IFN558 Management Information Systems
Assessment 1 Individual Template

Everybody to submit individually. *ALWAYS check your student email for the submission receipt.*

Student name: _____ Student ID:

_____

Deliverable
1: Problem formulation & design objectives Identify one problem area in the data and describe how the digital dashboard will help to address this problem.
2: Early draft Include a screenshot of the early draft of your digital dashboard.
3: Advanced version Include a screenshot of the advanced version of your digital dashboard.
4: Final version Include a screenshot of the final version of your digital dashboard.

Deliverable 1: Problem formulation & design motivation (250 – 500 words +/- 10%)
Why is the problem important and how will developing the dashboard help to address the problem? Specify one problem from the overarching challenge of improving the safety of the city. Look into the data and identify one aspect, which you think will help the stakeholders achieve their objectives through the support of the digital dashboard.

Problem Statement: Analyzing Crime Data from 1998 to 2019

The dataset includes various details about crimes that have occurred between 1998 and 2019, such as victim and offender information, crime classification, and reporting circumstances. These details include:

- Victim gender
- Victim age
- Victim's marital status
- Victim's College/University education
- Victim race
- Victim Hispanic origin
- Victim household income
- Offender gender
- Offender age
- Offender race
- Offender weapon
- Offender gang membership
- Offender drug/alcohol involvement
- Crime classification
- Relationship between the victim and the offender
- Victim's ability to recognize the offender
- Victim's reporting to the police
- Third-party involvement in reporting to the police
- Whether the offender is known to the victim
- Knowledge of the offender's whereabouts
- Whether the crime occurred in a private location

Now, let's consider the problem and how a digital dashboard can address it:

Problem 1: Data Collection and Analysis

In this scenario, the challenge is collecting and analyzing data from the given dataset, which contains extensive details about victims, offenders, and crimes. This process is time-consuming and challenging when performed manually, especially when dealing with large volumes of data stored in Excel sheets.

A digital dashboard can significantly simplify this process and improve efficiency by leveraging its business intelligence (BI) features. Here's how:

Data Aggregation :-The digital dashboard can automate the process of collecting, aggregating, and organizing data from the dataset. This reduces the time and effort required for manual data extraction.

Data Visualization :-The dashboard can visually represent the collected data through charts, graphs, and interactive visuals. This makes it easier for analysts and decision-makers to understand and interpret the data, identify trends, and draw insights.

Data Filters and Querying :- Users can apply filters and queries within the dashboard to focus on specific aspects or time frames. For example, they can quickly analyze crime patterns for a particular year, location, or demographic group.

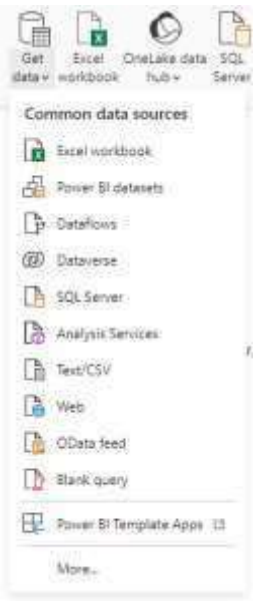
Real-Time Updates:- If the dataset is updated regularly, the dashboard can provide real-time or scheduled data updates, ensuring that stakeholders always have access to the latest information.

Custom Reports:- Users can generate customized reports and summaries from the dashboard, streamlining the process of sharing critical insights with relevant parties.

In conclusion, a digital dashboard would streamline the process of collecting, analyzing, and visualizing the extensive crime data, saving time and effort while providing valuable insights to help address the problem more effectively. This tool would be invaluable for law enforcement, researchers, and policymakers seeking to understand crime trends, develop targeted interventions, and improve public safety.

Deliverable 2: Early draft of dashboard (250 – 500 words +/- 10%)
Include a screenshot of the early draft of your digital dashboard. Provide a description of how you designed and developed the early draft of your digital dashboard.

