

Data Visualization on Ottawa Police Car Theft Dataset

Introduction

This report is based on the Ottawa Police dataset that contains information about car thefts. The goal of this assignment is to create and improve three different types of charts using Excel. Each chart is made with raw data and then improved by making four changes to make it easier to read and understand.

Chart 1: Line Chart – Incidents Over Time

I chose to use a line chart for this part of the data because it shows how car thefts have changed over time. Line charts are good for showing trends across years, and I wanted to highlight whether the number of incidents was going up, down, or staying the same. This type of chart helps tell a clear story about how serious the issue has become in recent years.

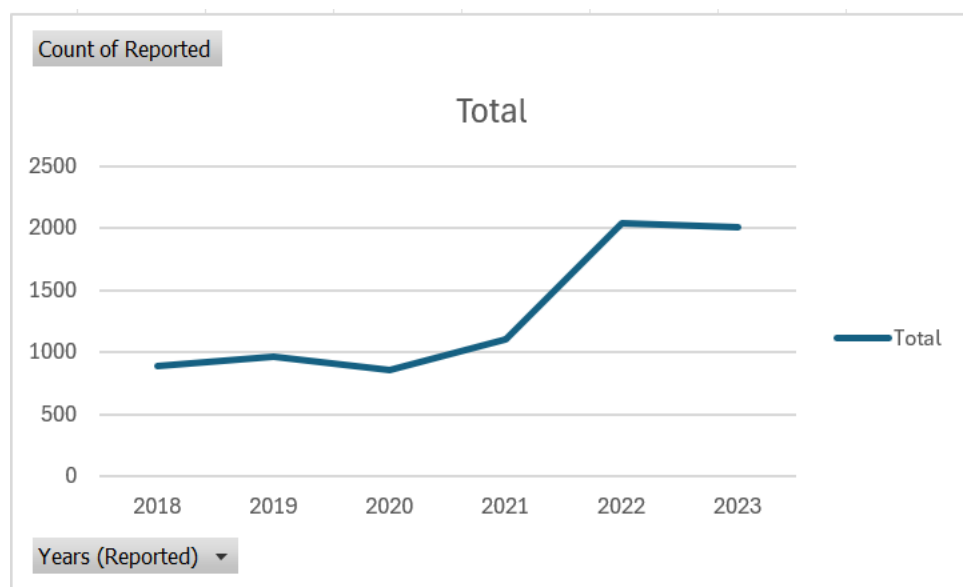


Figure 1.0 – Original Line Chart (Before any formatting)

This was the basic line chart created directly from the data. While it does show the general trend from 2018 to 2023, it's missing key elements like a proper chart title and axis labels. Without those, it's hard to know exactly what the data is about.

1.1 Added Axis Titles

I started by adding axis titles, but they still had the default text like "Axis Title." It wasn't useful yet, but it was the first step to improve the chart layout and make things more organized.

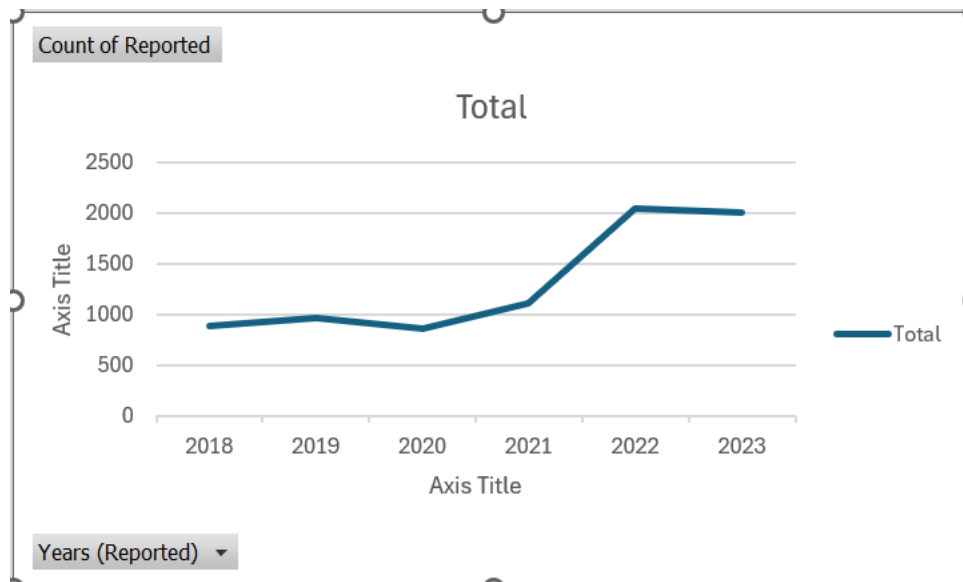


Figure1.1 – Axis Titles Added (But Not Customized Yet)

