CRIMES IN THE CITIES

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ABSTRACT

PLATFORM SUPPORTED BY NYU DUMBO CLUSTER

This project aimed to provide some insight on how the police department could better arrange their limited police resources in major cities in the United States, represented by New York City and Boston, using big data analytics tools.
In the project, we used MapReduce to clean the data and Impala for further analysis. We found the top 20 most frequently admitted crime in the cities. For each crime type, we further analyzed the month and exact time of the day the crime is most likely to happen.
From the analytics, results were that the most common types of crime in NYC were petit larceny and harassment with a percentage of 17% and 13% accordingly. The time these were most likely to happen is at the end of the year, from 3-8 pm in a day. The most frequent crime type in Boston was human injury. It most frequently occurs in the afternoons of July.
The conclusion using the above data analytics showed that the police department should focus more on the above type of crimes in these particular times.

MOTIVATION

- *The U.S News reported that "Oakland spent 41 percent of the city's general fund on policing in Fiscal Year 2017. Chicago spent nearly 39 percent, Minneapolis almost 36 percent, Houston 35 percent" (Neuhauser).*

- *With these much money spent, the crime rates in big cities were still much higher than small cities or suburb areas (Glaeser).*

- *So we would like to examine how to use police resources in the most efficient way.*

- *We would like to use our knowledge as well as the big data tools to give advice to the police department and hopefully lower crime rates in big cities.*

GOODNESS

The results of our analysis were trustworthy for the following reasons:

1. *The most frequently committed crimes we found are consistent with what's on wikipedia, namely larceny, motor vehicle theft, etc.*
2. *Our conclusions were drawn from a sufficient amount of data.*
3. *There were no logistic errors in the codes we wrote.*

Some of the results we found were counter-intuitive. For instance, according to our analysis, crimes like larceny, property loss and vandalism occurs most frequently during the day in Boston. This might be due to that Boston dataset records on this type of crimes are somewhat biased.

United States	
Crime rates* (2017)	
Violent crimes	
Homicide	5.3
Rape	41.7
Robbery	98.0
Aggravated assault	248.9
Total violent crime	382.9
Property crimes	
Burglary	430.4
Larceny-theft	1,694.4
Motor vehicle theft	237.4
Total property crime	2,362.2

Notes

*Number of reported crimes per 100,000 population.
Estimated total population: 325,719,178.

In 2013 the FBI modified the definition of rape.

Source: Crime in the United States by Volume and Rate per 100,000 Inhabitants, 1998–2017 (Table 1)

DATA SOURCES

TITLE: NEW YORK CITY CRIMES

SIZE: 253.42 MB

DESCRIPTION: This data set comes from NYC Open Data, and it was uploaded to Kaggle. It records crimes in NYC between 2014 and 1025. In this data set, we used month of when it happened, time in a day it happened and the crime types.

LINK: HTTPS://WWW.KAGGLE.COM/ADAMSCHROEDER/CRIMES-NEW-YORK-CITY?SELECT=NYPD_COMPLAINT_DATA_HISTORIC.CSV

SAMPLE DATA - NYC

CMPLNT_	CMPLNT_	CMPLNT_	CMPLNT_	CMPLNT_	RPT_DT	KY_CD	OFNS_DE	PD_CD	PD_DESC	CRM_ATP	LAW_CAT	JURIS_DE	BORO_NM	ADDR_PC	LOC_OF_(	PREM_TY	PARKS_N	HADEVEL	X_COORD	Y_COORD	Latitude	Longitude	Lat_Lon
1.01E+06	########	23:45:00			########	113	FORGERY	729	FORGERY	COMPLET	FELONY	N.Y. POLI(	BRONX	44	INSIDE	BAR/NIGHT CLUB			1007314	241257	40.82885	-73.9167	(40.828848333, -73.916661142)
1.53E+08	########	23:36:00			########	101	MURDER & NON-NEGL. MANSL			COMPLET	FELONY	N.Y. POLI(	QUEENS	103	OUTSIDE				1043991	193406	40.69734	-73.7846	(40.697338138, -73.784556739)
5.69E+08	########	23:30:00			########	117	DANGERO	503	CONTROL	COMPLET	FELONY	N.Y. POLI(	MANHATT	28		OTHER			999463	231690	40.80261	-73.9451	(40.802606608, -73.945051911)
9.68E+08	########	23:30:00			########	344	ASSAULT	101	ASSAULT	COMPLET	MISDEME	N.Y. POLI(	QUEENS	105	INSIDE	RESIDENCE-HOUSE			1060183	177862	40.65455	-73.7263	(40.654549444, -73.726338791)
6.42E+08	########	23:25:00	########	23:30:00	########	344	ASSAULT	101	ASSAULT	COMPLET	MISDEME	N.Y. POLI(	MANHATT	13	FRONT OF	OTHER			987606	208148	40.738	-73.9879	(40.7380024, -73.98789129)
3.66E+08	########	23:18:00	########	23:25:00	########	106	FELONY A	109	ASSAULT	ATTEMPT	FELONY	N.Y. POLI(	BROOKLY	71	FRONT OF	DRUG STORE			996149	181562	40.66502	-73.9571	(40.665022689, -73.957110763)
6.08E+08	########	23:15:00			########	235	DANGERO	511	CONTROL	COMPLET	MISDEME	N.Y. POLI(	MANHATT	7	OPPOSITE	STREET			987373	201662	40.7202	-73.9887	(40.720199996, -73.988735082)
2.65E+08	########	23:15:00	########	23:15:00	########	118	DANGERO	792	WEAPONS	COMPLET	FELONY	N.Y. POLI(	BRONX	46	FRONT OF	STREET			1009041	247401	40.84571	-73.9104	(40.845707148, -73.910398033)
9.89E+08	########	23:15:00	########	23:30:00	########	344	ASSAULT	101	ASSAULT	COMPLET	MISDEME	N.Y. POLI(	BRONX	48	INSIDE	RESIDENCE - APT. HOUSE			1014154	251416	40.85671	-73.8919	(40.856711291, -73.891899956)
4.15E+08	########	23:10:00	########	23:10:00	########	341	PETIT LAR	338	LARCENY	COMPLET	MISDEME	N.Y. POLI(	MANHATT	19	INSIDE	DRUG STORE			994327	218211	40.76562	-73.9636	(40.765617688, -73.96362342)
7.31E+08	########	23:05:00	########	23:15:00	########	341	PETIT LAR	343	LARCENY	COMPLET	MISDEME	N.Y. POLI(	BRONX	41	INSIDE	FAST FOOD			1014216	238784	40.82204	-73.8917	(40.822039935, -73.891732267)
1.78E+08	########	23:00:00	########	23:05:00	########	341	PETIT LAR	338	LARCENY	COMPLET	MISDEME	N.Y. POLI(	MANHATT	13	INSIDE	RESTAURANT/DINER			988113	206263	40.73283	-73.9861	(40.732828332, -73.986062857)
8.98E+08	########	23:00:00			########	109	GRAND LA	406	LARCENY	COMPLET	FELONY	N.Y. POLI(	MANHATT	14		STREET			987215	215403	40.75792	-73.9893	(40.757915693, -73.98929902)
5.66E+08	########	23:00:00			########	109	GRAND LA	415	LARCENY	COMPLET	FELONY	N.Y. POLI(	MANHATT	14		STREET			987215	215403	40.75792	-73.9893	(40.757915693, -73.98929902)
5.85E+08	########	23:00:00			########	113	FORGERY	729	FORGERY	COMPLET	FELONY	N.Y. POLI(	BROOKLY	67		STREET			1004325	174113	40.64456	-73.9277	(40.644562053, -73.92766205)
7.16E+08	########	23:00:00	########	23:05:00	########	105	ROBBERY	386	ROBBERY	COMPLET	FELONY	N.Y. POLI(	QUEENS	103	INSIDE	BAR/NIGHT CLUB			1044662	197327	40.7081	-73.7821	(40.708095777, -73.78210174)
3.38E+08	########	23:00:00	########	23:10:00	########	109	GRAND LA	411	LARCENY	COMPLET	FELONY	N.Y. POLI(	MANHATT	17	INSIDE	RESTAURANT/DINER			993034	214414	40.7552	-73.9683	(40.755197275, -73.968296117)
4.33E+08	########	23:00:00	########	23:05:00	########	359	OFFENSE	748	CONTEMP	COMPLET	MISDEME	N.Y. POLI(	BRONX	48	INSIDE	RESIDENCE - APT. HOUSE			1014139	251858	40.85792	-73.892	(40.857924499, -73.89195221)
7.61E+08	########	23:00:00	########	23:05:00	########	344	ASSAULT	101	ASSAULT	COMPLET	MISDEME	N.Y. POLI(	BROOKLY	61	INSIDE	RESIDENCE - APT. HOUSE			993932	160170	40.60631	-73.9651	(40.606308897, -73.965132766)
2.35E+08	########	22:55:00	########	23:10:00	########	351	CRIMINAL	259	CRIMINAL	COMPLET	MISDEME	N.Y. POLI(	QUEENS	102	FRONT OF	DRY CLEANER/LAUNDRY			1022298	186863	40.6795	-73.8628	(40.679498977, -73.862825258)
2.32E+08	########	22:53:00	########	22:55:00	########	235	DANGERO	511	CONTROL	COMPLET	MISDEME	N.Y. POLI(	BROOKLY	71		STREET			995387	178144	40.65564	-73.9599	(40.655642023, -73.959863084)
3.41E+08	4/6/2015	12:00:00	########	18:00:00	########	104	RAPE	155	RAPE 2	COMPLET	FELONY	N.Y. POLI(	QUEENS	110	INSIDE	OTHER							
7.04E+08	########	22:50:00	########	22:57:00	########	235	DANGERO	511	CONTROL	COMPLET	MISDEME	N.Y. POLI(	QUEENS	108		STREET			1012629	212283	40.74931	-73.8976	(40.749307045, -73.897578152)
5.49E+08	########	22:50:00	########	22:58:00	########	106	FELONY A	105	STRANGU	COMPLET	FELONY	N.Y. POLI(	BROOKLY	75	INSIDE	RESIDENCE - APT. HOUSE			1018309	183847	40.67124	-73.8772	(40.67123699, -73.877222202)

