Analyzing Trends and Insights in the NYPD Arrests Dataset (2022-2023)

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Objectives and Background

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Objectives

To extract insights for NYPD Arrest Dataset was collected from Kaggle the year of 2022-2023 to identify if there is any improvement of decreased crime rates overtime.

We will be focusing on these questions:

- ❏ How have arrest rates changed over the years?
- ❏ Are there trends in the types of arrests over time?
- ❏ Are there specific precincts or locations with higher arrest rates?
- ❏ What age group, race and sex committed the most crime? The least?
- ❏ Are there seasonal or temporal patterns in arrests?
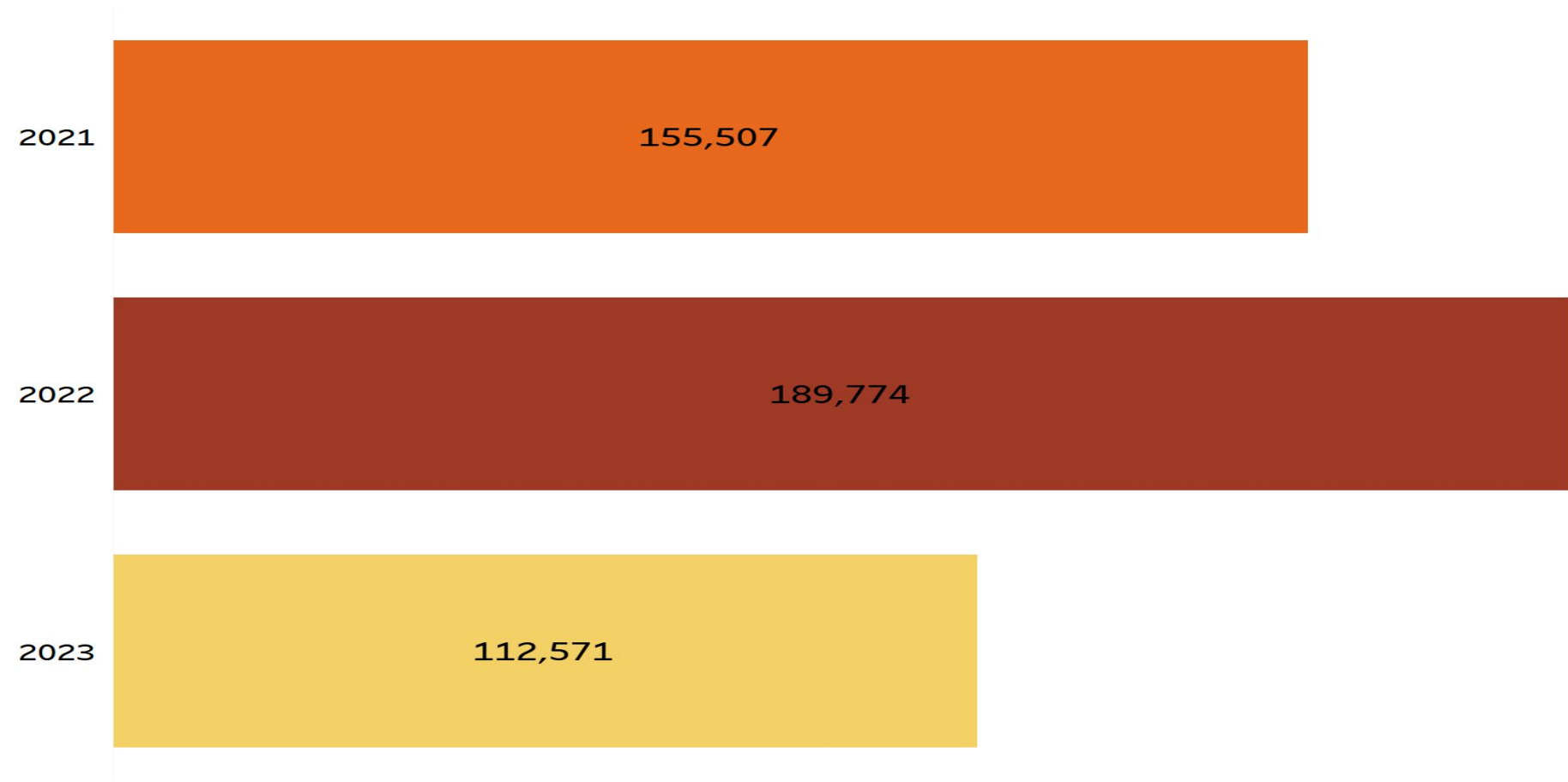
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Background