1.2 Correct Axis Labels Added

Here I added proper axis labels. I wrote “Axis Date Reported” on the bottom to show the timeline and “Number of Reported Incidents” on the left to show what the numbers mean. This made the chart easier to understand.

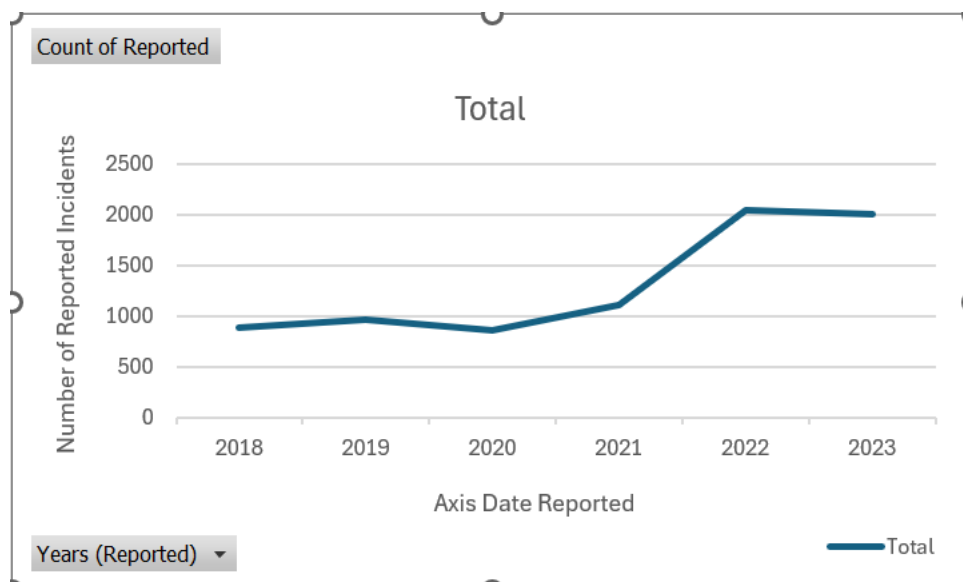


Figure1.2 – Correct Axis Labels Added

1.3 Updated Chart Title

I changed the title from “Total” to “Incidents Over Time.” Now it clearly tells

people what the chart is showing a timeline of vehicle thefts. A good title helps people understand the chart right away.

