prepared a Pie Chart which is showing the Crime Rates between the three provinces. For the above, we can clearly conclude that out of three provinces Ontario has have the Highest Crime rate for Robbery for the last 10 years i.e., 167489, which is almost 3 times more than Manitoba.

- **Compare the crime rates for the top 3 cities for Manitoba, the top 3 cities for Ontario, and the top 3 cities for Alberta with the highest crime in the last 10 years.**

Crime Rates for the Top 3 cities for Manitoba, Ontario and for Alberta with the highest crime in the last 10 years

Province	GEO	Robbery
AB	Edmonton, Alberta, municipal [48033]	12537
AB	Calgary, Alberta, municipal [48014]	10803
AB	Red Deer, Alberta, Royal Canadian Mounted Police, municipal [48882]	1278
MB	Winnipeg, Manitoba, municipal [46064]	18540
MB	Brandon, Manitoba, municipal [46005]	445
MB	Thompson, Manitoba, Royal Canadian Mounted Police, municipal [46774]	396
ON	Toronto, Ontario, municipal [35304]	35164
ON	Peel Region (Mississauga/Brampton), Ontario, municipal [35041]	9819
ON	Ottawa, Ontario, municipal [35010]	5997
Total		**94979**

The table is showing Crime Rates for the top 3 Cities in Manitoba, Ontario, and Alberta with the highest crime in the last 10 years. Where in Alberta Edmonton have the highest Robbery Rate of 12537, Manitoba's Winnipeg with 18540, and Ontario's Toronto with 35164.
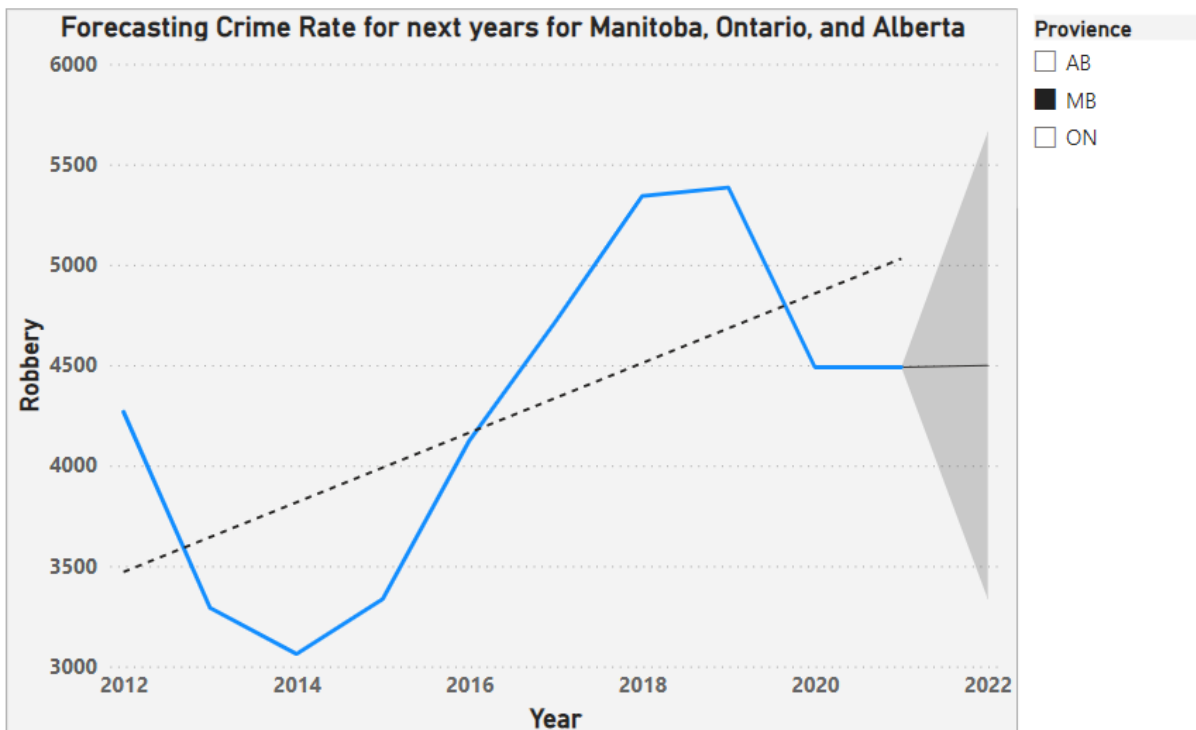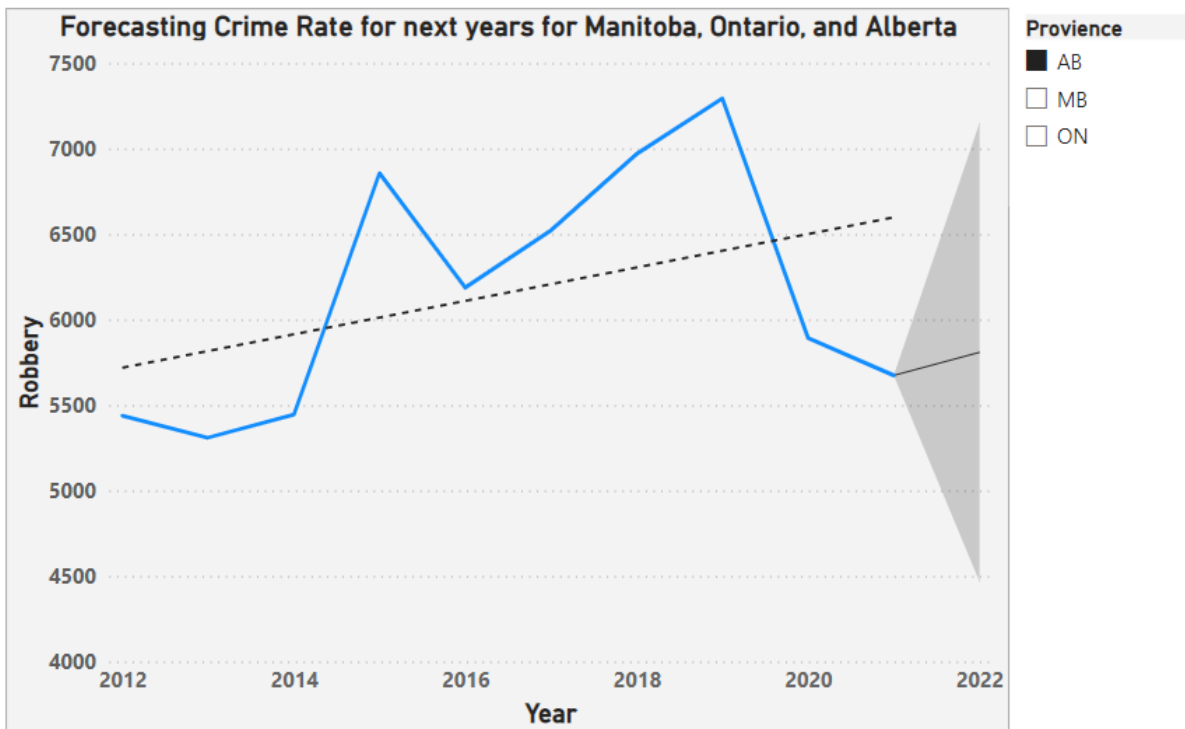
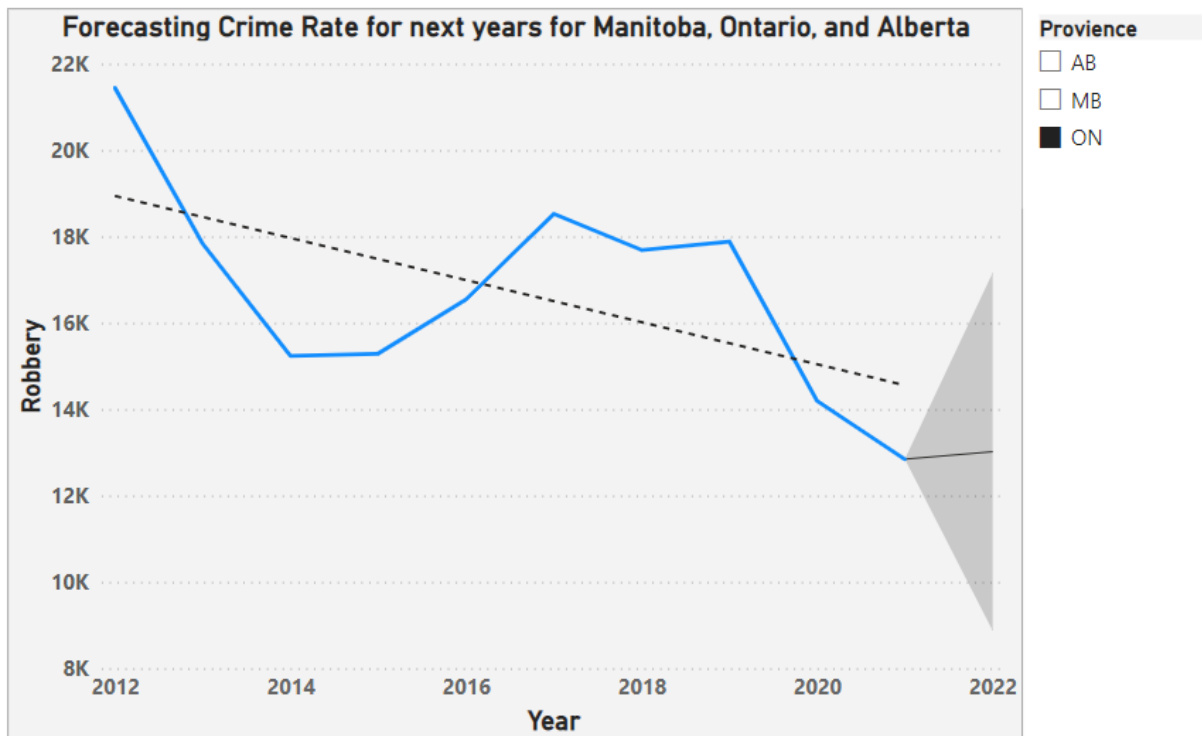- **Determine if there is a correlation between youth crime and adult crime for each high crime rate city.**

