

## **Examining the data**

### **Q1. Find the total number of tickets for the year.**

Ans1. Total no. of tickets for the year are 10,803,028.

### **Q2. Find out the number of unique states from where the cars that got parking tickets came.**

Ans2. 66 unique Registered States post error (99) value handling.

## **Aggregation Tasks**

### **Q1. How often does each violation code occur? Display the frequency of the top five violation codes.**

Ans1. Top 5 Violation Code are 21, 36, 38, 14 & 20 with 1,528,588, 1,400,614, 1,062,304, 893,498 & 618,593 tickets respectively.

### **Q2. How often does each 'vehicle body type' get a parking ticket? How about the 'vehicle make'?**

Ans2.

#### **Vehicle Body Type**

Top 5 vehicle body type are SUBN, 4DSD, VAN, DELV & SDN with 3,719,802, 3,082,020, 1,411,970, 687,330 & 438,191 tickets respectively.

#### **Vehicle Make**

Top 5 vehicle manufacture are FORD, TOYOTA, HONDA, NISSAN & CHEVR with 1,280,958, 1,211,451, 1,079,238, 918,590 & 714,655 tickets respectively

### **Q3. A precinct is a police station that has a certain zone of the city under its command. Find the (5 highest) frequencies of tickets for each of the following:**

Ans3.

#### **Violation Precint**

Top 5 Precint are 19, 14, 1, 18 & 114 with 535,671, 352,450, 331,810, 306,920 & 296,514 tickets respectively. It shows most of it are happening in 19 Precint.

#### **Issuer Precinct**

Top 5 Issuer Precinct are 19, 14, 1, 18 & 114 with 521,513, 344,977, 321,170, 296,553, 289,950 tickets respectively. So, Top 5 Violation & Issuer Precinct are the same.

### **Q4. Find the violation code frequencies for three precincts that have issued the most number of tickets. Do these precinct zones have an exceptionally high frequency of certain violation codes? Are these codes common across precincts?**

Ans. 19, 14 & 1 are the top 3 Precinct with the most number of tickets.

For 1, Top 3 are 14, 16 & 20 with 76,375, 39,197 & 28,768 tickets respectively

For 19, Top 3 are 46, 38 & 37 with 90,530, 74,926 & 73,359 tickets respectively

For 14, Top 3 are 14, 69 & 31 with 75,850, 58,032 & 40,150 tickets respectively

Violation Code 14 has appeared multiple times

### **Q5. Find out the properties of parking violations across different times of the day. Divide 24 hours into six equal discrete bins of time. Choose the intervals as you see fit. For each of these groups, find the three most commonly occurring violations.**

**Ans5.**

Top Violation Code as per Time buckets are as follows:

0-4 Hr - 21, 40 & 78

4-8 Hr – 14, 21 & 40

8-12 Hr – 21, 36 & 38

12-16 Hr – 36, 38 & 37

16-20 Hr – 38, 37 & 14

20-24 Hr – 7, 38 & 14

For most common Violation Code which is 14, 21 & 38. Most Tickets were issued in the morning 8-12 Hr (~1.80 Mn) followed by Aternoon 12-16 Hr (~867K)

**Q6. First, divide the year into a certain number of seasons, and find the frequencies of tickets for each season. Then, find the three most common violations for each of these seasons.**

Ans6. Frequency of tickets for 4 seasons are as follows

Spring (2,880,687), Autumn (2,830,802), Summer (2,606,208) & Winter (2,485,331)

Most Violation Codes with tickets frequency for each season are as follows:

**Spring:** 21 (402,807), 36 (344,834) & 38 (271,192)

**Summer:** 21 (405,961), 38 (247,561) & 36 (240,396)

**Autumn:** 36 (456,046), 21 (357,479) & 38 (283,828)

**Winter:** 21 (362,341), 36 (359,338) & 38 (259,723)

**Q7. The fines collected from all the instances of parking violation constitute a source of revenue for the NYC Police Department. Let's take an example of estimating this for the three most commonly occurring codes: find the total amount collected for the three violation codes with the maximum tickets. State the code that has the highest total collection. What can you intuitively infer from these findings?**

Ans7. Top 3 Violation codes are 21, 36 & 38 with 1,528,588, 1,400,614 & 1,062,304 tickets respectively.

Violation Code 21 (No Parking) Fine is USD 55

Violation Code 36 (Exceeding the posted speed limit in or near a designated school zone) Fine is USD 50

Violation Code 38 (Failing to show a receipt or tag in the windshield) is USD 50

Total Revenue collection from Top 3 Tickets is USD  $(55 \times 1,528,588 + 50 \times 1,400,614 + 50 \times 1,062,304) =$   
**USD 207,218,240**

**Observations:**

**1. Most of the Tickets were due No Parking, Over speeding or Exceeding Parking Time Limit / showing relevant documents for the same**

**2. There no much of a significant impact of season on tickets count**

**3. Most of the tickets were issued during the morning peak hours 8-12 Hr followed by afternoon hours of 12-4 Hrs**

**4. Most Tickets were issued in 19, 1 & 14 Precincts**