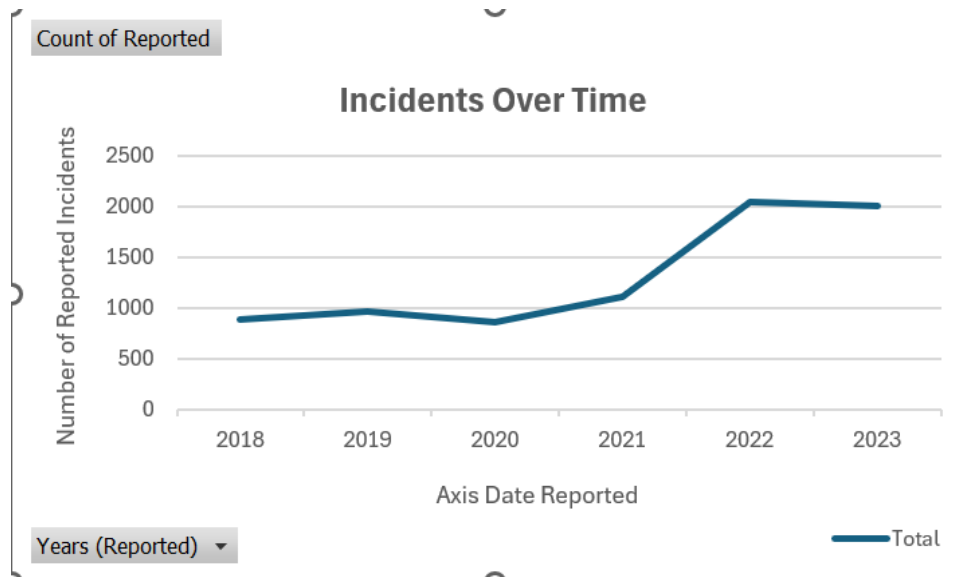


Figure1.3 – Updated Chart Title

1.4 Final Version with Data Labels and Markers

In the final version, I added small circle markers and exact numbers for each year. This makes it easy to see the values and follow the line. For example, you can quickly see that 2022 had the most incidents (2043). The numbers on the chart help people read the data without guessing.

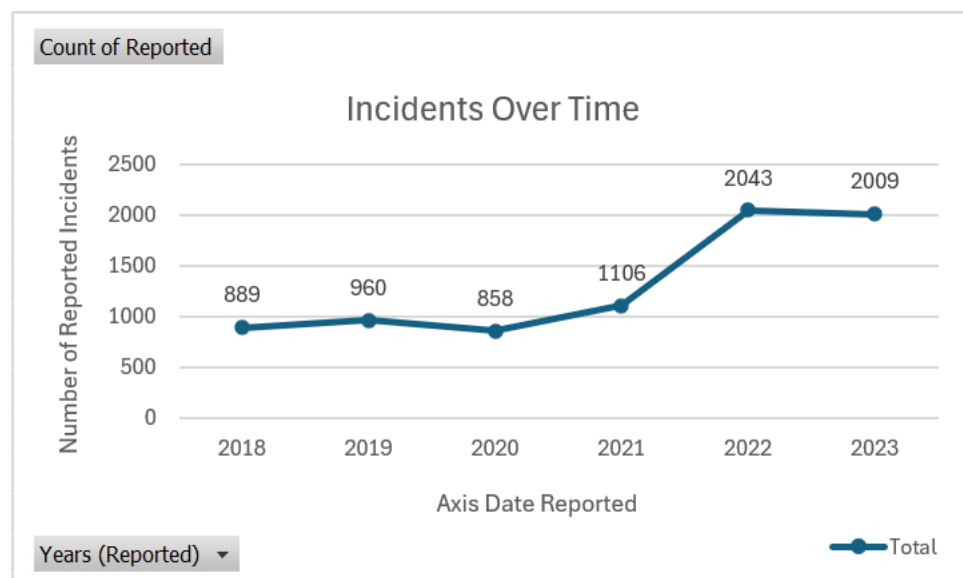


Figure1.4 – Final Version with Data Labels and Markers

This chart now clearly shows how car thefts changed over the years. It starts low, drops

a bit in 2020, and then jumps a lot in 2022. With the changes I made, it's much easier for someone to understand the trend without needing extra explanation.

Chart 2: Pie Chart – Reported Thefts by Time of Day

I chose a pie chart for this part of the data because it helps show the percentage of incidents that happened during different times of the day. Pie charts are a good way to compare parts of a whole, and in this case, it lets us see when most thefts occurred like morning, afternoon, evening, or night. I wanted to see which time of day had the most incidents and show that clearly to the viewer.

2.0 Original Pie Chart (No Changes)

This was the first version of the pie chart. It shows the categories and their slices, but there are no labels or title. It's hard to understand what the chart is really about or what time has the most thefts.