The NYPD Arrests Dataset for 2022-2023 provides a detailed record of arrests in New York City during this period. It serves as a valuable resource for understanding crime patterns and trends within the city. The dataset encompasses a wide range of information, including the demographic details of individuals arrested, the types of crimes committed, and the locations where arrests occurred.
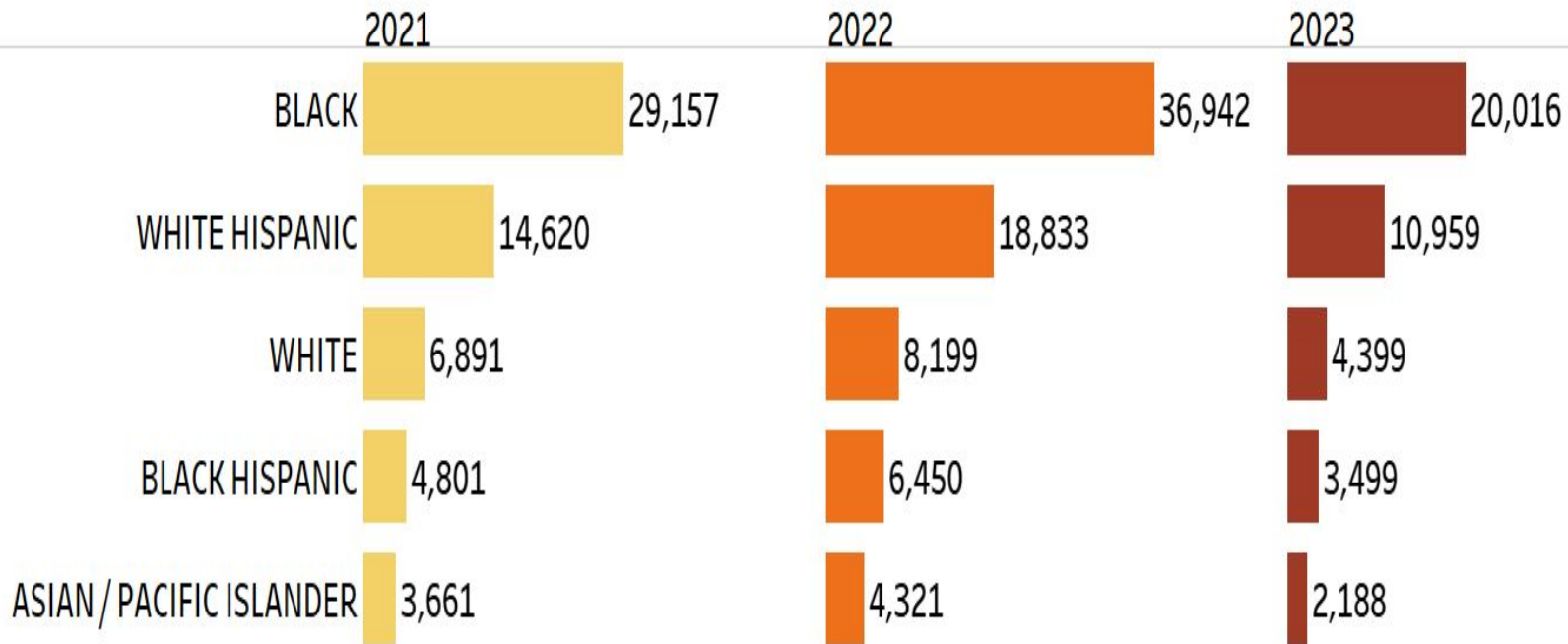
Background(Cont.)

In our analysis, we aim to extract meaningful insights by addressing key questions such as seasonal and temporal patterns in arrests, identifying the age groups, races, and genders associated with the highest crime rates, pinpointing specific precincts with elevated arrest rates, exploring trends in the types of arrests over time, and assessing changes in overall arrest rates throughout the years.