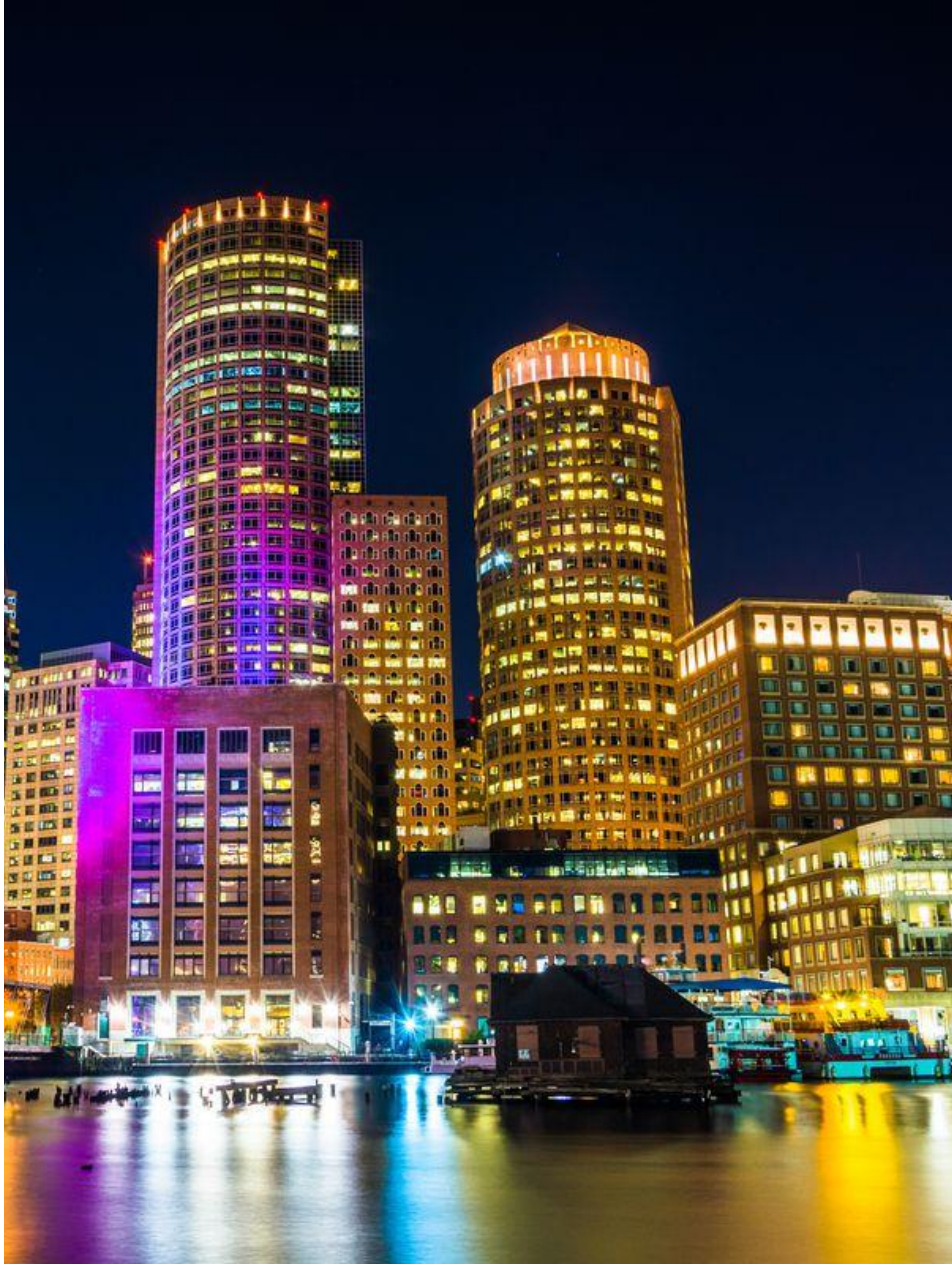
DATA SOURCES

TITLE: Crimes in Boston

SIZE: 10 MB

DESCRIPTION: Crime incident reports are provided by Boston Police Department (BPD) to document the initial details surrounding an incident to which BPD officers respond. This is a dataset containing records from the new crime incident report system, which includes a reduced set of fields focused on capturing the type of incident as well as when and where it occurred. Records begin in June 14, 2015 and continue to September 3, 2018.

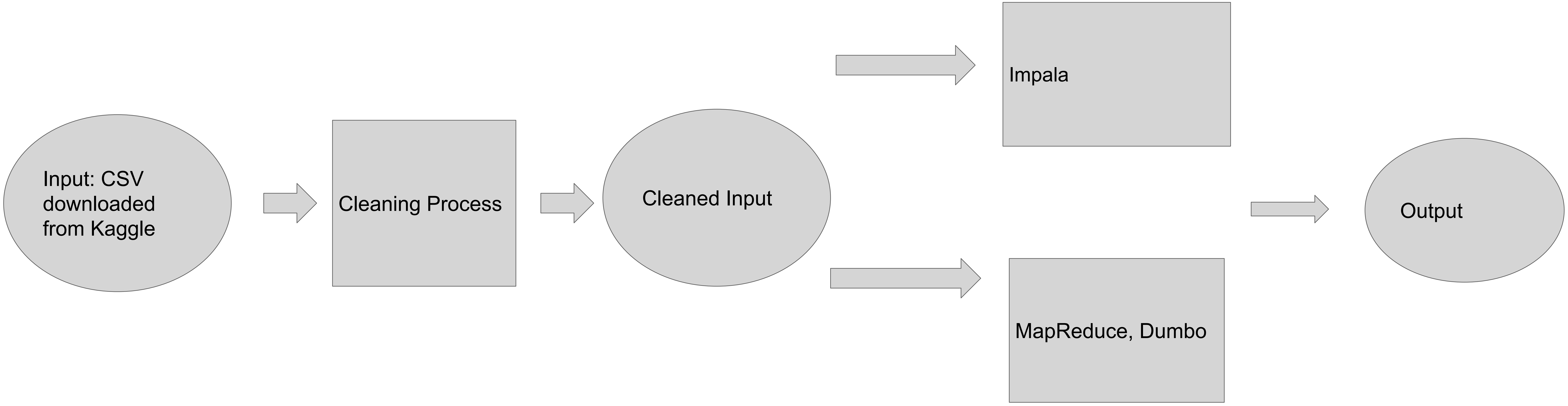
LINK: https://www.kaggle.com/AnalyzeBoston/crimes-in-boston