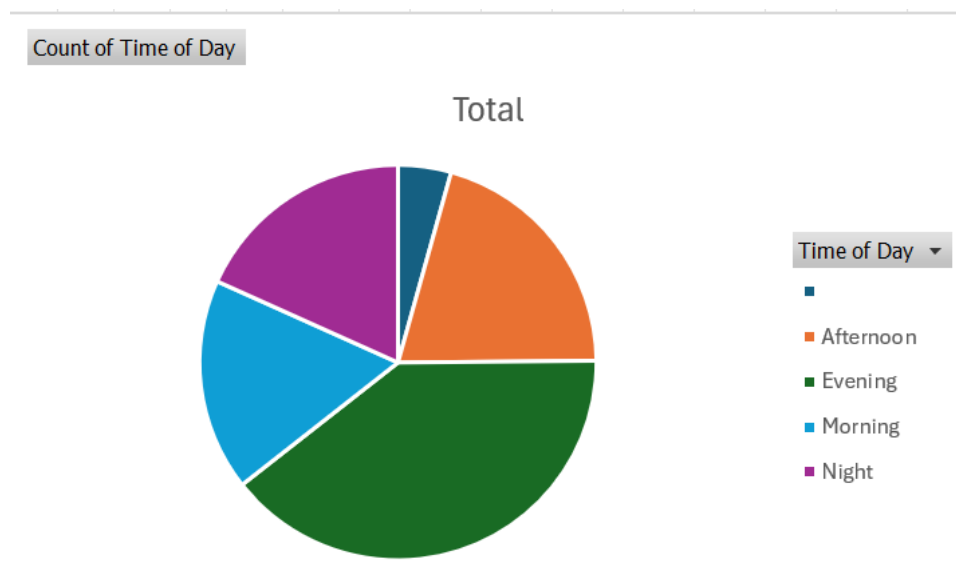


Figure 2.0 – Original Pie Chart (No Changes)

2.1 Basic Color Formatting Applied

I added different colors to each slice to help separate the categories visually. This was the first step toward making the chart easier to read.

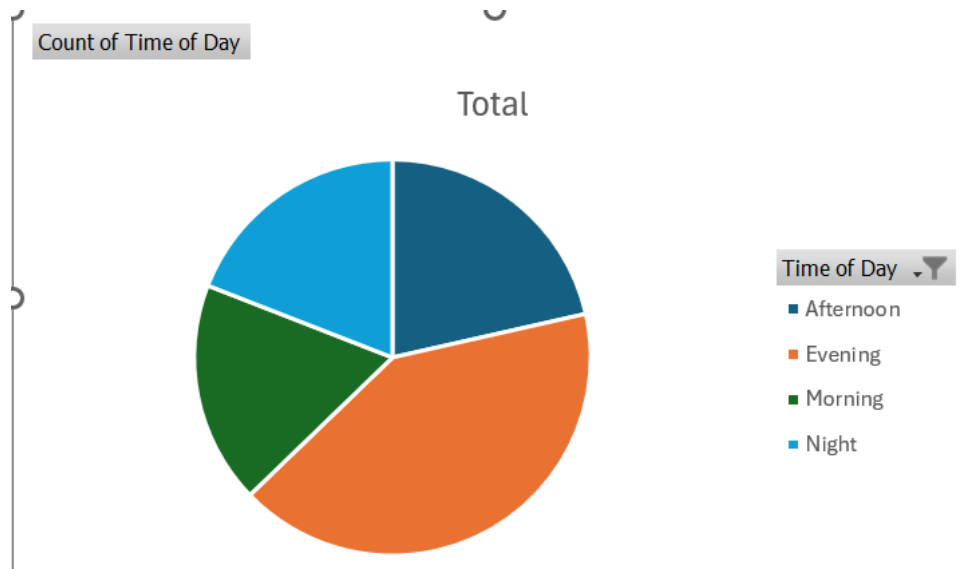


Figure 2.1 – Basic Color Formatting Applied

2.2 Added Chart Title

I changed the chart title to “Reported Thefts Across Different Times of Day.” This makes it clear what the viewer is looking at.

