

NYC PARKING TICKETS CASE STUDY

Context

NYC Police Department has the data of the parking tickets for the year 2014 -2017. Analysis is performed across the three different years – 2015, 2016, 2017. Each metric derived is compared across the three fiscal years.

Observations

Listing down the insights derived from the analysis:

- It is observed that the total number of tickets issued in 2017 is the highest compared to the other calendar years 2015 and 2016.

Years	Ticket_Counts
2015	5373971
2016	4872621
2017	5431918

- Few columns like No standing or Stopping Violation, Hydrant Violation, Double Parking Violation, Latitude, Longitude, Community Council and few more have NA values. Duplicate entries are observed in 'Summons Number' in 2015.
Null values entries can be observed in few other columns.
- Count of unique states for which the tickets were issued across the three years are 67, 66 and 64 accordingly.
- Some measures should be undertaken in order to curb the invalid location entry for the parking tickets issued. It is noted that such entries are gradually increasing over the years and is the highest in 2017.

Year	ViolationAdd_Invalid_Count
2015	799017
2016	895753
2017	1029420

- Based on the observations, most of the parking violations happen against Code 21 on all the three years which says
-Street Cleaning: No parking where parking is not allowed by sign, street marking or traffic control device.
Comparison of the frequency of violation code across the years:

Violation Code	Years			
	2015	2016	2017	3Yrs_ Freq per Day
21	2219	1817	2104	2046
38	2045	1495	1485	1675
36	1253	1681	1816	1583
14	1418	1109	1306	1277
37	1140	903	-	681

- Top 5 'Vehicle Body Type' and 'Vehicle make' getting the highest count of parking tickets:

Vehicle Body Type	Ticket_Counts		
	2015	2016	2017
SUBN	1915458	1596326	1883954
4DSD	1694252	1354001	1547312
VAN	879764	722234	724029
DELV	461300	354388	358984
SDN	237304	178954	194197

Vehicle Make	Ticket_Counts		
	2015	2016	2017
FORD	763108	612276	636844
TOYOT	619164	529115	605291
HONDA	557315	459469	538884
NISSA	459982	382082	462017
CHEVR	450117	339466	356032

- Highest count of tickets is recorded within the Violation Precinct 19 across all the years. So is the case with the Issuer Precinct.

Violation_Precinct	Ticket_Counts		
	2015	2016	2017
19	320203	264299	274445
18	215570	148843	169131
14	217605	150637	203553
1	169592	152231	174702
13	-	156144	-
114	168458	-	147444

Issuer_Precinct	Ticket_Counts		
	2015	2016	2017
19	310473	258049	266961
18	212130	144583	162994
14	210516	146165	200495
1	165037	146987	168740
13	-	153478	-
114	165345	-	144054

- Violation Code 14 show a higher frequency across the three precincts which have issued the most number of tickets. Most of the violation codes are common between 3 years. However, we find count of 1 and 2 for at least 14 of them, which means not all codes are common

Violation Code	2015(19,18, 14)	2016(19,13,1)	2017 (19,14,1)
14	143476	78685	113187
69	79014	-	39046
38	65706	62192	48190
37	51833	57678	43782
46	42903	49863	68869
16	-	45358	-
21	-	34806	33499
31	41746	-	-

- Most commonly occurring violations happens in Bin 3 interval. This interval is from 8 AM - 12 PM.

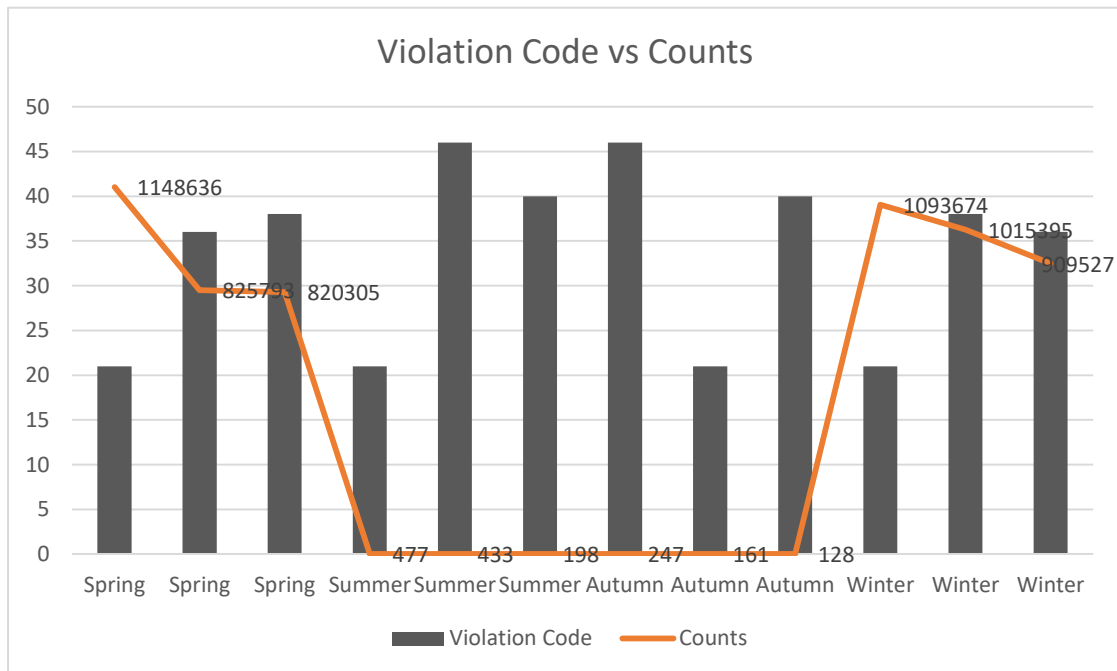
Violation Code	Time Bins	Frequency
21	3	1767141
36	3	846204
38	3	626177