SAMPLE DATA - Boston

INCIDENT_NUMBER	OFFENSE_CODE	OFFENSE_CODE_GROUP	OFFENSE_DESCRIPTION	DISTRICT	REPORTING_AREA	SHOOTING	OCCURRED_ON_DATE	YEAR	MONTH	DAY_OF_WEEK	HOUR	UCR_PART	STREET	Lat	Long	Location
I182070945	619	Larceny	LARCENY ALL OTHERS	D14	808		2018-09-02 13:00:00	2018	9	Sunday	13	Part One	LINCOLN ST	42.35779134	-71.13937053	(42.35779134, -71.13937053)
I182070943	1402	Vandalism	VANDALISM	C11	347		2018-08-21 00:00:00	2018	8	Tuesday	0	Part Two	HECLA ST	42.30682138	-71.06030035	(42.30682138, -71.06030035)
I182070941	3410	Towed	TOWED MOTOR VEHICLE	D4	151		2018-09-03 19:27:00	2018	9	Monday	19	Part Three	CAZENOVE ST	42.34658879	-71.07242943	(42.34658879, -71.07242943)
I182070940	3114	Investigate Property	INVESTIGATE PROPERTY	D4	272		2018-09-03 21:16:00	2018	9	Monday	21	Part Three	NEWCOMB ST	42.33418175	-71.07866441	(42.33418175, -71.07866441)
I182070938	3114	Investigate Property	INVESTIGATE PROPERTY	B3	421		2018-09-03 21:05:00	2018	9	Monday	21	Part Three	DELHI ST	42.27536542	-71.09036101	(42.27536542, -71.09036101)
I182070936	3820	Motor Vehicle Accident Response	M/V ACCIDENT INVOLVING PEDESTRIAN - INJURY	C11	398		2018-09-03 21:09:00	2018	9	Monday	21	Part Three	TALBOT AVE	42.29019621	-71.07159012	(42.29019621, -71.07159012)
I182070933	724	Auto Theft	AUTO THEFT	B2	330		2018-09-03 21:25:00	2018	9	Monday	21	Part One	NORMANDY ST	42.30607218	-71.0827326	(42.30607218, -71.08273260)
I182070932	3301	Verbal Disputes	VERBAL DISPUTE	B2	584		2018-09-03 20:39:37	2018	9	Monday	20	Part Three	LAWN ST	42.32701648	-71.10555088	(42.32701648, -71.10555088)
I182070931	301	Robbery	ROBBERY - STREET	C6	177		2018-09-03 20:48:00	2018	9	Monday	20	Part One	MASSACHUSETTS AVE	42.33152148	-71.07085307	(42.33152148, -71.07085307)
I182070929	3301	Verbal Disputes	VERBAL DISPUTE	C11	364		2018-09-03 20:38:00	2018	9	Monday	20	Part Three	LESLIE ST	42.29514664	-71.05860832	(42.29514664, -71.05860832)
I182070928	3301	Verbal Disputes	VERBAL DISPUTE	C6	913		2018-09-03 19:55:00	2018	9	Monday	19	Part Three	OCEAN VIEW DR	42.31957856	-71.04032766	(42.31957856, -71.04032766)
I182070927	3114	Investigate Property	INVESTIGATE PROPERTY	C6	936		2018-09-03 20:19:00	2018	9	Monday	20	Part Three	DALESSIO CT	42.34011469	-71.05339029	(42.34011469, -71.05339029)
I182070923	3108	Fire Related Reports	FIRE REPORT - HOUSE, BUILDING, ETC.	D4	139		2018-09-03 19:58:00	2018	9	Monday	19	Part Three	MARLBOROUGH ST	42.3503876	-71.0878529	(42.35038760, -71.08785290)
I182070922	2647	Other	THREATS TO DO BODILY HARM	B3	429		2018-09-03 20:39:00	2018	9	Monday	20	Part Two	WOODROW AVE	42.28647012	-71.08714661	(42.28647012, -71.08714661)
I182070921	3201	Property Lost	PROPERTY - LOST	B3	469		2018-09-02 14:00:00	2018	9	Sunday	14	Part Three	MULVEY ST	42.27924052	-71.09667382	(42.27924052, -71.09667382)
I182070920	3006	Medical Assistance	SICK/INJURED/MEDICAL - PERSON				2018-09-03 19:43:00	2018	9	Monday	19	Part Three		42.35287456	-71.0738297	(42.35287456, -71.07382970)
I182070919	3301	Verbal Disputes	VERBAL DISPUTE	C11	341		2018-09-03 18:52:00	2018	9	Monday	18	Part Three	STONEHURST ST	42.30526428	-71.06683755	(42.30526428, -71.06683755)
I182070918	3305	Assembly or Gathering Violations	DEMONSTRATIONS/RIOT	D4	130		2018-09-03 17:00:00	2018	9	Monday	17	Part Three	HUNTINGTON AVE	42.34857652	-71.07772012	(42.34857652, -71.07772012)
I182070917	2647	Other	THREATS TO DO BODILY HARM	B2	901		2018-09-03 19:52:00	2018	9	Monday	19	Part Two	HORADAN WAY	42.33371742	-71.09665806	(42.33371742, -71.09665806)
I182070915	614	Larceny From Motor Vehicle	LARCENY THEFT FROM MV - NON-ACCESSORY	B2	181		2018-09-02 18:00:00	2018	9	Sunday	18	Part One	SHIRLEY ST	42.3256949	-71.06816778	(42.32569490, -71.06816778)

DIAGRAM



Input: CSV downloaded from Kaggle
Cleaning Process
Cleaned Input
Impala
MapReduce, Dumbo
Output

CODE CHALLENGE

Challenge: Separating the hour time from the specific time.
For example: 12 out of 12:30:00
Solution:

```
dateFormat1 = new SimpleDateFormat("HH:mm:ss");
DateFormat dateFormatHour = new SimpleDateFormat("K aa", Locale.ENGLISH);
try {
    Date date = dateFormat1.parse(fields[1]);
    String hourString = dateFormatHour.format(date);
    fields[1] = hourString;
} catch (ParseException e) {
    // e.printStackTrace();
}

String newString = String.join(",", fields);
key = new Text(newString);

super.reduce(key, values, context);
```

CODE CHALLENGE

Challenge: Removing unwanted commas in strings

Solution:

```python
flag = False
line_list = list(line)

for i in range(len(line_list)):

    if line_list[i] == '"' and flag == False:
        flag = True
    elif line_list[i] == '"' and flag == True:
        flag = False

    if line_list[i] == "," and flag == True:
        line_list[i] = "."

line = "".join(line_list)
```