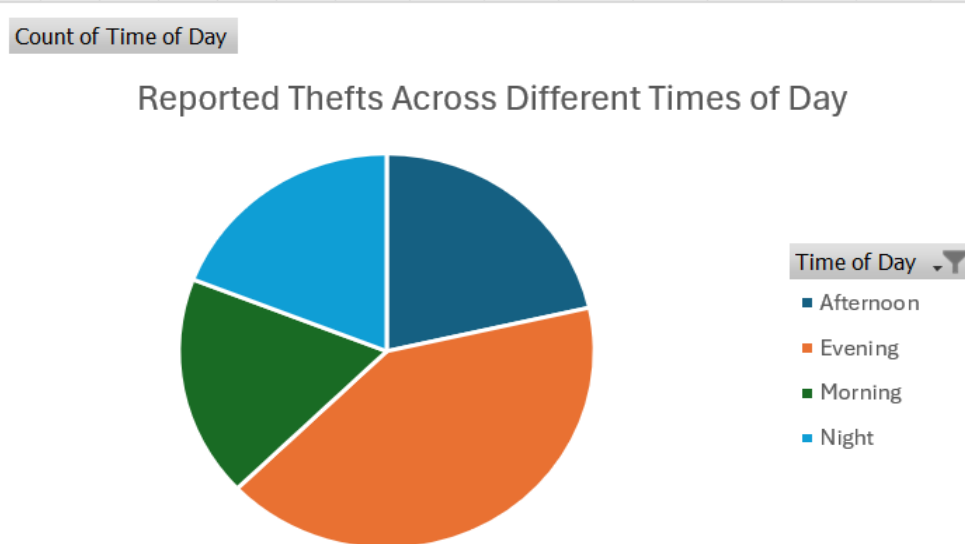


Figure 2.2 – Added Chart Title

2.3 Added Data Labels

I added labels to each slice of the pie so the viewer can see the values directly. This helps people compare the time slots without guessing.

Count of Time of Day

Reported Thefts Across Different Times of Day

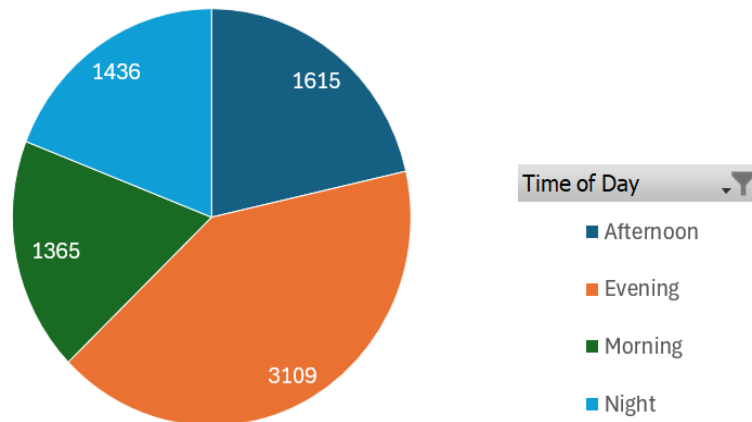


Figure 2.3 – Added Data Labels

2.4 Final Version with Direct Labels and Color Emphasis

In the final version, I added both the category and value directly onto the pie slices. The most common time of day (Evening) is easy to see because of its large slice and clear label. The pie no longer needs a legend because all info is visible on the chart itself.

Count of Time of Day

Reported Thefts Across Different Times of Day

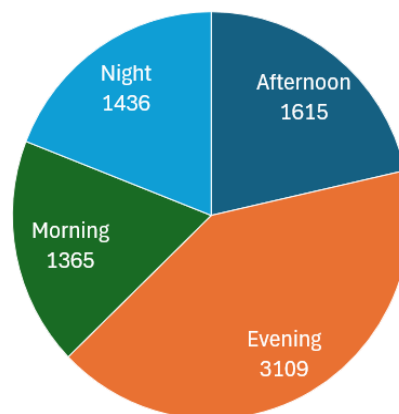


Figure 2.4 – Final Version with Direct Labels and Color Emphasis

This chart now clearly shows which time of day has the most vehicle thefts. Evening is the largest section, which is easy to notice right away. By using clear labels, color, and

layout changes, the viewer can now understand the pattern without needing extra explanation.

Chart 3: Bar Chart – Recovered Vehicles by Division

I chose a bar chart for this visualization because it's a good way to compare numbers between different groups. In this case, I wanted to show how many vehicles were recovered in each police division Central, East, and West. A bar chart helps people clearly see which division had the most recoveries and which had the least. It makes comparison quick and easy.

3.0 Original Bar Chart (No Formatting)

This was the first version of the chart, straight from the data. It shows the basic values, but it has no proper title or labels. The viewer can't easily tell what the numbers mean or what's being measured.