For Creating Any dashboard Firstly it need to pass ETL(Extract – Transform – Load) phase after that it can be ready to make interactive dashboard. **Step – 1.**Extract data from the data sources like
Sql server
Excel File
Csv File



Step -2. After getting data from the various sorces now it's time to check whether if is there any null value or duplicate value avalaible or not if it is then clean the data and go ahead after successfully cleaning it is ready to make dashboards.

Step -3. After performing data cleaning process now it's time to check your necessary things from the given data analyse what things do you want from the given data set and how you can present those all things in the form of

Certainly, I can explain each of the elements you've listed in more detail:

1.Slicers

- Slicers are interactive filtering elements in a digital dashboard that allow users to filter and select data. They are typically used to refine the data displayed on the dashboard.
- Slicers often take the form of dropdown menus, checkboxes, or slider bars. Users can choose specific values, ranges, or categories to focus on within the data.
- For example, in a crime data dashboard, you could use slicers to filter by crime classification, time period, location, or other relevant attributes.

2.Pie Chart

- A pie chart is a circular chart divided into slices, with each slice representing a portion of a whole. The size of each slice corresponds to the proportion it represents in the dataset.
- Pie charts are useful for displaying the distribution of a single categorical variable. They are particularly effective when you want to show how a whole is divided into parts.
- In a crime data dashboard, you might use a pie chart to illustrate the distribution of different types of crimes within a specific time frame.

3. Donut Chart

- A donut chart is similar to a pie chart but has a hole in the center, which gives it the appearance of a donut. It is often used to compare the parts of a whole.
- Donut charts are effective for showing the relationship between subcategories within a larger category. They can be useful when you want to emphasize proportions and show hierarchical data. - In your crime data dashboard, a donut chart could be used to display the breakdown of crimes in different areas of the city.

4. KPIs (Key Performance Indicators)

- KPIs are metrics that provide a clear, quantifiable measure of performance or progress toward specific objectives or goals.
- KPIs are typically displayed as numerical values, percentages, or indicators, and they are used to quickly assess the state of a particular aspect of the business or data.
- In a crime data dashboard, KPIs could include metrics such as the total number of reported crimes, the crime clearance rate, or the percentage change in crime rates over time.

5.Stacked Column Chart

- A stacked column chart is a type of bar chart where data is represented as stacked columns. Each column represents a category or group, and the height of each column is divided into segments to represent subcategories.
- Stacked column charts are useful for showing the composition of a whole while also highlighting the individual components.
- In a crime data dashboard, a stacked column chart could illustrate the number of crimes over time, with each column representing a specific time period and the segments showing the types of crimes within that period.

6.Stacked Bar Chart

- A stacked bar chart is similar to a stacked column chart but with horizontal bars. It's used to show the composition of a whole and the breakdown of categories or subcategories.
- Stacked bar charts are effective for comparing the distribution of data within categories.
- In a crime data dashboard, a stacked bar chart might be used to display the distribution of crimes by location, with each bar representing a location and the segments indicating the types of crimes reported in that location.

7.Matrix

- A matrix is a grid or table-like visualization that displays data in rows and columns. It's used to compare and analyze data across multiple dimensions or attributes.
- Matrices are particularly useful for displaying cross-tabulated data and providing a detailed view of the relationships between multiple variables.

Conclusion

These elements can be combined in a digital dashboard to provide users with a rich and interactive experience, enabling them to explore and understand the crime data more effectively.

By using this all things data analysis and data visualization becomes so easy and it also provide good interface

Deliverable 3: Advanced version of dashboard (250 – 500 words +/- 10%)
Include a screenshot of the advanced version of your digital dashboard. Provide a description of how you designed and developed your digital dashboard explaining the transition from the early draft to the advanced version.

Let's Understand all things step by step which designed in previous steps.

1.KPI'S

As mentioned in previous page Kpi's are used to display the data in form of numbers which available in the dataset.