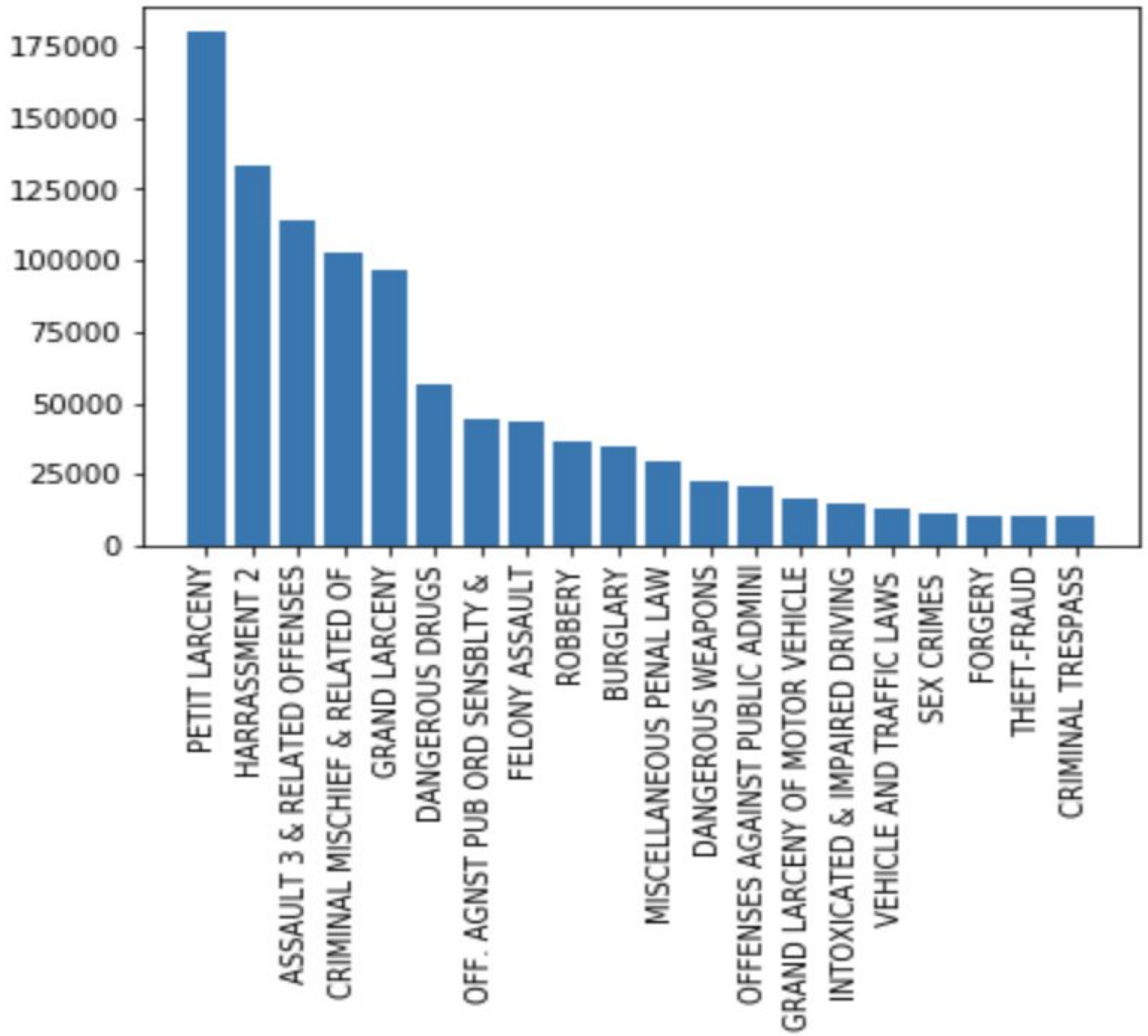
INSIGHTS - Crimes in NYC

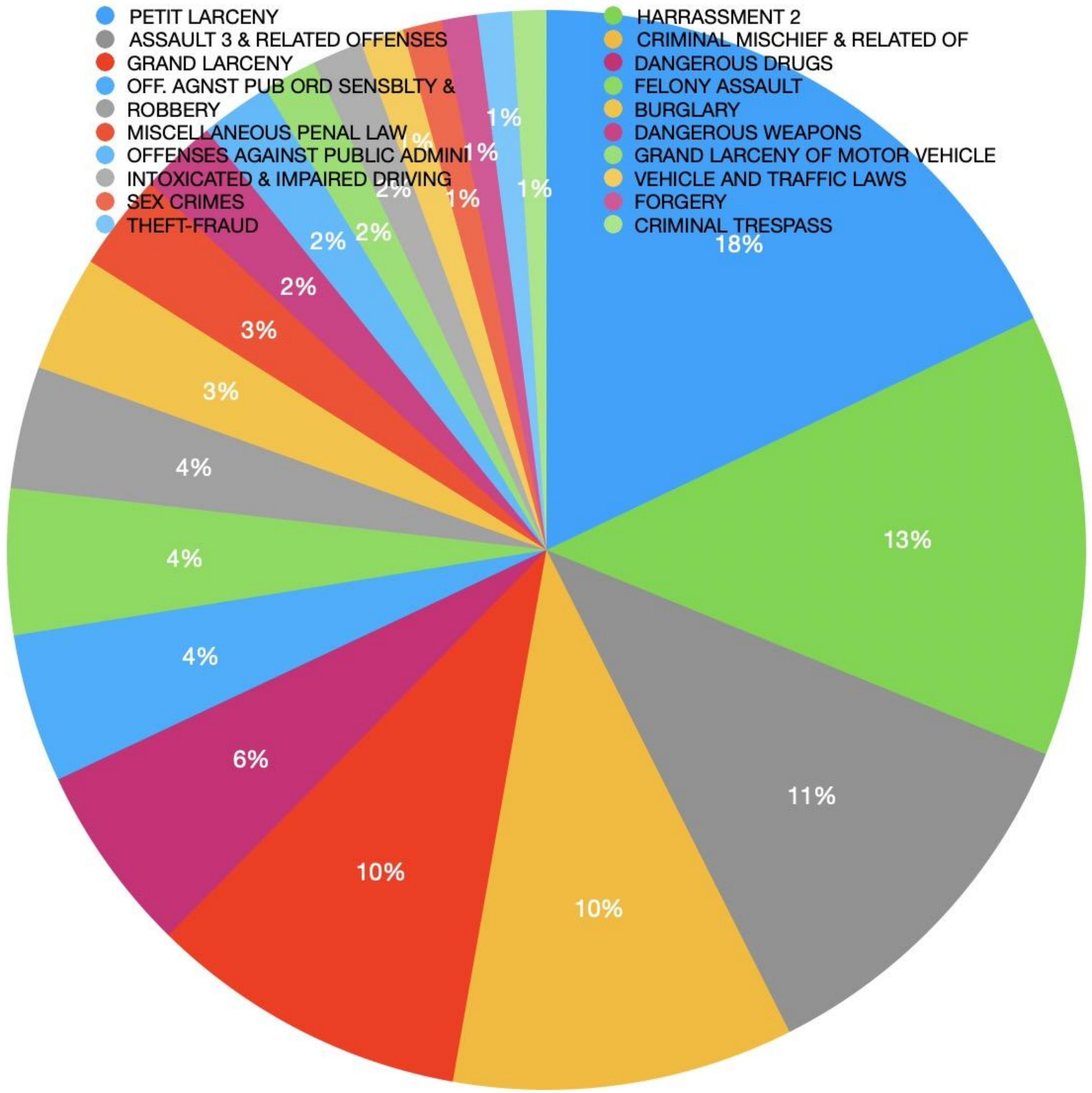
Month	Number
11	114936
12	110305
8	90052
7	89611
10	87570
5	87352
9	85217
6	84739
4	79373
3	78740
1	74778
2	65837

PETIT LARCENY	180246
HARRASSMENT 2	133179
ASSAULT 3 & RELATED OFFENSES	114430
CRIMINAL MISCHIEF & RELATED OF	102771
GRAND LARCENY	96232
DANGEROUS DRUGS	56868
OFF. AGNST PUB ORD SENSBLTY &	44772
FELONY ASSAULT	43921
ROBBERY	36801
BURGLARY	34994
MISCELLANEOUS PENAL LAW	29221
DANGEROUS WEAPONS	22953
OFFENSES AGAINST PUBLIC ADMINI	21353
GRAND LARCENY OF MOTOR VEHICLE	16223
INTOXICATED & IMPAIRED DRIVING	15169
VEHICLE AND TRAFFIC LAWS	13050
SEX CRIMES	11780
FORGERY	10591
THEFT-FRAUD	10472
CRIMINAL TRESPASS	10292

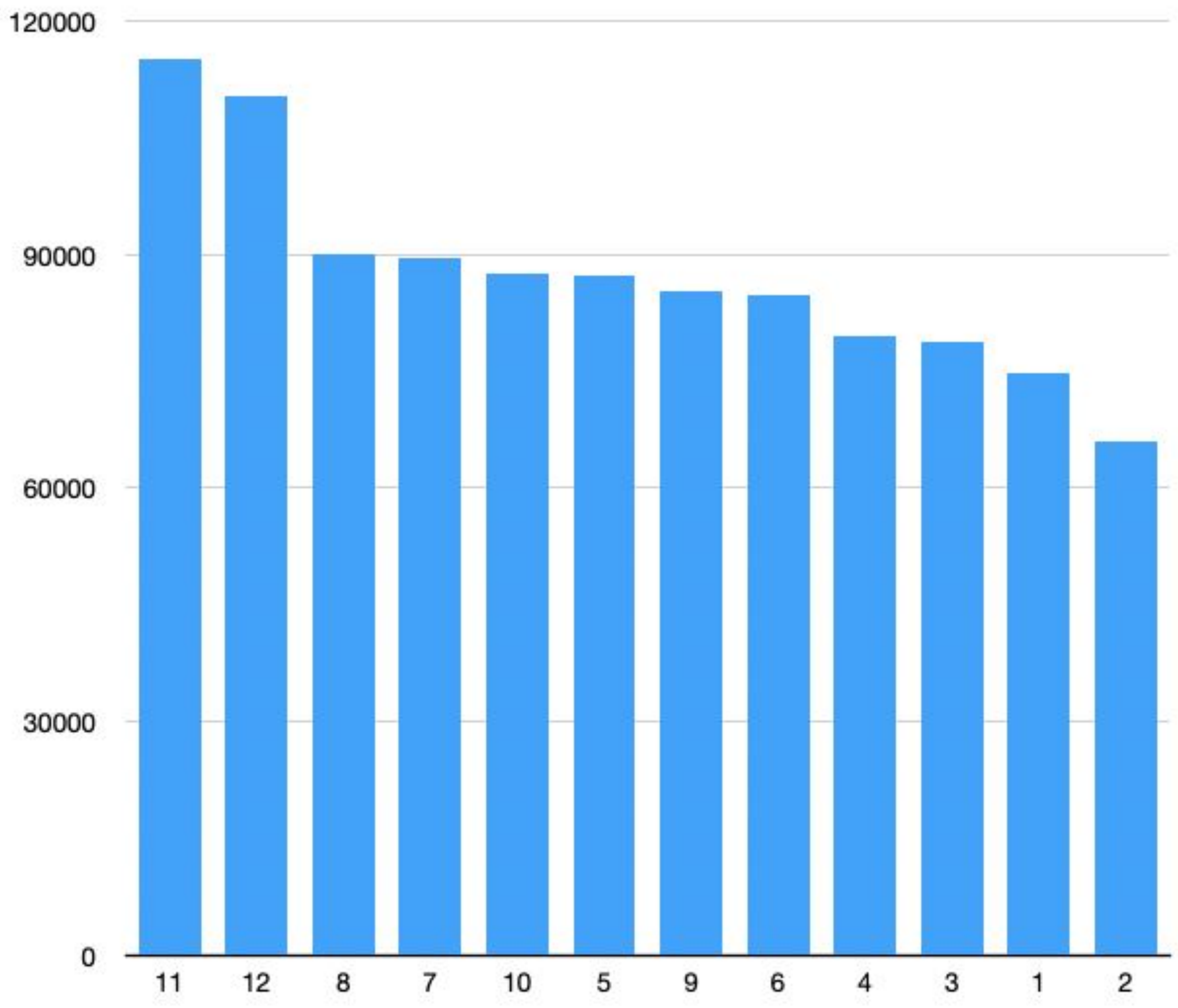
Time	Number
3 PM	62273
6 PM	62200
5 PM	61047
4 PM	60321
7 PM	59530
8 PM	58779
0 PM	58017
2 PM	56111
9 PM	53248
10 PM	50302
0 AM	49875
1 PM	49550
11 PM	45635
11 AM	41351
10 AM	40103
9 AM	38377
1 AM	35901
8 AM	34923
2 AM	29934
3 AM	25246
7 AM	22496
4 AM	21995
6 AM	15702
5 AM	15659