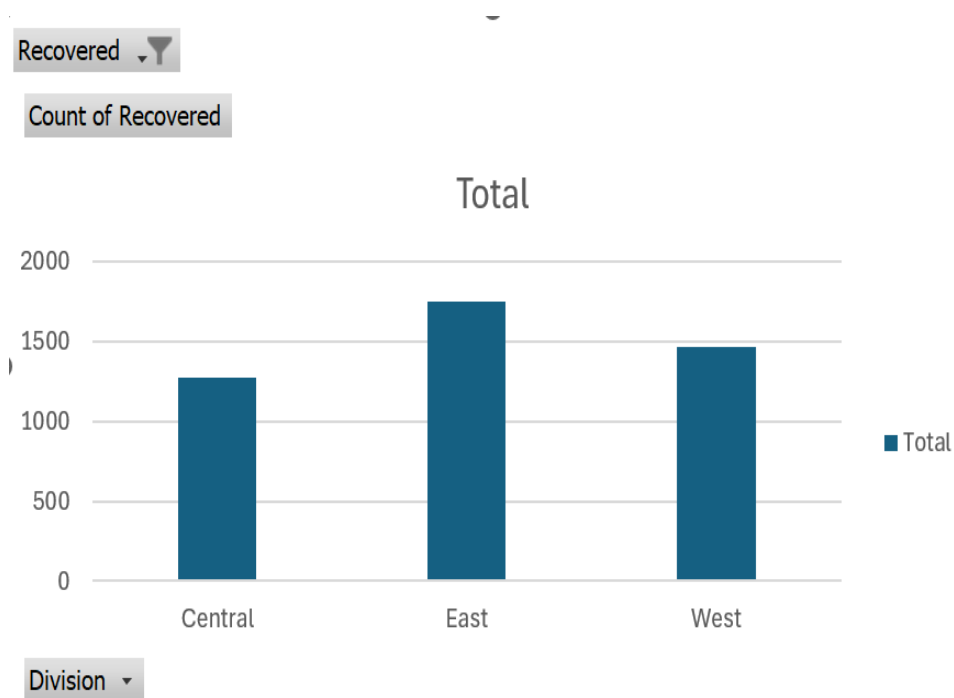


Figure 3.0 – Original Bar Chart (No Formatting)

3.1 Spacing and Layout Adjusted

I adjusted the layout slightly to give more space and make the bars easier to read. No other changes were made yet, but this made it feel a bit cleaner.

