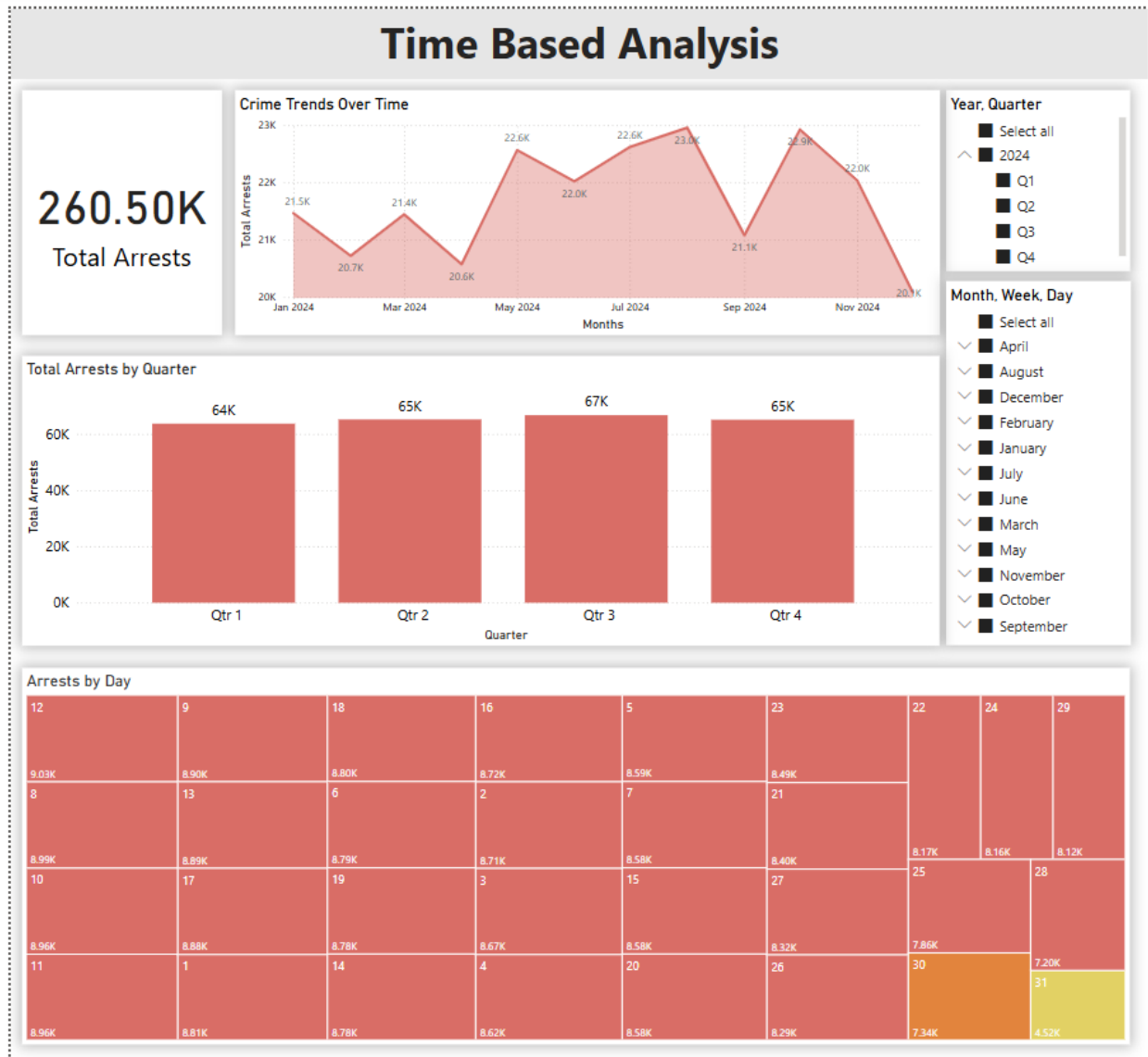


## Individual Project 1: NYPD Arrest Data (Part 2)

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#### Arrests by Day

Day	Arrests
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31

For the time-Based analysis, I have used following data visualization:

- 1] **Card**: which shows the total number of arrests based on the slicer year, quarter, Month, week and Day
- 2] **Line Chart**: This is used to show the peak month of crimes and crime trends over time
- 3] **Tree Map**: This is used to show the peak day for arrests based on the slicer month, year.

4] **Slicer:** These are used to sort the arrests by day, week, month, Quarter and year and based on the selection other visuals will change accordingly.