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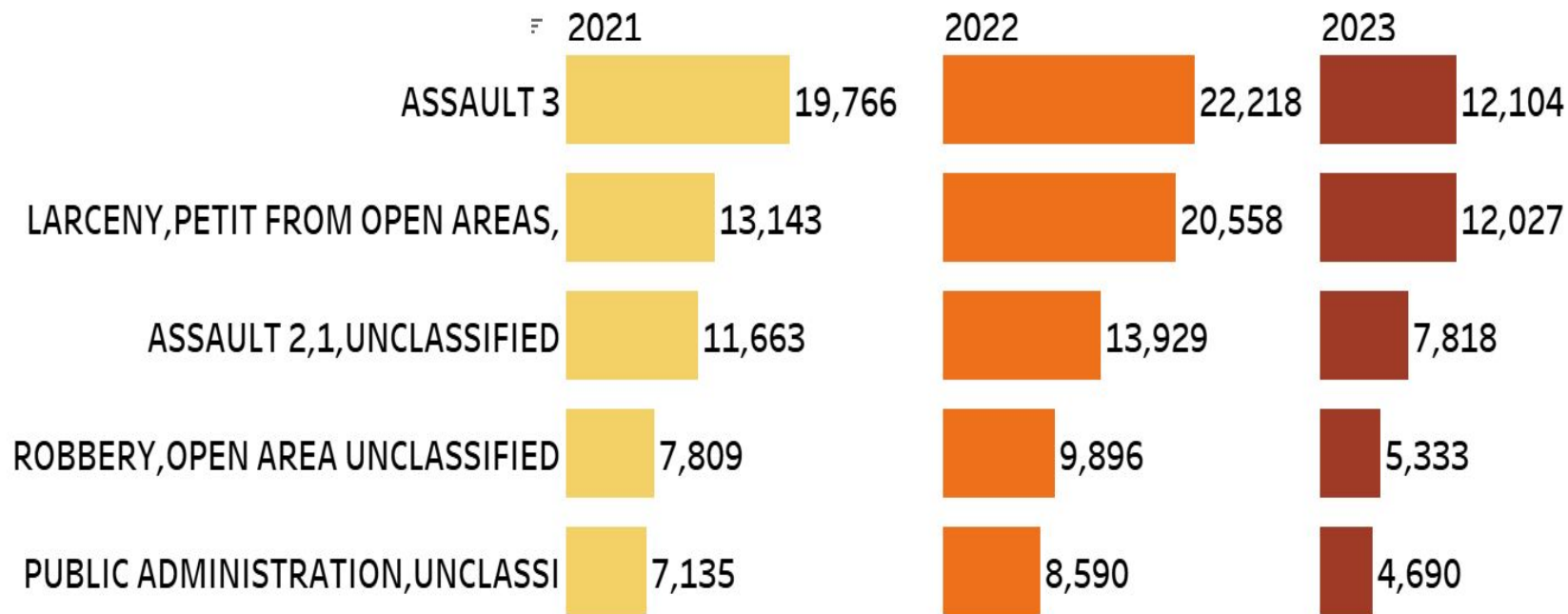# Arrests Rates Changes Over The Years (Total of Number Arrests By Year)

Year	Arrests
2021	155,507
2022	189,774
2023	112,571

Arrests Rates Changes Over the Years(Total Number of Arrests by Race and Year)