Correlations between Youth Crime and Adult Crime for each High Crime Rate City

Province	GEO	Robbery	Correlations
ON	Toronto, Ontario, municipal [35304]	35164	0.90
AB	Calgary, Alberta, municipal [48014]	10803	0.83
ON	Peel Region (Mississauga/Brampton), Ontario, municipal [35041]	9819	0.73
MB	Thompson, Manitoba, Royal Canadian Mounted Police, municipal [46774]	396	0.64
ON	Ottawa, Ontario, municipal [35010]	5997	0.57
AB	Edmonton, Alberta, municipal [48033]	12537	0.56
MB	Winnipeg, Manitoba, municipal [46064]	18540	0.46
AB	Red Deer, Alberta, Royal Canadian Mounted Police, municipal [48882]	1278	0.33
MB	Brandon, Manitoba, municipal [46005]	445	-0.76
Total		**94979**	**0.70**

For the above question, we have created a table chart as through this we can clearly see all the correlations for the Top 3 Cities of Alberta, Manitoba, and Ontario. Where Toronto, Ontario has the highest correlation of 0.90 with a Robbery rate of 35164.

- **Determine the crime rate for next year for Manitoba, Ontario, and Alberta.**

Forecasting Crime Rate for next years for Manitoba, Ontario, and Alberta

In this question, we can see the forecast for next year till 2022 for Albert, Manitoba, and Ontario. Predictions and forecasts are explained more in the next section.

CRIME RATE PREDICTION: PREDICT AMOUNT OF CRIME FOR MANITOBA, ONTARIO, AND ALBERTA FROM A PROVINCE PERSPECTIVE.

From the above line graphs, we are predicting the Robbery Rate till 2022 for all three Provinces. We can see in Alberta the Robbery rate is fluctuating each year. There was a huge rise in 2018-2020 but after that it reduced. In Manitoba, the Robbery Rate spiked during the same period i.e., 2018-2020 but it reduced after that. And in Ontario, we can we the robbery rate is reducing every year. The Graphs is also showing the Trending line for all of the above provinces where Ontario is the only province that is showing Decreasing trending line. Our Visualization is predicting a very small increase in the robbery rate in all of the provinces.

CONCLUSION

From the above report, we can say that the Robbery Rate in Mantibo and Alberta has reduced since 2020. In Ontario, the Robbery Rate is well controlled by Police Department as we can clearly see every year the rate is reducing. Also, the Trending Line is showing the same. So at last the Police Department for Manitoba and Alberta have to look more carefully at the Robbery Rate.