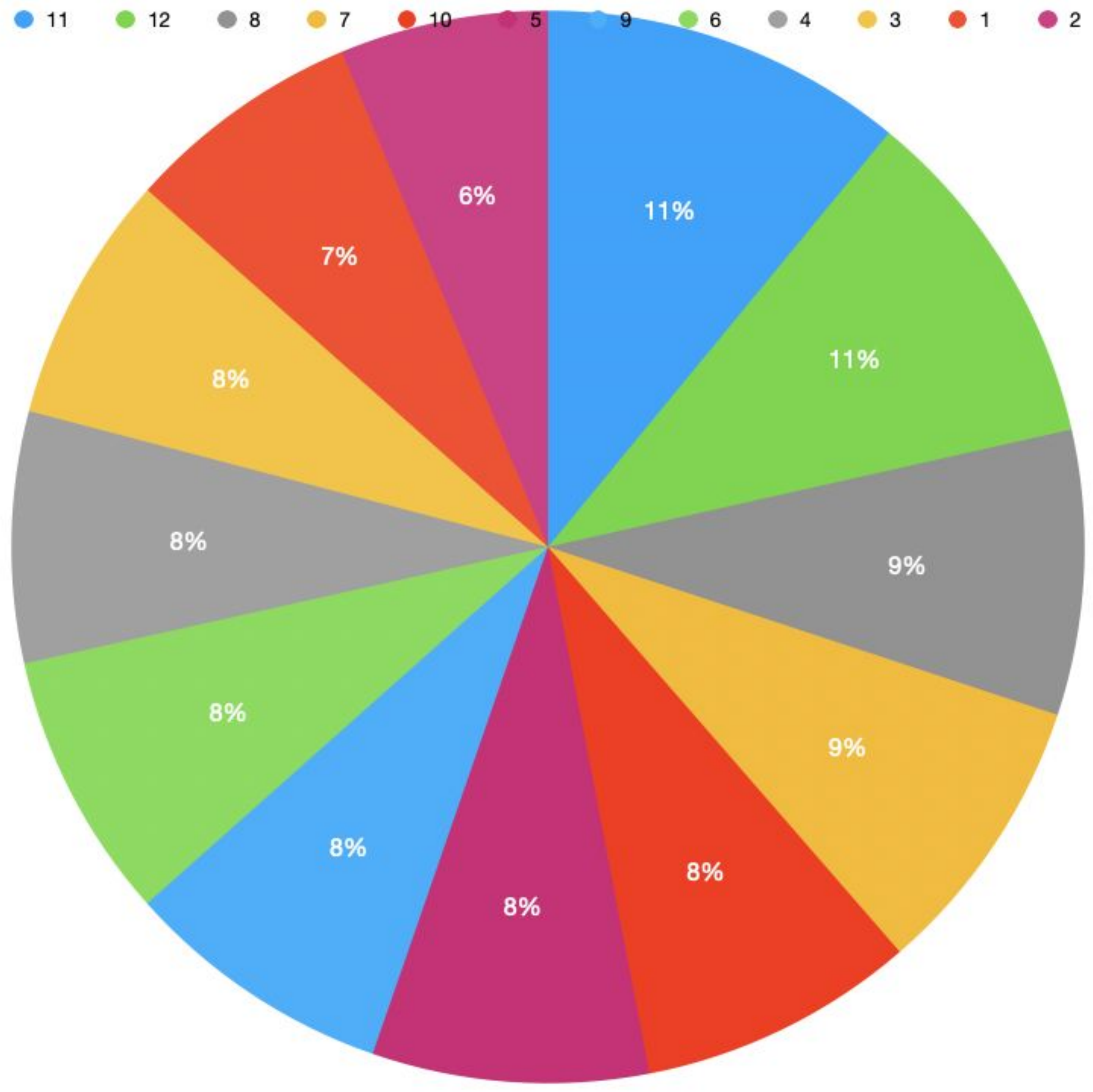
Crime Types Ranking



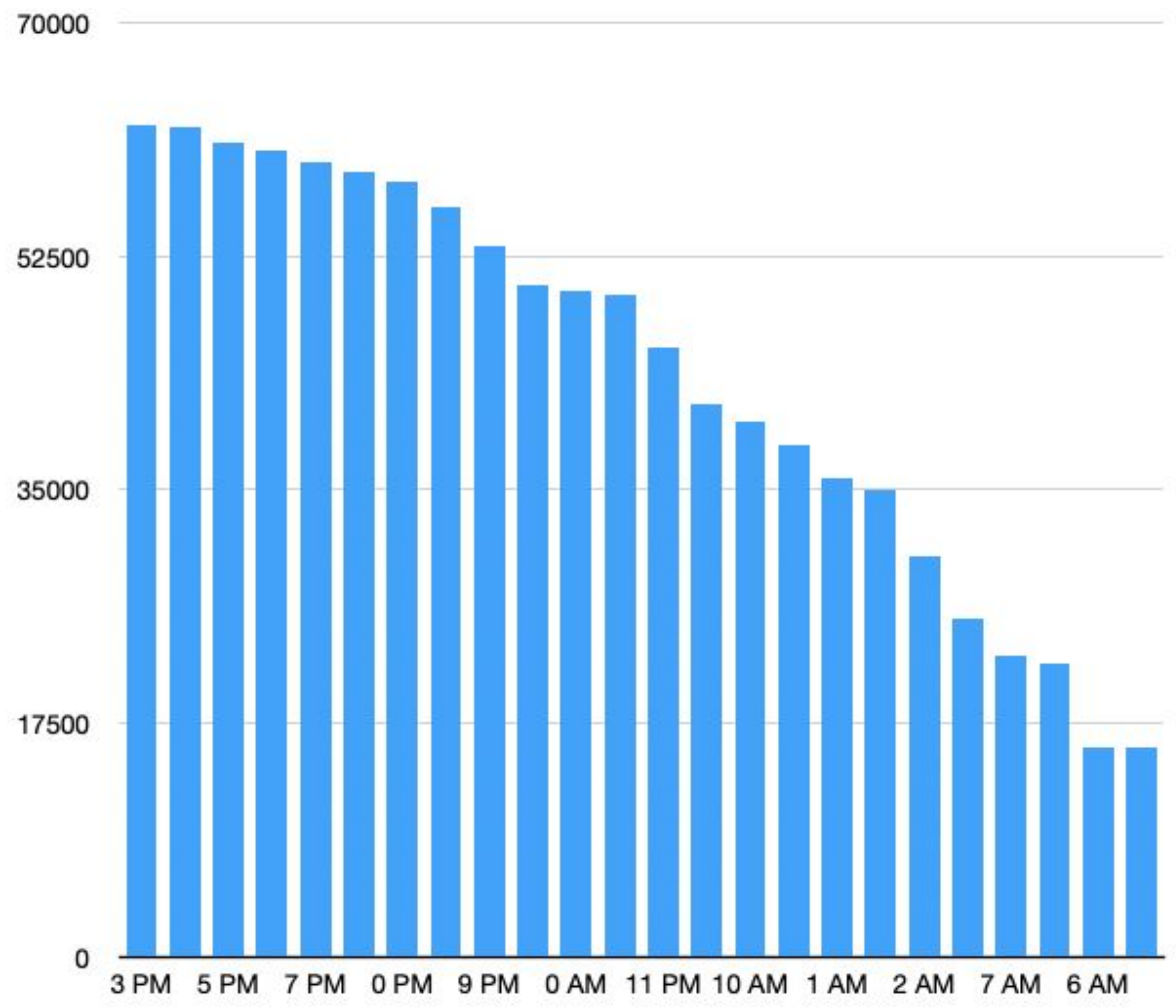


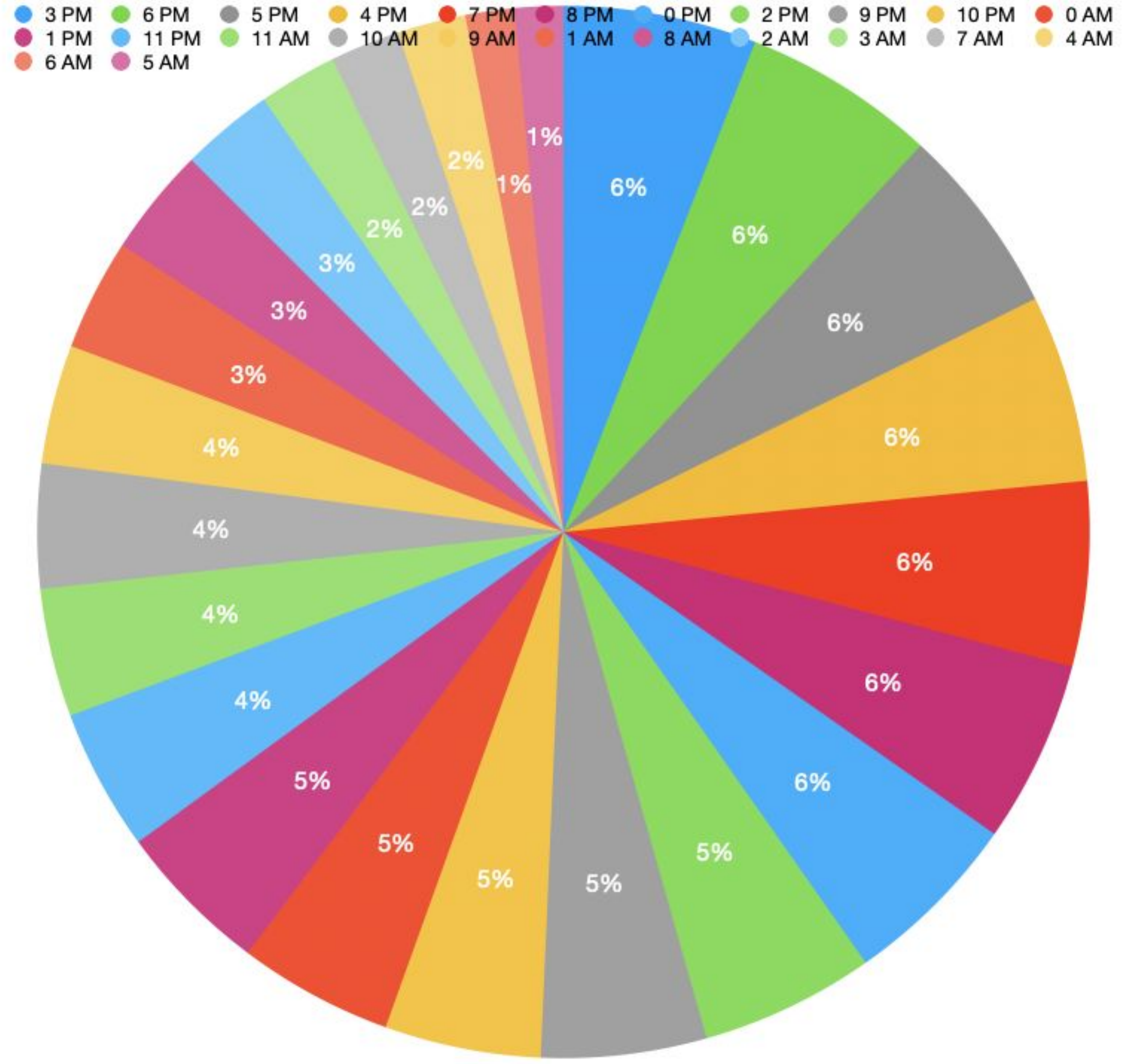
Month Ranking





Time in a day Ranking





INSIGHTS - Crimes in NYC

Crime	More likely to happen in	More likely to happen in
PETIT LARCENY 180246	NOV	4PM
HARRASSMENT 2 133179	NOV	3PM
ASSAULT 3 & RELATED OFFENSES 114430	NOV	9PM
CRIMINAL MISCHIEF & RELATED OF 102771	NOV	12AM
GRAND LARCENY 96232	DEC	12PM
DANGEROUS DRUGS 56868	NOV	8PM
OFF. AGNST PUB ORD SENSBLTY & 44772	NOV	12PM
FELONY ASSAULT 43921	NOV	10PM
ROBBERY 36801	DEC	3PM
BURGLARY 34994	DEC	8AM
MISCELLANEOUS PENAL LAW 29221	NOV	6PM
DANGEROUS WEAPONS 22953	NOV	10PM
OFFENSES AGAINST PUBLIC ADMINI 21353	NOV	8PM
GRAND LARCENY OF MOTOR VEHICLE 16223	NOV	10PM
INTOXICATED & IMPAIRED DRIVING 15169	NOV	3AM
VEHICLE AND TRAFFIC LAWS 13050	NOV	6PM
SEX CRIMES 11780	NOV	12AM
FORGERY 10591	NOV	4PM
THEFT-FRAUD 10472	MAR	12PM
CRIMINAL TRESPASS 10292	NOV	8PM