2.Slicers

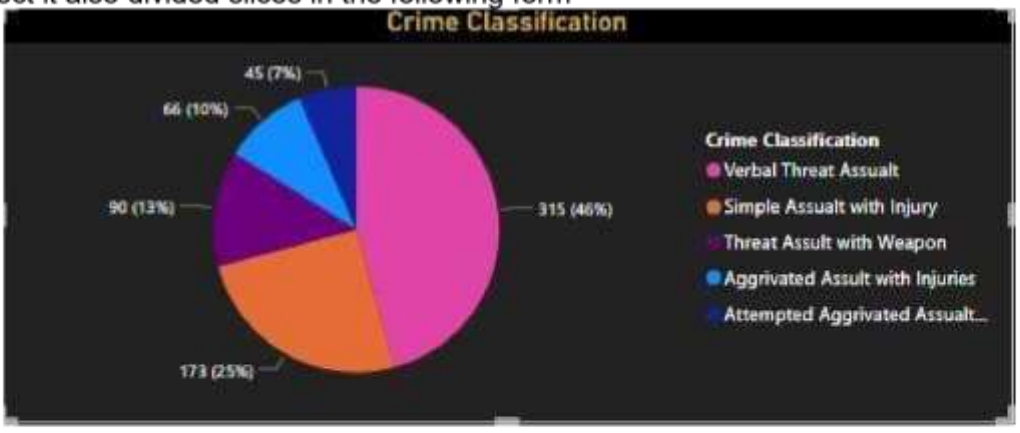
Slicers are interactive filtering elements in a digital dashboard that allow users to filter and select data. They are typically used to refine the data displayed on the dashboard.

This is the implementation of slicers in the crime project it will list out categories from 1998 to 2019

3. Pie Chart

A pie chart is a circular chart divided into slices, with each slice representing a portion of a whole. The size of each slice corresponds to the proportion it represents in the dataset

In this project it also divided slices in the following form



4.Donut Chart

A donut chart is similar to a pie chart but has a hole in the centre, which gives it the appearance of a donut. It is often used to compare the parts of a whole

For this project donut chart will divide offender race In the following way

For this project donut chart will divide offender race In the following way

5.Stack column chart

A stacked column chart is a type of bar chart where data is represented as stacked columns. Each column represents a category or group, and the height of each column is divided into segments to represent subcategories.

For this project it used stack column chart for count the numbers of male and females

6.Stack Bar Chart

A stacked bar chart is similar to a stacked column chart but with horizontal bars. It's used to show the composition of a whole and the breakdown of categories or subcategories.

For this project it used Stack bar chart for show the Marital Status of the victim

7.Matrix

A matrix is a grid or table -like visualization that displays data in rows and columns. It's used to compare and analyse data across multiple dimensions or attributes.

For this it used matrix for get the data of income

Victom HouseHold Income

Victim Household Income	Count of Victim Marital Status
Missing	163
75,000 >	104
50,000-74,999	68
40,000-49,999	51
20,000-24,999	50
< 5,000	38
30,000-34,999	32
35,000-39,999	32
25,000-29,999	30
12,500-14,999	27
7,500-9,999	23
Total	689

8.Treemap

A treemap is a powerful and visually appealing data visualization tool that is commonly used in Power BI and other data analytics platforms. It presents hierarchical datain a structured, rectangular format, where each level of the hierarchy is represented by a nested rectangle. The size and color of each rectangle reflect specific data attributes, making it easy to compare andanalyse the data at a glance.

In this case it used treemap for know the detail of offender

Deliverable 4: Final version of dashboard (250 – 500 words +/- 10%)
Include a screenshot of the final version of your digital dashboard. Provide a description of how you designed and developed your digital dashboard explaining the transition from the advanced version to the final version.

Final Dashboard

This is the Digital Dashboard which shows the data from 1998 – 2019 and you can find the insights from the dashboard by data visualizations.

(Final Dashboard at the page number of 13)

How advanced version to the final version Polished Design:
The final version of the dashboard features a refined and visually appealing design, with attention to details such as color schemes, fonts, and layout.