5] **Bar Chart:** This is used to show a peak quarter of arrests.

## Insights For Time-Based Analysis:

### 1. How many arrests occur on any specific day, week, month, quarter, or year?

#### Total Arrests Overview

- The dashboard indicates a total of 260.50K arrests for the year 2024.

#### Monthly Arrest Trends

- The line chart in the dashboard illustrates the **crime trends over time** by displaying the total arrests per month.
- The number of arrests fluctuates throughout the year, with notable peaks and declines.
- Key observations:
  - January: 21.5K arrests
  - February: 20.7K arrests
  - March: 21.4K arrests
  - April: 20.6K arrests
  - May: 22.6K arrests
  - June: 20.0K arrests
  - July: 22.6K arrests
  - August: Peak at 23.0K arrests
  - September: 21.1K arrests
  - October: Another Peak at 22.9K arrests
  - November: 20K arrests
  - December: 20.1K arrests

#### Quarterly Analysis

- The dashboard includes a filter for selecting different quarters (Q1, Q2, Q3, Q4).
- **Q3** shows higher arrest numbers compared to other quarters.

#### Daily Arrest Trends

- The heatmap displays arrests on specific days of the month.
- The lowest daily count appears on the 30th and 31st of certain months.
- The highest daily arrests are recorded on the 8th and 12th

## 2. Peak Arrest Days and Months

### Peak Days for Arrests

- The heatmap highlights specific days with increased arrest activity.
- **8th, 10th, and 12th** of the month consistently have the highest arrests, indicating possible recurring trends.
- The **30th and 31st** of the month show a decline in arrests.

### Peak Months for Arrests

- The line chart suggests that **August and October** have the highest arrest numbers, indicating peak crime periods.
- **December** has a smaller number of arrests.



For the Crime Patterns & Trends Analysis, I have used the following data visualizations:

- 1] **Bar Chart** – Displays the Top 5 most frequently occurring crimes, helping identify the most common offenses.
- 2] **Line Chart** – Shows total arrests over time by year, quarter, month, and day, allowing analysis of crime trends.
- 3] **Gauge Chart** – Represents the percentage change in arrests, providing insight into whether crime is increasing or decreasing.
- 4] **Slicer** – Allows filtering arrests by month, helping to identify crime trends in specific time frames.
- 5] **Checkbox Filter** – Enables selection of specific crime types (OFNS\_DESC) to focus on particular offenses.

## Insights For Crime Pattern and trends Analysis:

### 1. What are the top 5 most frequently occurring crimes?

The **Top 5 most frequently occurring crimes** are displayed in the **horizontal bar chart** on the right. The crime categories with the highest number of arrests include:

1. Assault 3 & Related Offenses (Approximately 38K arrests)
2. Petit Larceny (Approximately 27K arrests)
3. Vehicle and Traffic Law Violations (Approximately 14K arrests)
4. Other Offenses (Approximately 13K arrests)
5. Offenses Against Public Admini (Approximately 9K arrests)

These crimes account for a significant proportion of total arrests and indicate common criminal activities in the given dataset.

### 2. Which crimes have increased or decreased the most overtime?

The **line chart at the bottom** represents the **total arrests over time (Year, Quarter, Month, Day) for different offense descriptions (OFNS\_DESC)**. This visualization helps in identifying crime trends over the year.

#### Crimes That Have Increased Over Time:

- Assault 3 & Related Offenses: This offense consistently shows a high number of arrests and maintains an increasing trend over time.
- Petit Larceny: This crime remains one of the most frequently occurring and has shown fluctuations, but overall, it has seen an increasing trend.
- Vehicle and Traffic Law Violations: Over time, this offense has seen an upward trend.