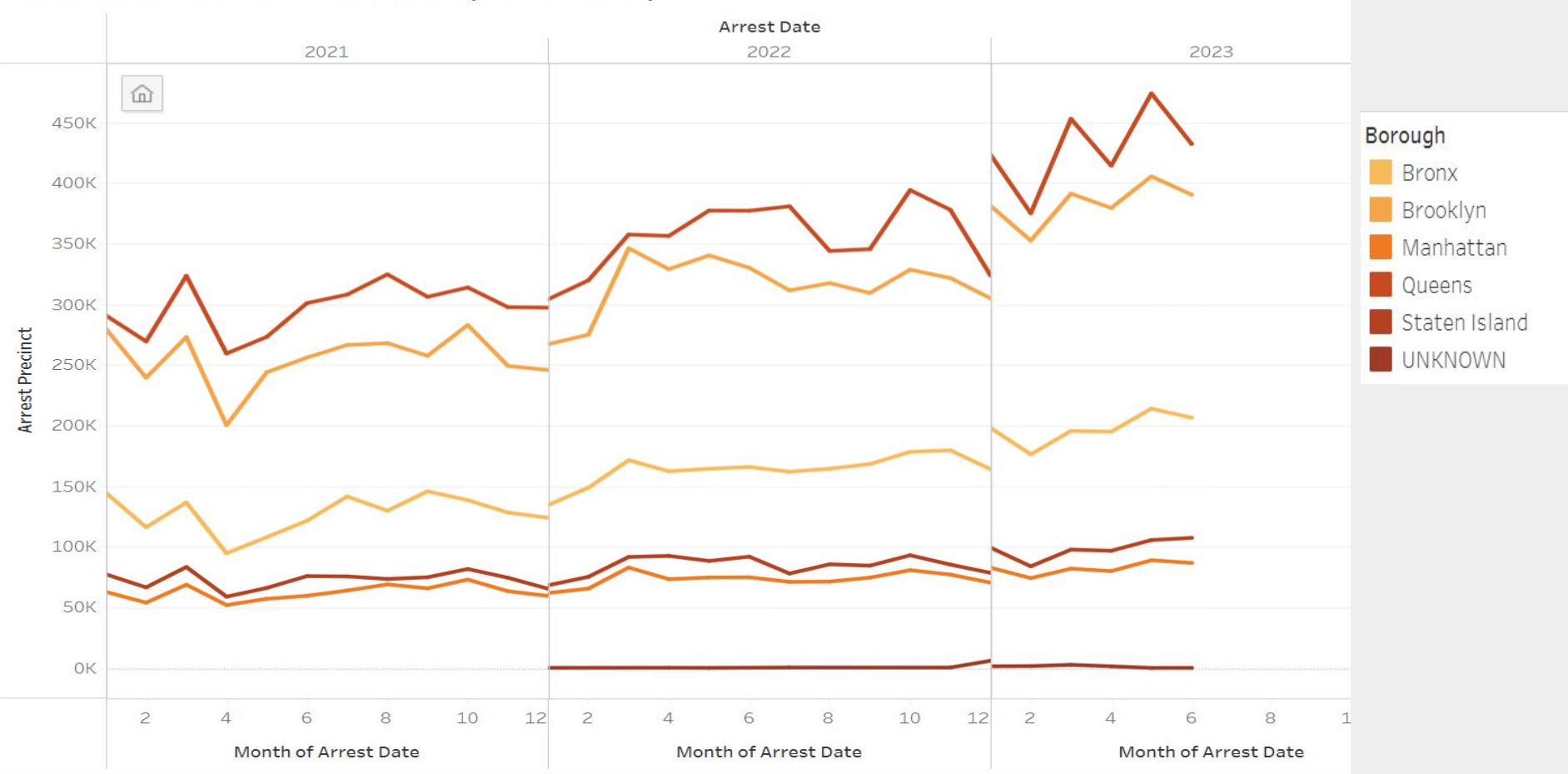|	2021	2022	2023
BLACK	29,157	36,942	20,016
WHITE HISPANIC	14,620	18,833	10,959
WHITE	6,891	8,199	4,399
BLACK HISPANIC	4,801	6,450	3,499
ASIAN / PACIFIC ISLANDER	3,661	4,321	2,188

Black people, White Hispanics, Whites, Black Hispanics and Asian or Pacific Islanders are the top 5 groups that committed more crimes in 2021, 2022 and 2023.

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Top 5 Arrests Rates Changes Over the Years(2021-2023)

	2021	2022	2023
ASSAULT 3	19,766	22,218	12,104
LARCENY,PETIT FROM OPEN AREAS,	13,143	20,558	12,027
ASSAULT 2,1,UNCLASSIFIED	11,663	13,929	7,818
ROBBERY,OPEN AREA UNCLASSIFIED	7,809	9,896	5,333
PUBLIC ADMINISTRATION,UNCLASSI	7,135	8,590	4,690

Assault 3 were the most frequent arrest type in 2021, 2022 and 2023

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Arrest Trends Over the Months (2021 - 2023)