- Understanding the seasonality of the data, the comparisons were made across the different season of the year as Spring, Summer, Autumn and Winter. It is observed that the Winter season has the highest number of parking tickets and Autumn has the least.

Season Name	Ticket_Counts
Spring	7870482
Summer	2103
Autumn	1137
Winter	8417648

- It is observed that 21 is the most common violation across the seasons. Overall, we see more violations during the Spring and Winter seasons. And the three most common violations for each of these seasons are given below:

Violation Code	Season_Name	Counts
21	Spring	1148636
36	Spring	825793
38	Spring	820305
21	Summer	477
46	Summer	433
40	Summer	198
46	Autumn	247
21	Autumn	161
40	Autumn	128
21	Winter	1093674
38	Winter	1015395
36	Winter	909527

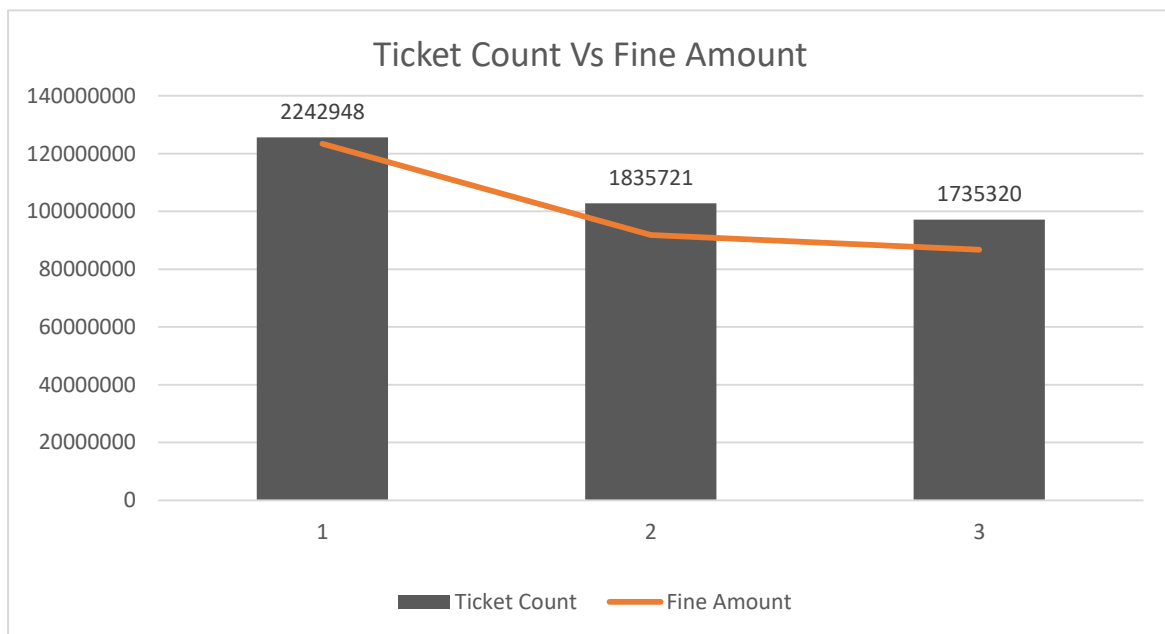


- On the analysis of fines collected, the highest parking ticket count is for violation code 21 and the fine amount sum up to \$123362140, which is the highest of the three.
- Each of the violation code is defined as:
 - 21 - Street Cleaning: No parking where parking is not allowed by sign, street marking or traffic control device.

38 - Failing to show a receipt or tag in the windshield. Drivers get a 5-minute grace period past the expired time on parking meter receipts.

36 - Exceeding the posted speed limit in or near a designated school zone.

Violation Code	Ticket Count	Fine Amount
21	2242948	123362140
38	1835721	91786050
36	1735320	86766000



Inference:

- Therefore, we can conclude that NYC police gets a lot of revenue from these 3 top violation code fine amounts (which is in 3 years consolidated view).
- And we infer either there is a lot of sign, street marking or traffic control device in the city or too many cars and the stoppage reasons like shopping malls, hotels, shops etc.
- Also, it seems NY citizens use cars more during the spring and winter season than compared to summer and autumn.