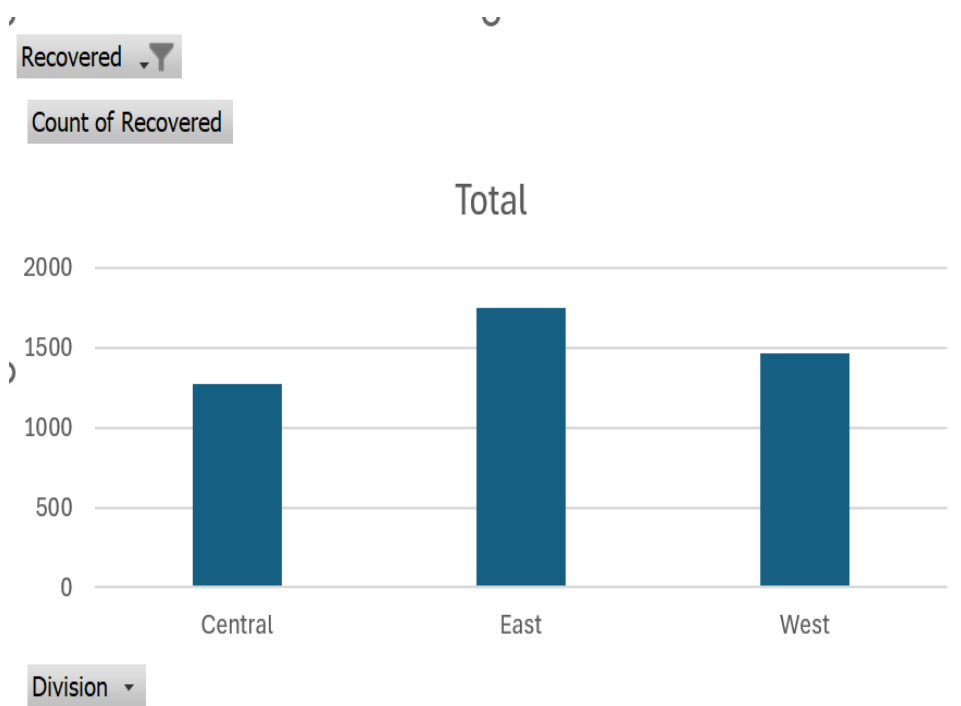


Figure 3.1 – Spacing and Layout Adjusted

3.2 Axis Labels Added

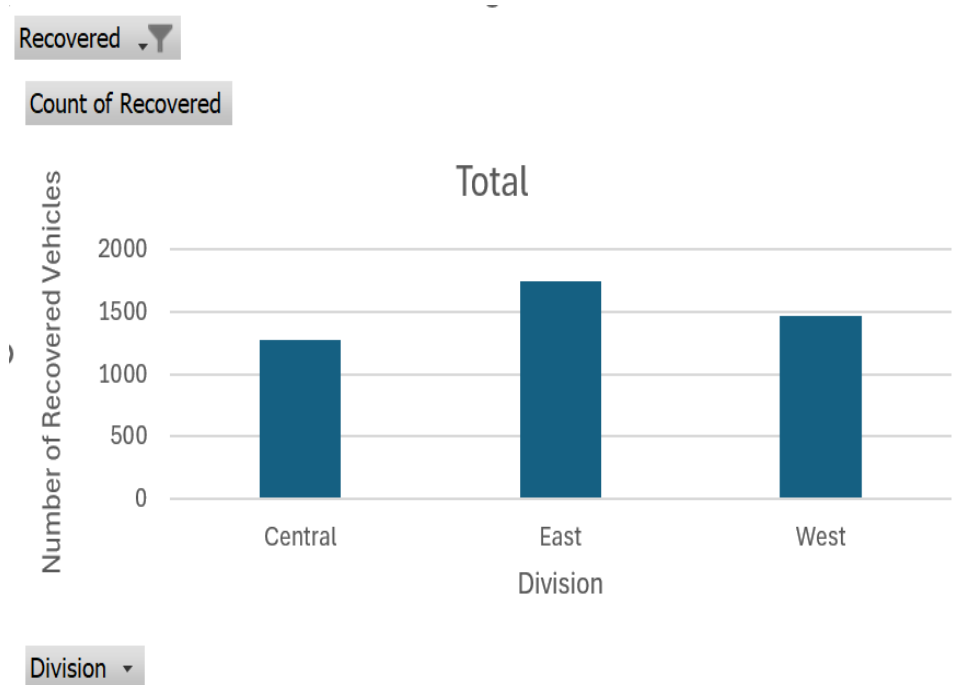


Figure 3.2 – Axis Labels Added

I added labels to both axes. “Division” is now shown at the bottom, and “Number of Recovered Vehicles” on the left. This makes the chart much easier to understand, because now the viewer knows what each bar and number is about.

3.3 Chart Title and Data Labels Added

I updated the chart title to say “Recovered Vehicles by Division,” which tells the viewer what the chart is about. I also added the actual numbers above each bar (1275, 1750, and 1471), so it’s easy to compare them without guessing.