Highlights:

1. *Police should focus more on Theft-fraud in March.*
2. *Other than petit larceny and harassment that would most likely to happen in the afternoon, other crimes were more likely to happen at night.*
3. *The previous result “highest crime rate at 3 pm” was due to the large base number of petit larceny and harassment.*

INSIGHTS - Crimes in Boston

OFNS	FREQ
Medical Assistance: SICK/INJURED/MEDICAL - PERSON	18783
Investigate Person: INVESTIGATE PERSON	18750
Motor Vehicle Accident Response: M/V - LEAVING SCENE - PROPERTY DAMAGE	16323
Vandalism: VANDALISM	15154
Simple Assault: ASSAULT SIMPLE - BATTERY	14791
Verbal Disputes: VERBAL DISPUTE	13099
Towed: TOWED MOTOR VEHICLE	11287
Investigate Property: INVESTIGATE PROPERTY	11124
Larceny: LARCENY THEFT FROM BUILDING	9069
Other: THREATS TO DO BODILY HARM	9042
Larceny From Motor Vehicle: LARCENY THEFT FROM MV - NON-ACCESSORY	8893
Property Lost: PROPERTY - LOST	8892
Warrant Arrests: WARRANT ARREST	8407
Larceny: LARCENY SHOPLIFTING	7949
Motor Vehicle Accident Response: M/V ACCIDENT - PROPERTY DAMAGE	6557
Larceny: LARCENY ALL OTHERS	5963
Motor Vehicle Accident Response: M/V ACCIDENT - PERSONAL INJURY	5131
Aggravated Assault: ASSAULT - AGGRAVATED - BATTERY	4886
Fraud: FRAUD - FALSE PRETENSE / SCHEME	4413
Missing Person Located: MISSING PERSON - LOCATED	4365

Top 20 most frequently committed crimes

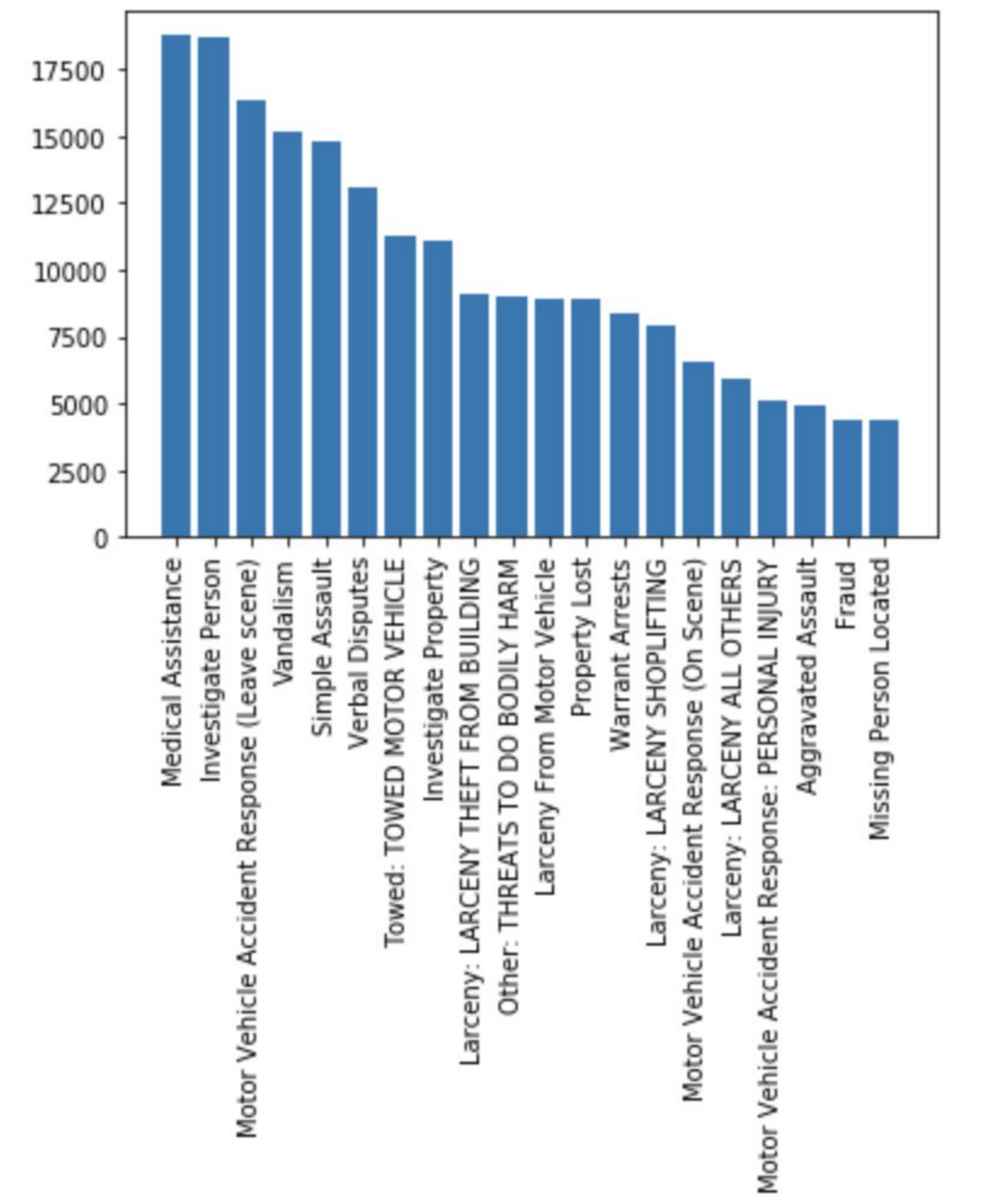
Time	Freq
17	20763
18	20302
16	19871
12	18679
19	17588
14	17189
13	16846
15	16522
11	16448
10	16347
20	15850
0	15105
9	14740
21	14111
8	13043
22	12926
23	10596
1	9269
7	8850
2	7693
6	5026
3	4589
4	3408
5	3311