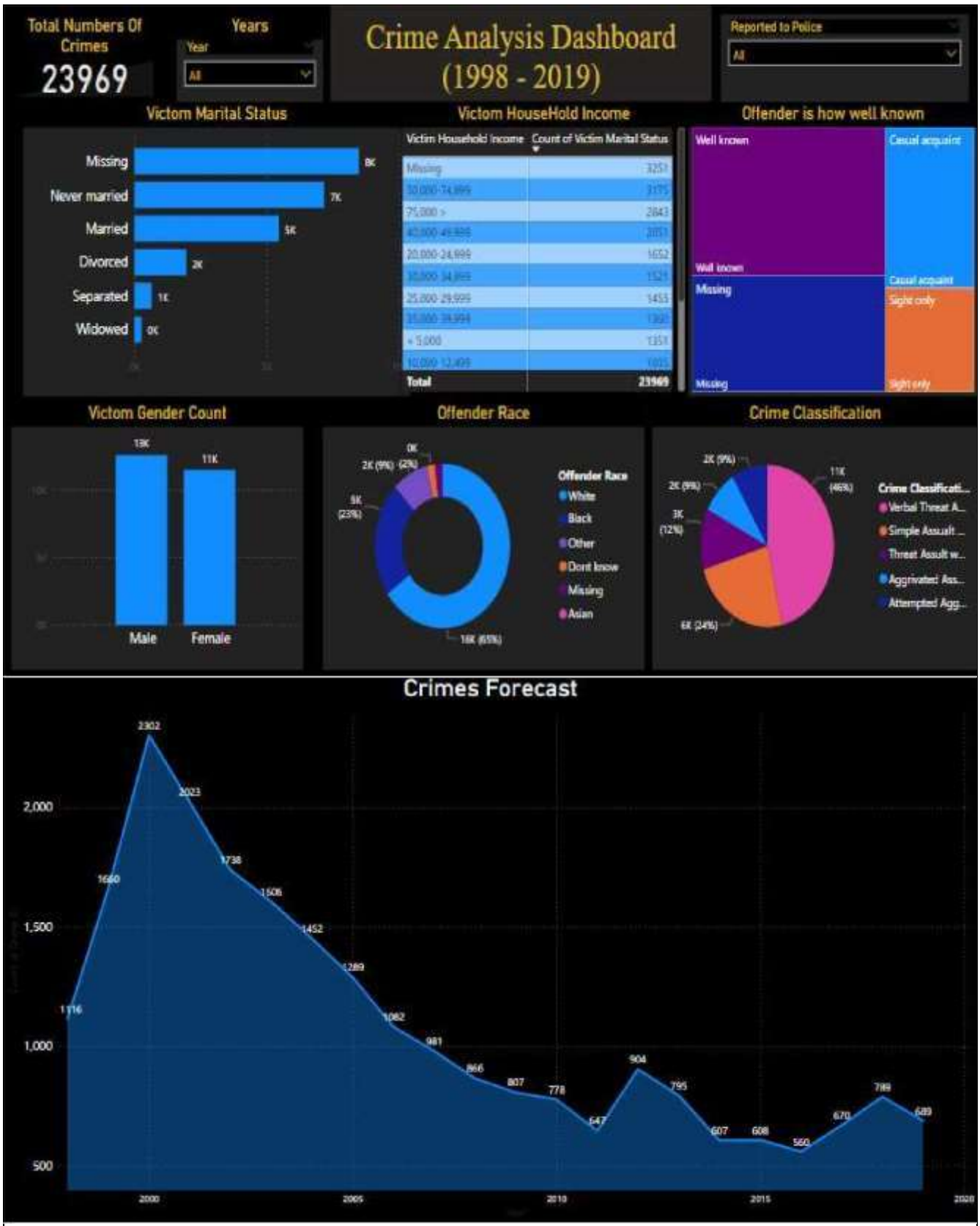
Fully Functional: All components, features, and interactivity are fully implemented and thoroughly tested. The dashboard should be free of major bugs or issues.

Data Integration and Updates: Data integration is seamless, and the dashboard is set up for automatic or scheduled data updates, ensuring that users always have access to the latest information.

User Documentation: User guides or documentation are often provided to help users navigate and make the most of the dashboard.

Security and Access Control: Security measures are in place to protect sensitive data, and access controls are established to restrict dashboard access to authorized users.