#### Crimes That Have Decreased Over Time:

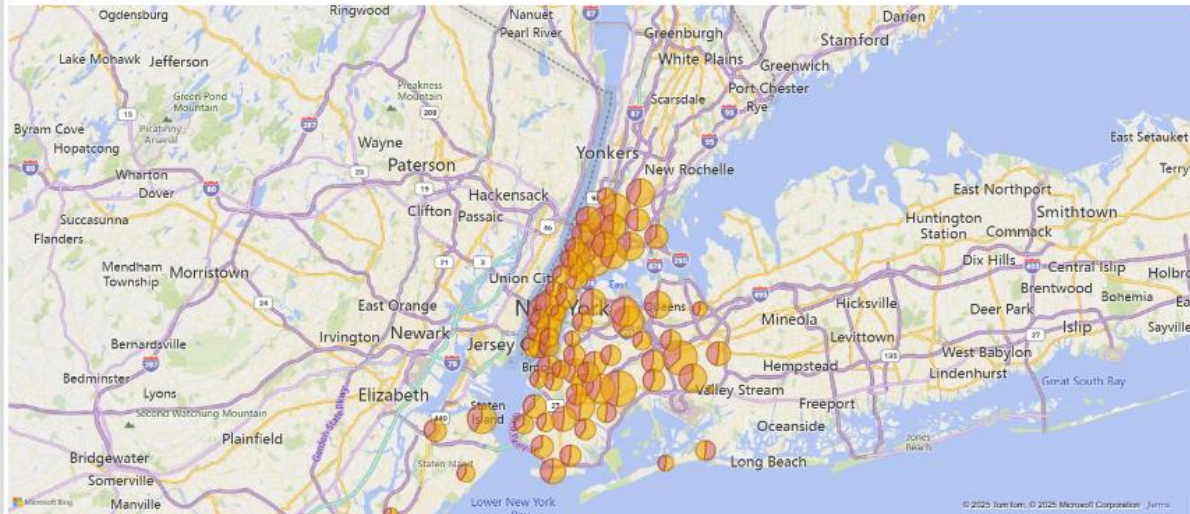
- Offenses Against Public Admini: This offense category shows a relatively declining trend in arrests.
- Other Offenses: Some fluctuations are observed, but overall, there is a decrease in occurrences over time.

The **percentage change in arrests (8.67%)**, displayed on the left side of the dashboard, provides an overall indication of the increase or decrease in crime rates.

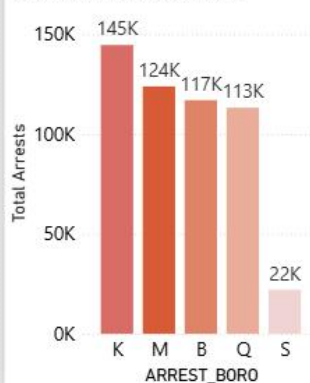
# Geographic Analysis

Felony vs. Misdemeanor arrest in each Precinct

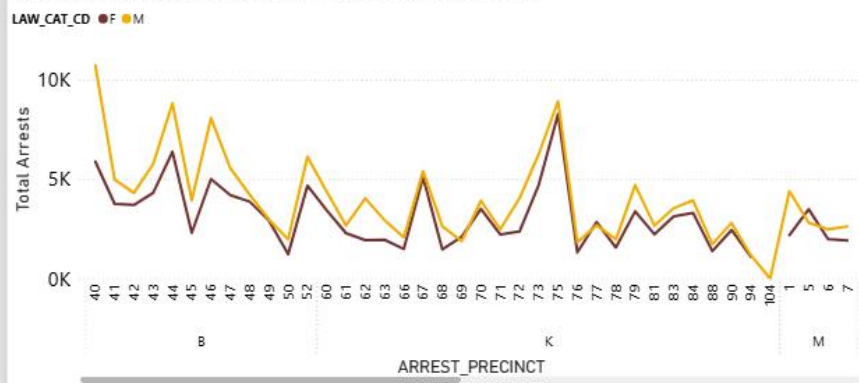
LAW\_CAT\_CD ● F ● M



Total Arrests by ARREST\_BORO



Total Arrests by ARREST\_BORO, ARREST\_PRECINCT and LAW\_CAT\_CD



For Geographic Analysis, I have used the following data visualizations:

- 1] **Map Visualization** – Displays the distribution of felony vs. misdemeanor arrests across different precincts using pie chart markers.
- 2] **Bar Chart** – Represents total arrests by borough (ARREST\_BORO), showing which borough has the highest number of arrests.
- 3] **Line Chart** – Shows total arrests by precinct, comparing felony (F) vs. misdemeanor (M) offenses across various locations.