Map of Arrest in Different Postcode

2021

11354
11373
10301
11212
11434
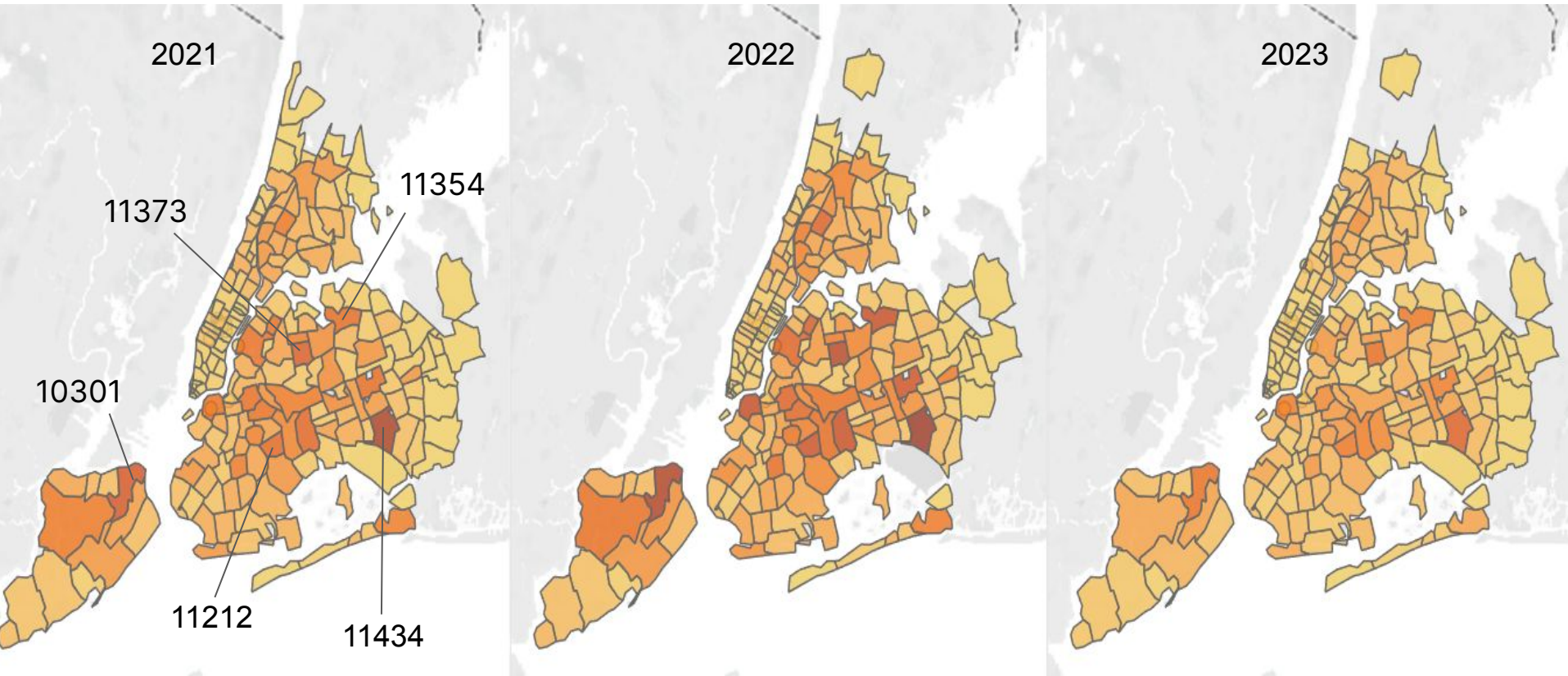
2022

2023

Top 5 Postcodes Over The Years(2021 - 2023)
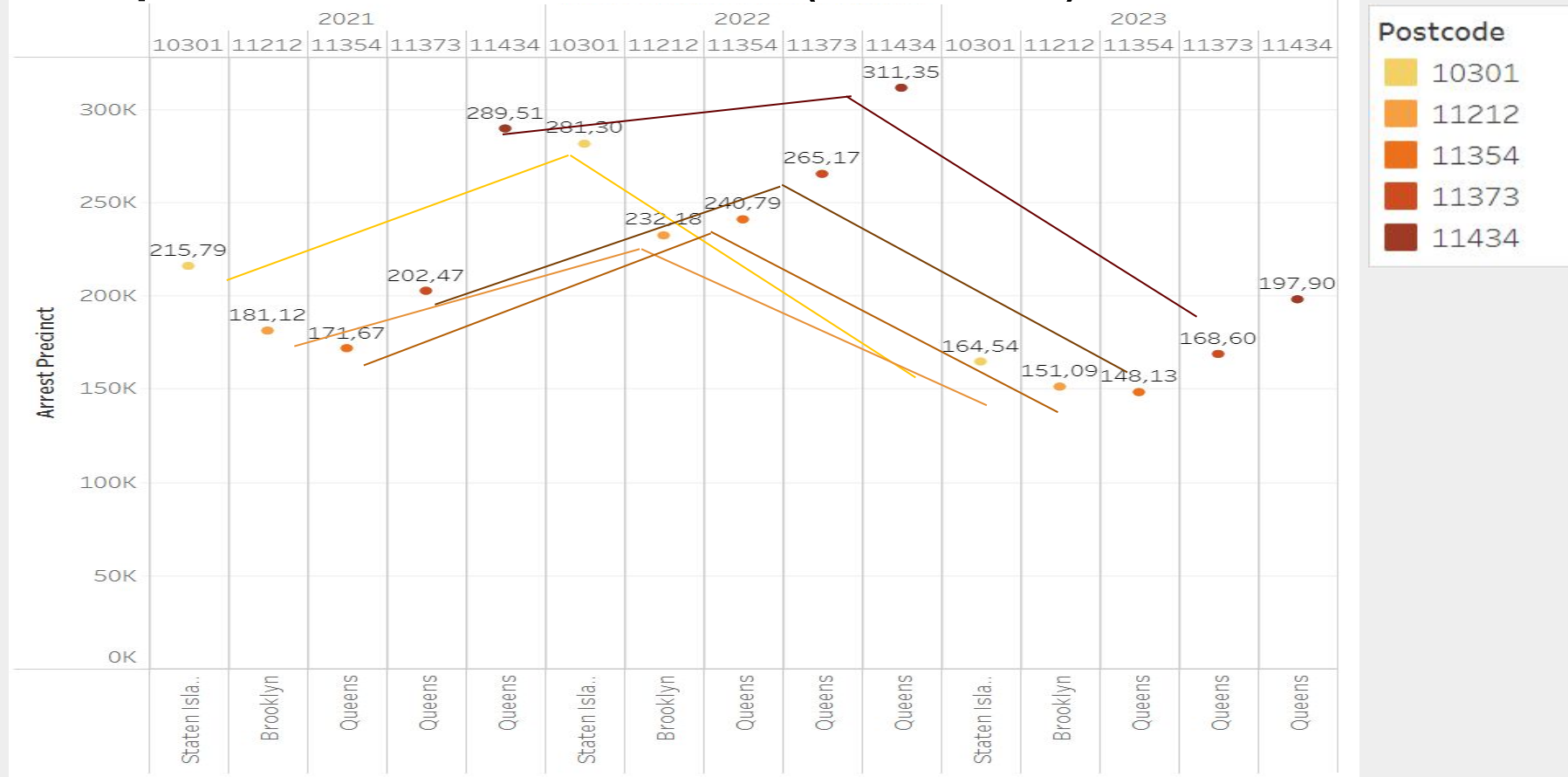
Most & Least Crimes Committed by Age Group, Race & Perp Sex

Perp Race	Perp Sex	2021 18-24	25-44	45-64	65+	<18	2022 18-24	25-44	45-64	65+	<18	2023 18-24	25-44	45-64	65+	<18
ASIAN /	F	199	798	353	44	26	231	837	391	57	37	140	454	246	34	19
PACIFIC	M	1,168	4,086	1,618	189	112	1,350	4,998	1,882	252	229	818	2,816	1,018	143	155
ISLANDER	U											40	68	35	6	3
BLACK	F	2,845	7,574	2,364	114	510	3,355	9,639	2,790	201	758	1,818	5,246	1,565	105	435
	M	12,571	35,011	12,807	857	2,480	13,818	42,859	16,266	1,106	3,336	7,470	24,557	9,097	647	1,927
	U											201	677	262	21	55
BLACK	F	404	1,131	295	14	76	567	1,537	313	17	156	349	899	187	10	82
HISPANIC	M	2,636	6,759	1,673	113	475	3,115	8,699	2,280	155	579	1,835	5,205	1,298	79	404
	U											60	157	35	5	7
WHITE	F	420	2,004	665	78	30	437	2,519	873	86	43	241	1,422	488	74	32
	M	1,368	8,079	3,847	417	155	1,510	9,129	4,080	462	262	869	4,851	2,371	283	118
	U											27	127	61	4	2
WHITE	F	1,340	3,948	935	75	202	1,654	4,969	1,152	88	302	994	2,891	719	40	189
HISPANIC	M	5,794	18,846	5,885	378	709	6,985	23,415	7,299	434	1,058	4,255	13,695	4,071	258	737
	U											117	412	131	13	14

Arrest Date / Age Group

The Black males in the age group of 25-44 committed the most crimes in 2021- 2023.