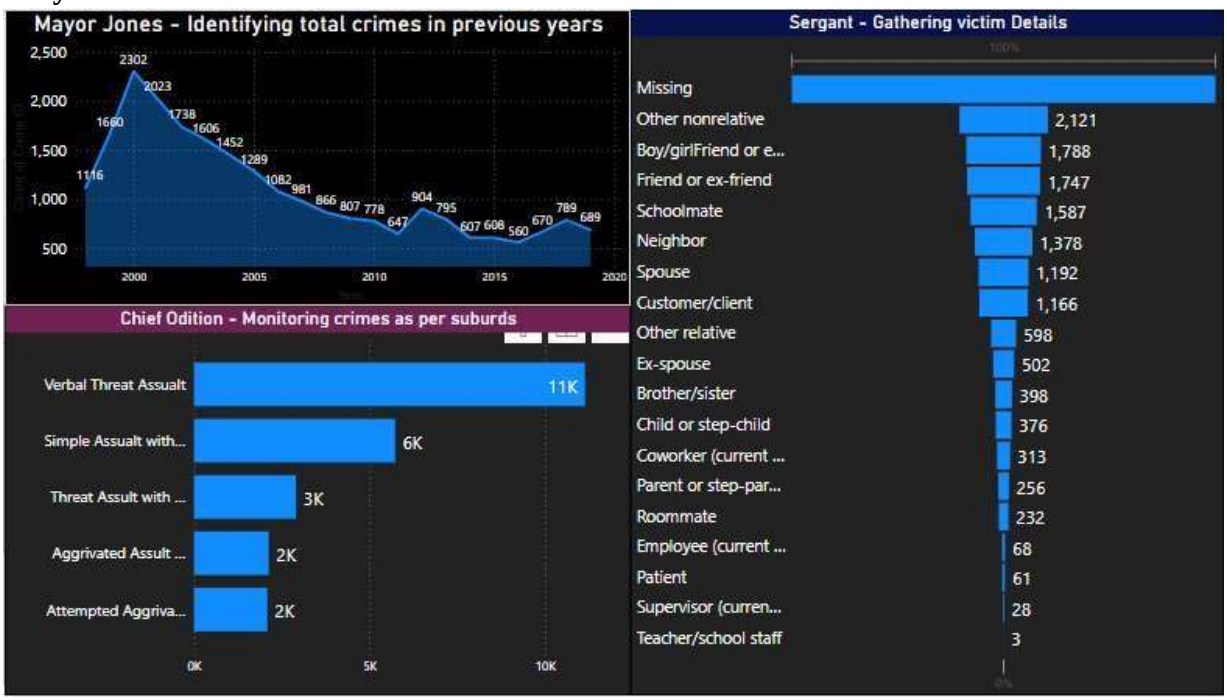
Performance Optimization: The final version is optimized for performance, ensuring that it loads quickly and functions smoothly even with large datasets.