## Insights For Geographic Analysis:

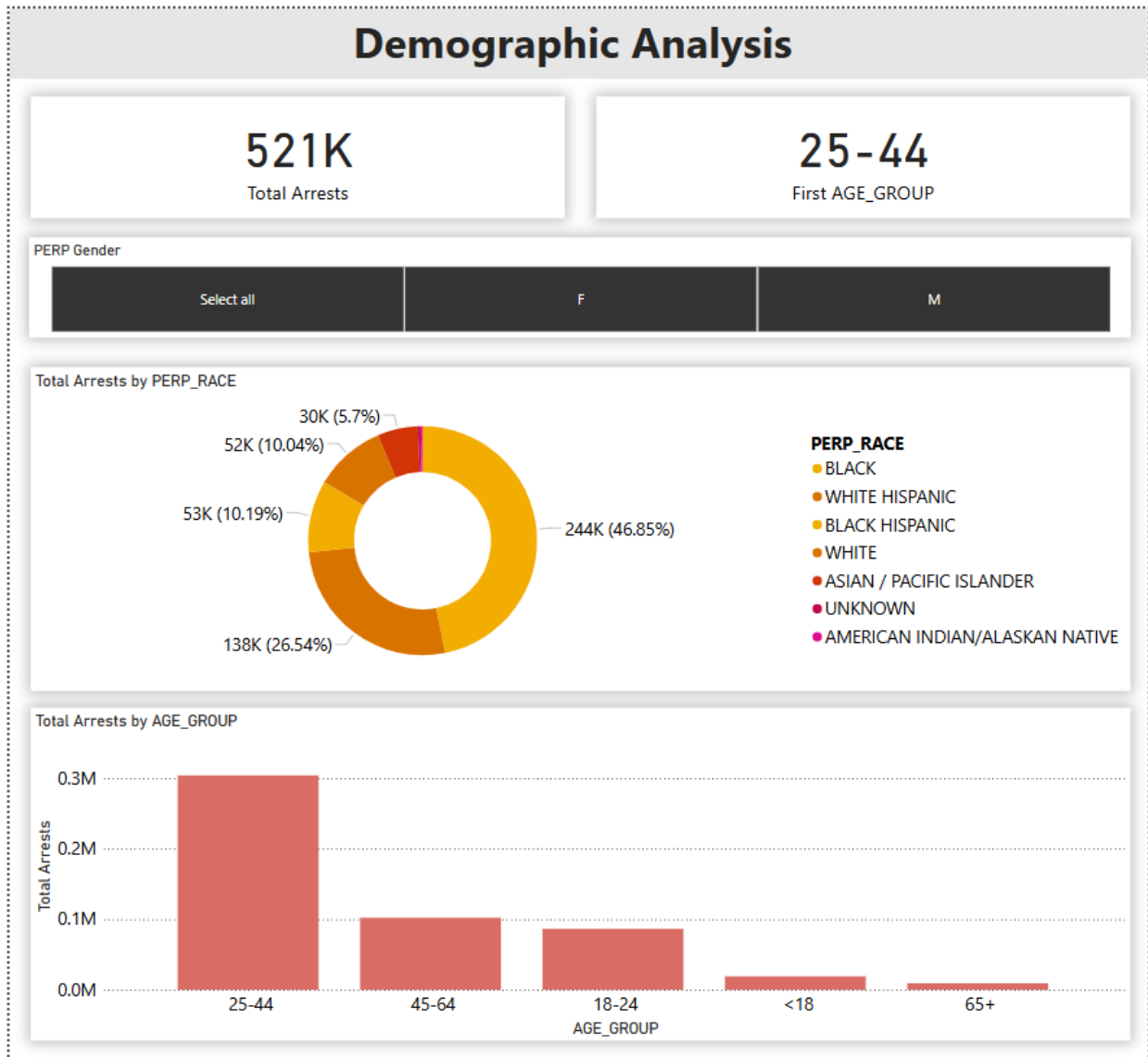
### 1. What is the distribution of felony vs. misdemeanor arrests in each precinct?

- The **map visualization** displays the distribution of felony and misdemeanor arrests across different **precincts**. Each precinct is represented by a circle, where the size and color distribution indicate the number and type of arrests.
- **LAW\_CAT\_CD Legend:**
  - **F (Felony)** is marked in one color.
  - **M (Misdemeanor)** is marked in another color.
- The **line chart (bottom right)** breaks down the **total arrests by precinct** across boroughs, distinguishing between felony and misdemeanor arrests.
- Certain precincts exhibit **higher spikes** in total arrests, indicating areas with more law enforcement activity.

### 2. Which borough has the highest number of arrests?

- The **bar chart (bottom left)** visualizes the total arrests by borough (**ARREST\_BORO**).
- **Borough-wise arrest count:**
  1. Brooklyn (K): 145K arrests (Highest)
  2. Manhattan (M): 124K arrests
  3. Bronx (B): 117K arrests
  4. Queens (Q): 113K arrests
  5. Staten Island (S): 22K arrests (Lowest)

Brooklyn (K) has the highest number of arrests, followed by Manhattan and the Bronx. Staten Island has the lowest number of recorded arrests.