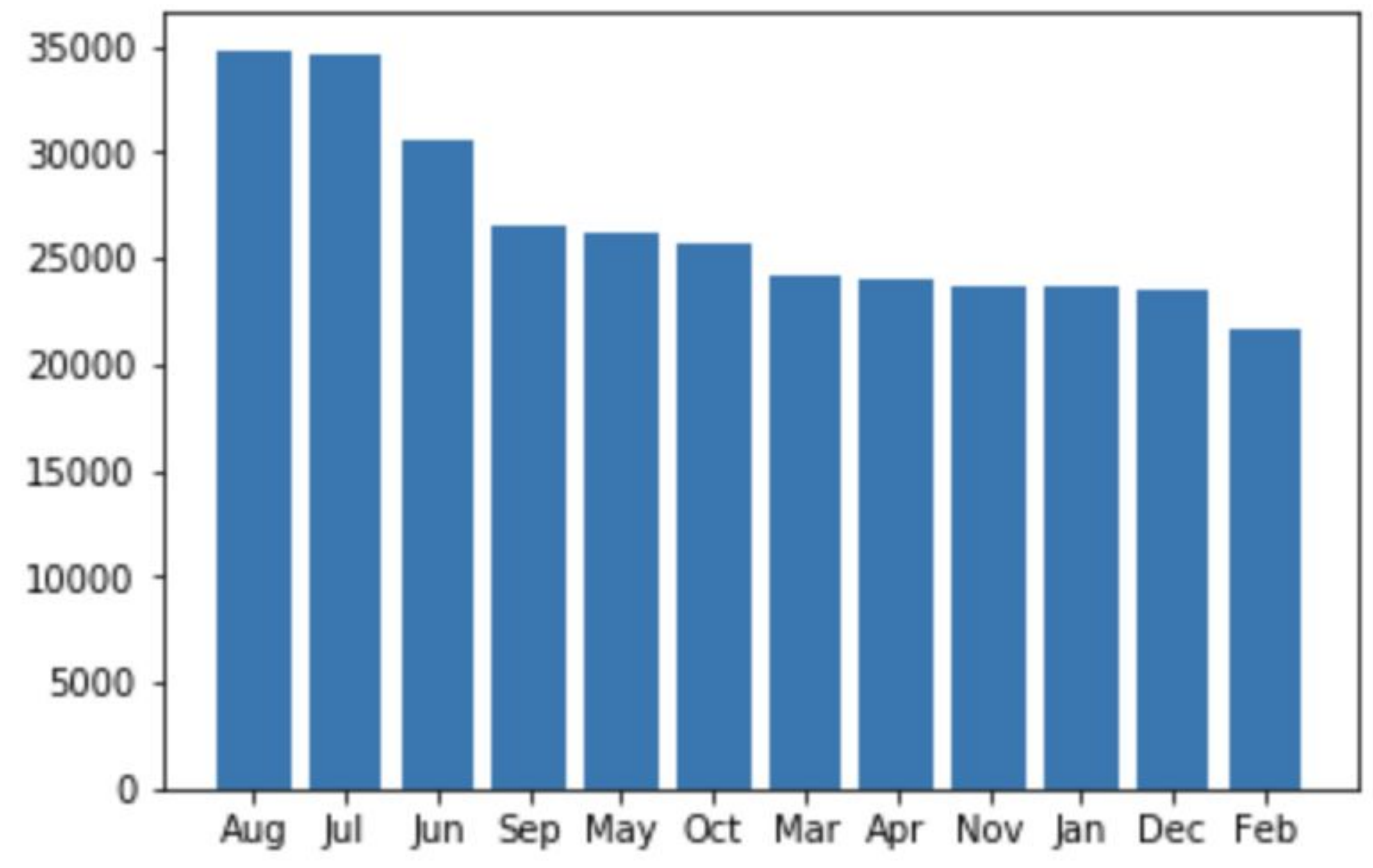
Month

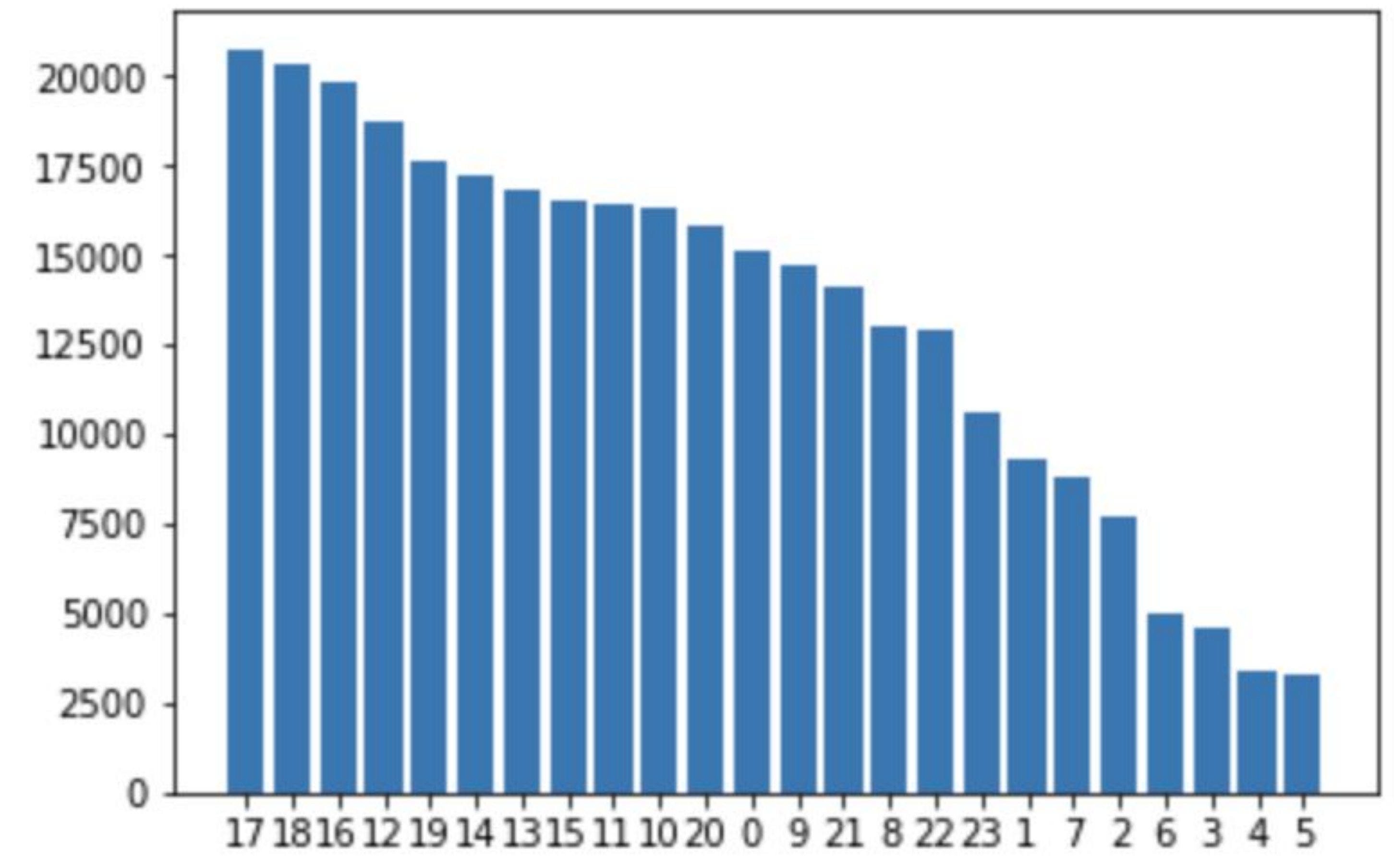
Month	Freq
8	34823
7	34556
6	30568
9	26543
5	26199
10	25737
3	24146
4	24086
11	23675
1	23609
12	23477
2	21653