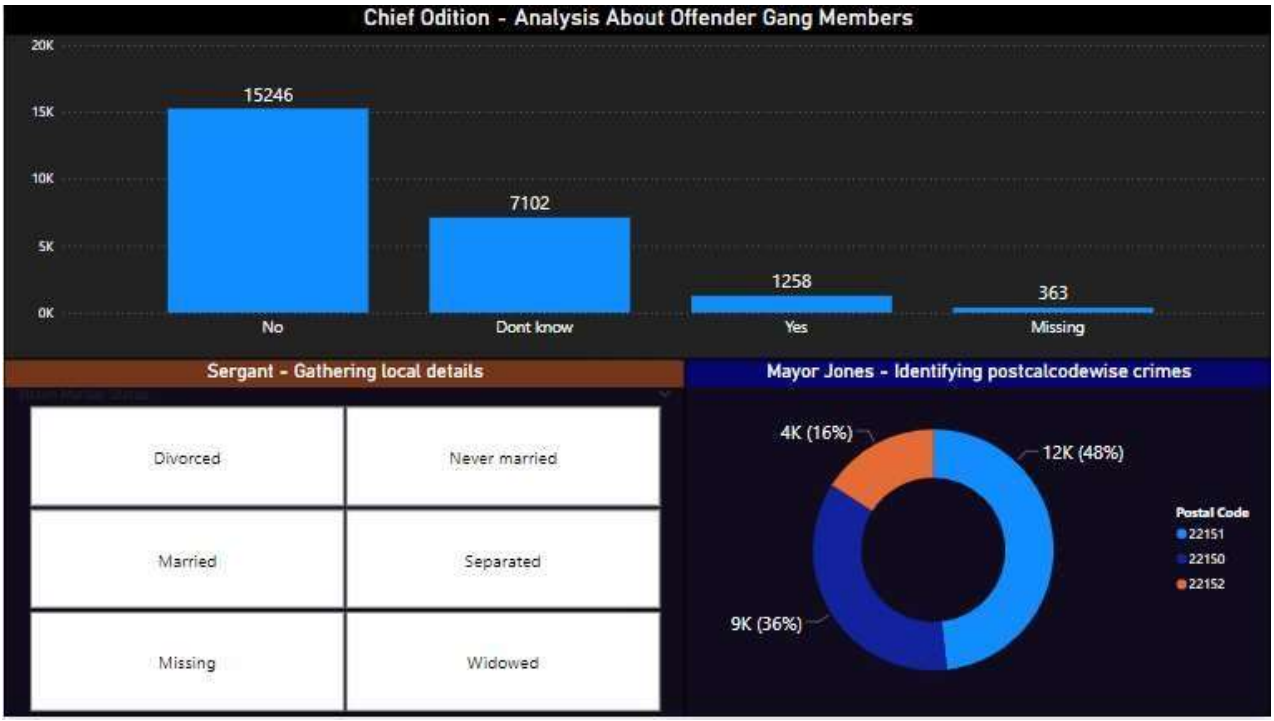

Total Numbers Of Crimes
23969
Years
Year
All
Crime Analysis Dashboard (1998 - 2019)
Reported to Police
All
Victom Marital Status
Missing
Never married
Married
Divorced
Separated
Widowed
Victom HouseHold Income
Victim Household Income
Count of Victim Marital Status
Total
23969
Offender is how well known
Well known
Casual acquaint
Missing
Sight only
Victom Gender Count
Male
Female
Offender Race
Offender Race
White
Black
Other
Dont know
Missing
Asian
Crime Classification
Crime Classificati...
Verbal Threat A...
Simple Assault ...
Threat Assult w...
Aggrivated Ass...
Attempted Agg...
Crimes Forecast
2,000
1,500
1,000
500
2000
2005
2010
2015
2020

Insights from the crime data from 1998 – 2019

- From 1998 to 2019 there are 23969 crimes registered.
- Total number Of male victoms are 13K and number of female victoms are 11k.
- Offender race is 16k at it's max for the white peoples.
- Most numbers of classification is verbal threat assault.

For give the reporting from the officers it need following data visualizations above it have case study that which officers what did.





As per Dashboard we can see there are 3 main characters from the case

1. Mayor jones
2. Chief Odition
3. Sergant

Roles Of all characters

1.Mayor Jones

As per dashboard it can easy to understrand that mayor jones identifying the total crimes which happened in previous years.

This character is responsible for collecting crimes data and analyze that data.in this case he is gathering local crimes details via postal codes.

2.Cheif Odition

As per dashboard it is also looking easy the role of this character he is monitoring the crimes and did tge study on the classification of the crimes.

This character is fully responsible for the crimes related information gathering.in this case he is responsible for gathering data from the gang members of the crime.

3.Sergant

Sergant is the character which is different from the above 2 characters.

As per dashboard it confirms that he is responsible for gathering victim details and do the case study and try to find the important data.in this case he is gathering reqirement from the different slicers as per given in the dashboards.

Some scenero for data visualization

Insights From The Year 2000

- In the year of 2000 numbers of crimes were 11491.
- That year number Of male victoms are 1218 and number of female victoms are 1084.
- As per report of the year 2000 Never married persons did 452 crimes.
- Most numbers of classification was verbal threat assault.