For the Demographic Analysis, I have used the following data visualizations:

- 1] **Card** – Displays the total number of arrests (521K) and highlights the most frequent age group (25-44).
- 2] **Donut Chart** – Shows the distribution of arrests by race (PERP\_RACE), helping understand racial demographics of arrests.
- 3] **Bar Chart** – Represents total arrests by age group, identifying which age categories have the highest number of arrests.
- 4] **Slicer** – Allows filtering by gender (Male/Female) to analyze differences in arrests between men and women.



## Insights For Demographics Analysis:

### 1. What is the distribution of arrestees by age?

- The **bar chart (bottom section)** represents the total number of arrests across different **age groups**.
- **Highest Arrested Age Group:**
  - The 25-44 age group has the highest number of arrests
- **Other Age Groups:**
  - 45-64 years: Second highest, with significantly fewer arrests than 25-44.
  - 18-24 years: Moderate number of arrests.
  - Under 18 & 65+: These groups have the lowest number of arrests.

The majority of arrestees fall in the 25-44 age group, followed by 45-64 years and 18-24 years. Under 18 and 65+ groups have significantly lower arrests.

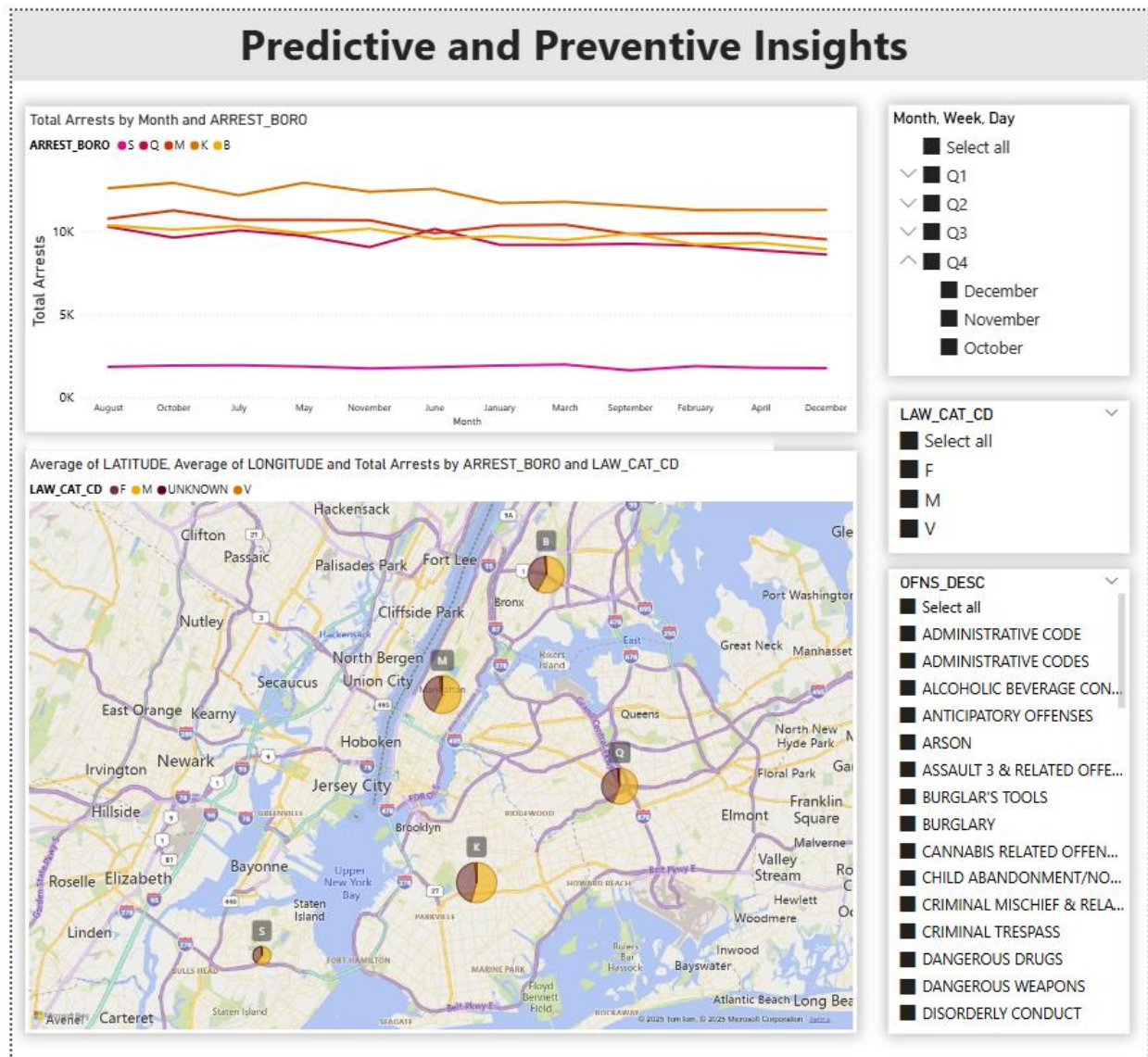
### 2. What is the distribution of arrestees by race?