The least are Black Hispanic females in the age group of 65+ in 2021 & 2022. In 2023, the least is White Unknown.
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All Years Compared

Fall

- 41,277 — 2021
- 49,701 — 2022

Spring

- 36,226 — 2021
- 49,566 — 2022
- 57,527 — 2023

Summer

- 40,156 — 2021
- 47,928 — 2022
- 19,488 — 2023

Winter

- 37,848 — 2021
- 42,579 — 2022
- 35,556 — 2023
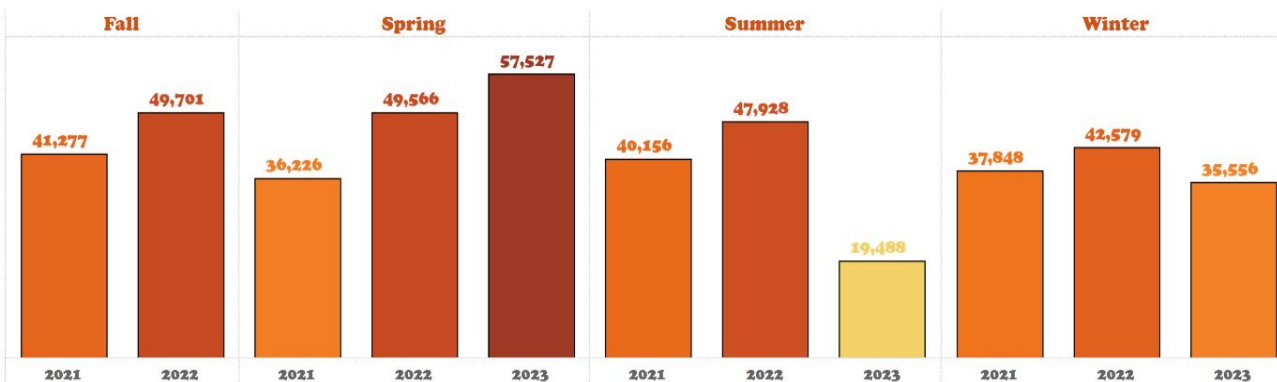
The NYPD Arrest Data Set demonstrates a correlation between the seasons and the arrest rate.

The data shows that the number of arrests are highest during the Summer and Fall seasons, and lowest during the Spring and Winter seasons, over the years 2021 and 2022.

Based on the data that is available up to June 30, 2023, we can project that the trend of higher arrest rates in the Summer and Fall months will continue in 2023.

The data shows that arrests in the Summer and Fall have increased by 7.73% over 2021 and 2022, compared to arrests in the Spring and Winter.

Winter/Spring		166,219
Fall/Summer	7.73%	179,062

2021 & 2022 Seasonal Arrests
06/30/2023 is last day recorded

- 80,427 — Winter
- 85,792 — Spring
- 88,084 — Summer
- 90,978 — Fall

source.
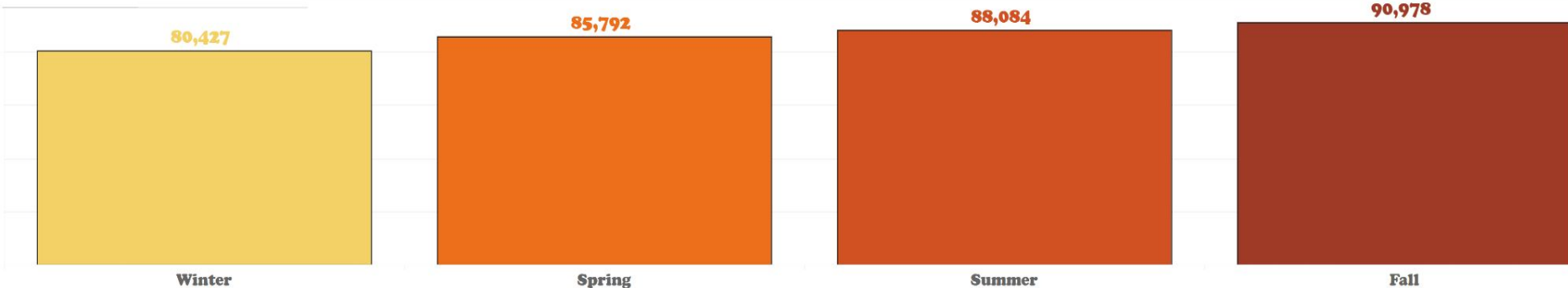
Temporal Pattern of Arrests (Since 2021)