Time

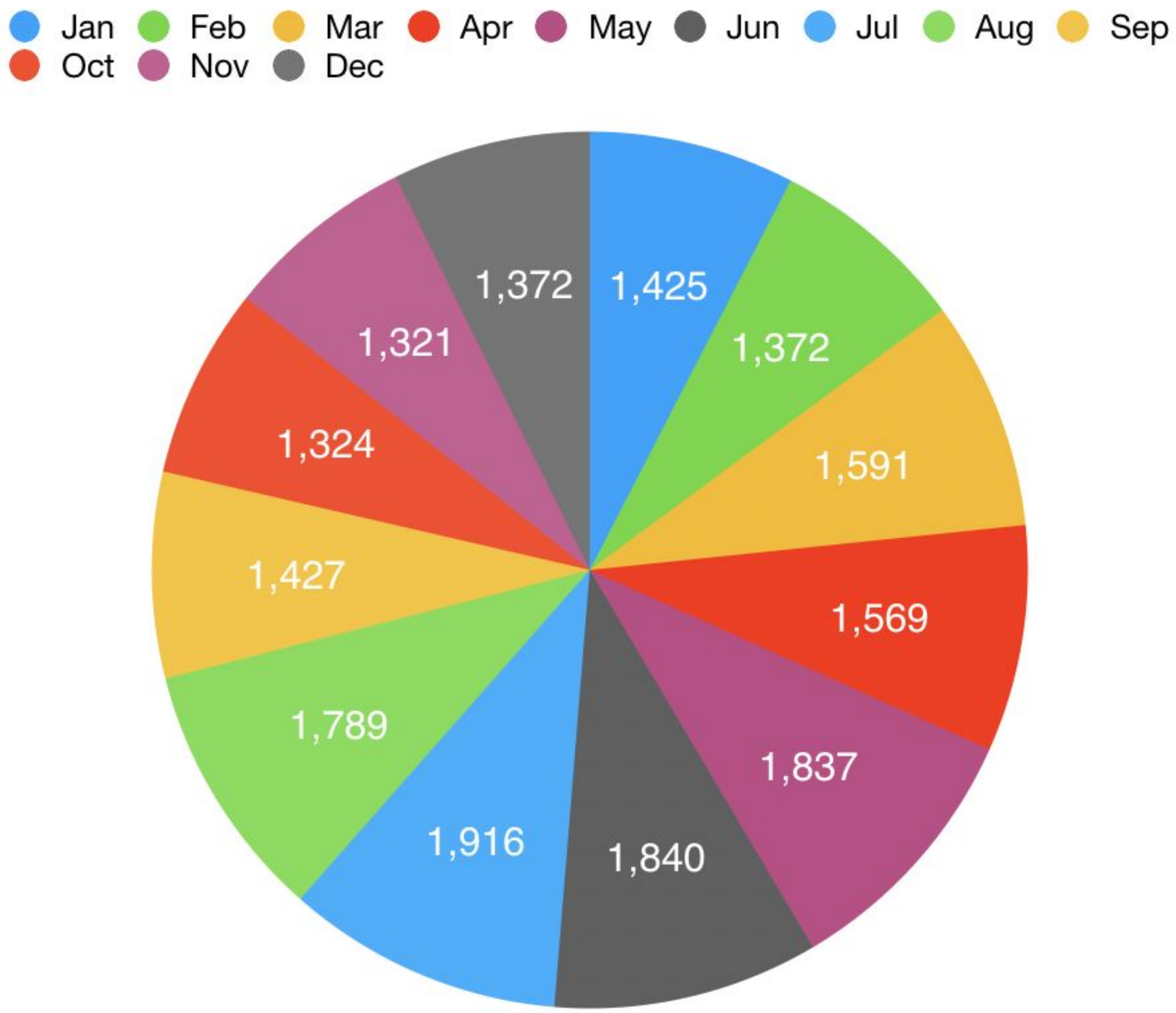
INSIGHTS - Crimes in Boston



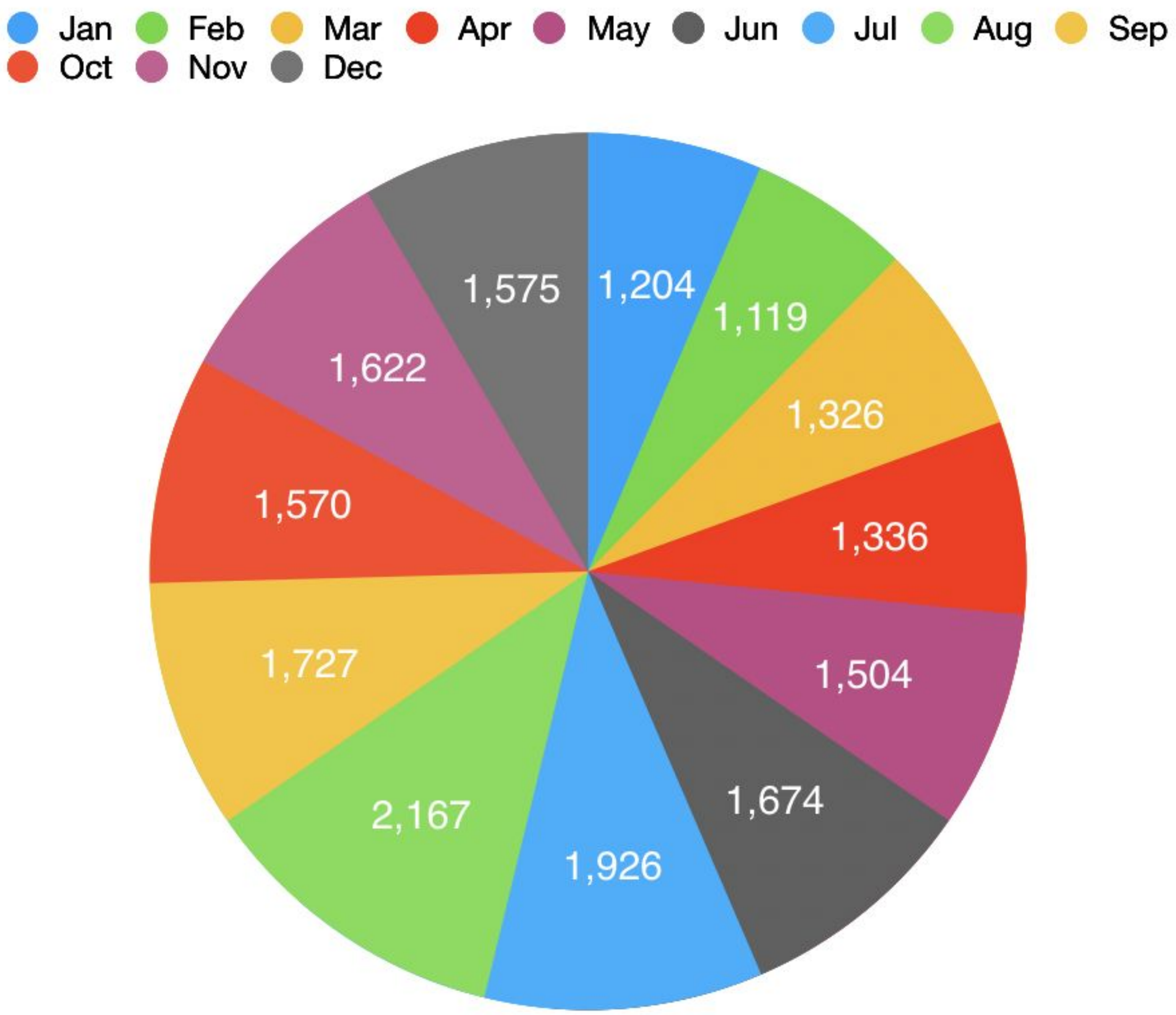




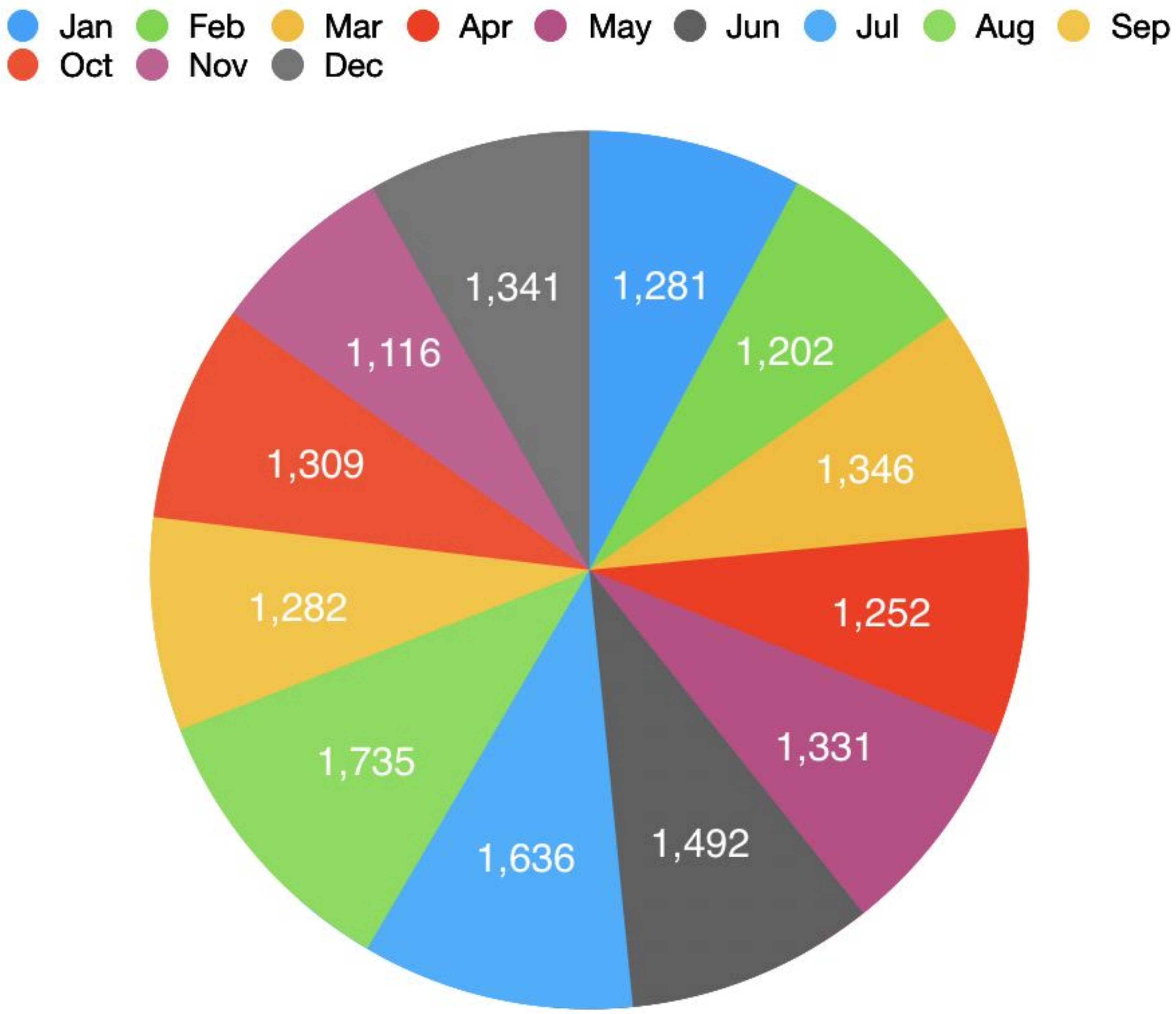
INSIGHTS - Crimes in Boston



Medical Assistance: SICK/INJURED/MEDICAL - PERSON



Investigate Person: INVESTIGATE PERSON



Motor Vehicle Accident Response: M/V - LEAVING SCENE - PROPERTY DAMAGE

INSIGHTS - Crimes in Boston

time	freq
12	1087
16	1078
13	1068
14	1057
17	1052
18	1036
19	1030
10	1012
11	998
15	991
21	985
20	981
22	869
9	795
0	772
8	672
23	636
1	635
2	495
7	397
3	313
4	278
6	274
5	272

Medical Assistance: SICK/INJURED/MEDICAL - PERSON

time	timenum
16	1257
18	1185
17	1178
12	1170
19	1145
14	1119
13	1100
15	1086
11	1022
20	1020
10	954
21	894
9	818
0	766
22	763
23	597
8	592
1	447
7	402
2	391
3	262
6	213
4	200
5	169

Investigate Person: INVESTIGATE PERSON

time	timenum
17	1180
18	1082
16	1080
19	959
20	882
15	830
21	827
14	801
12	796
13	773
22	771
10	749
9	726
11	713
8	700
23	666
0	552
7	530
2	415
1	392
6	323
3	255
5	179
4	142

Motor Vehicle Accident Response: M/V - LEAVING SCENE - PROPERTY DAMAGE

OBSTACLES

1. *Dataset selection*

   Kaggle had a considerable amount of datasets on the topic of crimes in cities in the US. When choosing datasets for this project, we went through a lot of test runs to see which datasets best fit the subject we'll be studying, namely enough data on crime type and time.

2. *Communication between team members*

   Due to different time zone of our team members, communication was not as easy. We managed to solve this situation by working independently during day time and exchanging our ideas in morning and evening of when we were both available.

SUMMARY

- *The results of our research were that: New York City and Boston had different results in terms of crime types, months of when crimes happen, and time in a day of when crimes happen. These differences proved that police force should be arranged differently due to various characteristics of the cities.*
- *In New York, crimes happened the most in November and December, whereas in Boston they were July and August.*
- *In New York the most common crimes were petit larceny and harassment, and in Boston they were medical assistance and investigate person.*
- *In New York, 3pm was the time with the highest crime rate, and the corresponding time in Boston is 5 pm.*
- *Conclusion: This project had been designed to provide insight on how to better allocate police resources for most efficient use. A significant amount of city's general fund had been spent on policing. However, the crime rates in big cities were still considerably higher than those of smaller cities. As contributors, it is our ardent hope that the conclusions from this project might act as a guide on police resources allocation optimization.*

ACKNOWLEDGEMENTS

- *We would like to thank kaggle uploader def love(x) and analyze boston.*
- *Also, we would like to show our appreciation to the Boston Police Department and the NYC Open Data for the original data source.*

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THANK YOU FOR WATCHING !