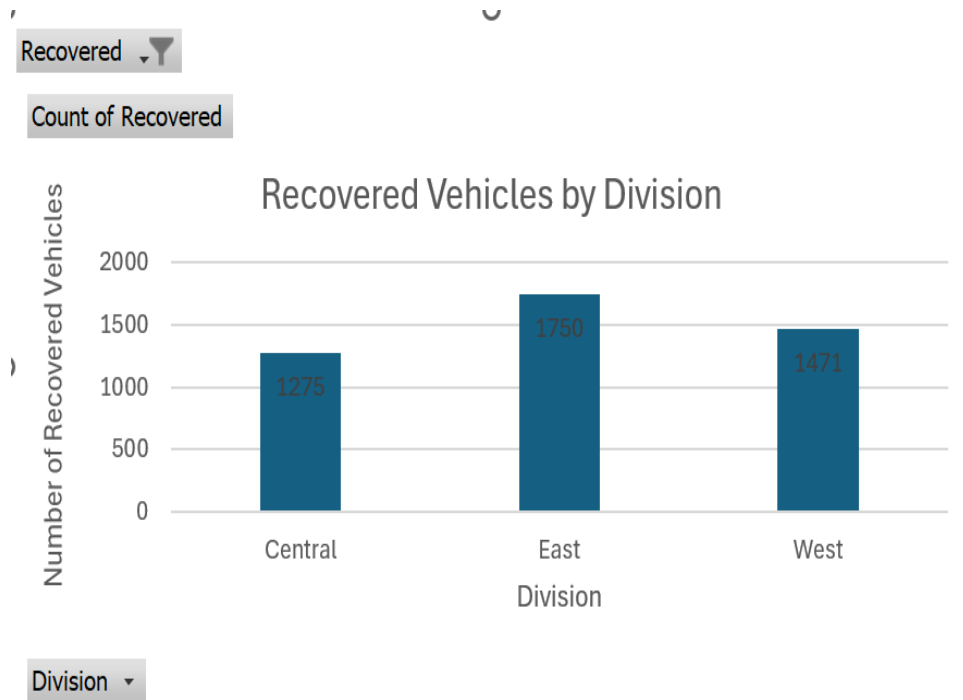


Figure 3.3 – Chart Title and Data Labels Added

3.4 Final Version with Color and Emphasis

In the final version, I changed the color of the bars to green to represent “recovery” in a more positive way. I also made the numbers bold and white so they stand out. The chart is now clear, easy to read, and shows the message right away.

This bar chart now shows a clear comparison between the three divisions. It’s easy to see that the East division had the most recovered vehicles, followed by West, then Central. The color, labels, and title all help make the chart easier to understand and more meaningful to the viewer.

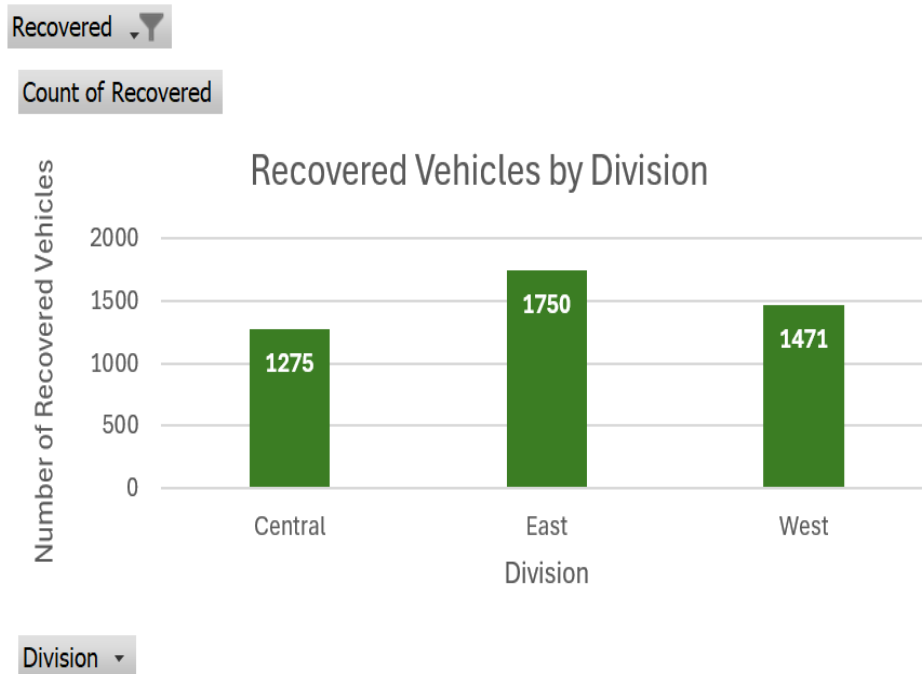


Figure 3.4 – Final Version with Color and Emphasis

Conclusion

In this project, I created and improved three different types of charts: a line chart, a pie chart, and a bar chart. For each one, I started with a basic version and then made changes to improve clarity and communication. I used titles, labels, color, and simple visual techniques to help the viewer understand the data more quickly. These changes followed good data visualization practices and made the story behind the numbers much easier to see. This helped me better understand how to turn raw data into a clear visual message.