Percentage of Arrests by Temperature Range

- 17°F - 33°F: 1.83%
- 34°F - 50°F: 23.96%
- 51°F - 66°F: 26.87%
- 67°F - 83°F: 32.96%
- > 83°F: 14.34%
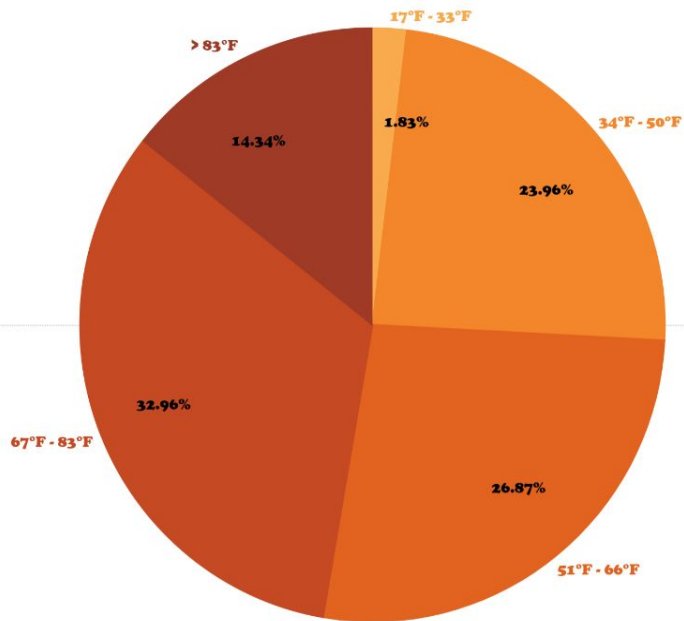
Temperature Range of Arrests

- < 16°F: 219
- 17°F - 33°F: 8,396
- 34°F - 50°F: 109,689
- 51°F - 66°F: 123,011
- 67°F - 83°F: 150,896
- > 83°F: 65,641
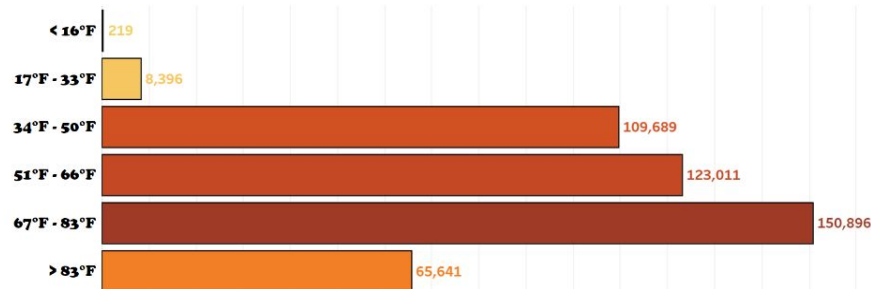
Combining Temperature Data with the Arrest Data shows that most arrests are made when the temperature is between 51°F and 83°F.

The arrests in this range account for nearly 60% of all arrests since 2021. This number is expected to increase due to the remaining months in the current year.

Arrests when the temperature is over 83°F only account for 14% of all arrests.

Correlation Does Not Equal Causation

Although, the data shows that there **is** a correlation between arrests rates and temperature, we must note that correlation **does not** equal causation. There are a number of other factors that could be contributing to the seasonal pattern in arrest rates, such as weather, school holidays, economic factors, mental health, over-policing, and changes in crime reporting behavior.

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source.

Recommendations

There are a number of recommendations that can be made to solve the arrest pattern issues. These recommendations can be divided into two categories:

Prevention	Enforcement
Address the root causes of crime: This includes addressing issues such as poverty, unemployment, lack of education, and substance abuse. It also includes addressing systemic racism in the criminal justice system, such as racial profiling and implicit bias.	**Decriminalize nonviolent offenses:** Many nonviolent offenses, such as marijuana possession and minor traffic offenses, are disproportionately enforced in communities of color. Decriminalizing these offenses would reduce the number of people of color who are arrested for minor offenses.
Increase social support services: This includes providing people with access to mental health services, job training programs, and after-school programs for youth.	**Invest in community-based alternatives to incarceration:** Community-based alternatives to incarceration can be more effective in reducing recidivism than incarceration. Investing in these programs would help to reduce the number of people of color who are arrested.
Develop public awareness campaigns about arrest patterns: This could help people to be more aware of the risks they face and to take steps to protect themselves	**Use data-driven policing:** This involves using data to identify crime hotspots and patterns, and to target enforcement efforts accordingly.

Citations

1. Open Data, "NYPD Arrest Data". July, 2023.
   https://data.cityofnewyork.us/Public-Safety/NYPD-Arrest-Data-Year-to-Date-/uip8-fykc

2. Justice Policy Institute, "Education & Public Safety." August, 2007 pp. 1-15.
   https://justicepolicy.org/wp-content/uploads/2022/02/07-08_rep_educationandpublicsafety_ps-ac.
   pdf