- The **donut chart (middle section)** breaks down the total arrests by **PERP\_RACE**.
- **Top Racial Groups Arrested:**
  - Black: 244K arrests (46.85%) – The highest among all races.
  - White Hispanic: 138K arrests (26.54%).
  - Black Hispanic: 53K arrests (10.19%).
  - White: 52K arrests (10.04%).
  - Asian/Pacific Islander: 30K arrests (5.7%).
  - Other groups, including Unknown and American Indian/Alaskan Native, have the lowest representation.

The Black population has the highest number of arrests, followed by White Hispanic and Black Hispanic individuals. Asian/Pacific Islanders and other racial groups have relatively lower arrests.

### 3. What is the distribution of arrestees by gender?

- The **gender selection filter (top section)** allows filtering between **Male (M)** and **Female (F)** arrestees.
- Most arrests (not explicitly shown in numbers but inferred) are typically **male dominated**, as seen in most criminal demographic analyses.



For the historical trend analysis of high-crime areas, I have used the following data visualizations:

- 1] **Line Chart:** This is used to show crime trends over time, helping to identify peak months for arrests in different boroughs.
- 2] **Map Visualization:** Displays the geographical distribution of arrests, highlighting crime hotspots based on historical data. Each marker represents total arrests in a borough, categorized by crime type.
- 3] **Slicer:** Allows filtering arrests by month, quarter, enabling trend analysis over different time periods.
- 4] **Category Filter:** Enables filtering by crime type (LAW\_CAT\_CD) and offense description, helping to analyze which crimes are most prevalent in specific areas.

## Insights For Predictive and Preventive Analysis:

### Line Chart Analysis:

The total arrests trend over time helps determine which boroughs (S, Q, M, K, B) consistently report higher crime rates.

If a borough consistently shows higher arrest numbers, it indicates a high-crime area.

### Geospatial Map Insights:

The map visualizes arrest locations, helping identify crime hotspots.

The distribution of different crime categories within boroughs provides further insights into the type of offenses dominating specific areas.

### Seasonal and Temporal Trends:

Filtering by quarter and month can reveal if crime rates peak during specific periods.

This helps in predicting and preparing for high-crime periods.

### Crime Type Analysis:

Filtering by LAW\_CAT\_CD (Felony, Misdemeanor, Violation) and Offense Description enables deeper insights into what types of crimes are most common in different boroughs.

## Historical Trends in Crime:

### 1. Geographic Crime Distribution

- Brooklyn (K), the Bronx (B), and Manhattan (M) have the highest number of arrests, making them high-crime boroughs.
- Certain precincts consistently show high arrest counts, as seen in the geographic analysis of felony and misdemeanor arrests.
- Mapping high-crime precincts over time highlights areas with repeated spikes in crime, making them predictable hotspots.

### 2. Crime Patterns & Trends

- Top crimes such as assault, petit larceny, and vehicle-related offenses occur frequently, suggesting persistent crime-prone locations.
- Long-term trends indicate that these crimes have remained highly prevalent over time, reinforcing the existence of repeat high-crime areas.

### **3. Time-Based Crime Peaks**

- Arrests follow consistent temporal trends, with certain months and days showing higher crime rates.
- This pattern allows for better resource allocation and predictive policing in high-risk areas.

### **4. Demographic Influence**

- The 25-44 age group has the highest number of arrests, contributing significantly to crime trends in certain locations.
- The racial breakdown of arrests suggests that socioeconomic factors influence crime distribution across boroughs.

**Yes, we can identify high-crime areas based on historical trends.**

- Certain boroughs and precincts repeatedly show high arrest counts, making them predictable high-crime zones.
- Frequent crime types and temporal trends reinforce crime hotspots.
- NYPD can use this data to allocate resources efficiently, enhance surveillance, and implement proactive crime prevention strategies.