NYPD Shooting Incident Data Report

~From Japanese tourist's & data scientist's views~

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Agenda

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1. Objective of this analysis

- New York is one of the most attractive cities for Japanese tourists (museums, Yankee Stadium, Statue of Liberty, musicals, etc.)
- For safe and fun, need to understand the security in NY
- Japanese are less sensitive to shooting incidents
- **Analyze NYPD Shooting incidents as a reference for traveling**
- Shooting incidents by **Borough** and **Time zone**
- For further analysis, the features of the data and specific analysis procedures also be described

Analyzing NY shooting incidents for Japanese travelers

2. Data description

- Analyzing "NYPD Shooting Incident Data (Historic)" https://catalog.data.gov/dataset/nypd-shooting-incident-data-historic
- Every shooting incident that occurred in NYC going back to 2006 through the end of the previous year
- Dataset includes, Rows: 25,596 Columns: 19
- Column specification:

data type	#	columns
character	10	OCCUR_DATE, BORO, LOCATION_DESC, PERP_AGE_GROUP, PERP_SEX, PERP_RACE, VIC_AGE_GROUP, VIC_SEX, VIC_RACE Lon_Lat
double	7	INCIDENT_KEY, PRECINCT, JURISDICTION_CODE, X_COORD_CD, Y_COORD_CD, Latitude, Longitude
logical	1	STATISTICAL_MURDER_FLAG
time	1	OCCUR_TIME

3. Tidy data

- First, check basic statistics (Median, Max/Min, # of NA)
- Feature selection (BORO, OCCUR_TIME, etc.) & drop NAs
- Group by BORO & OCCUR_TIME

Group by BORO

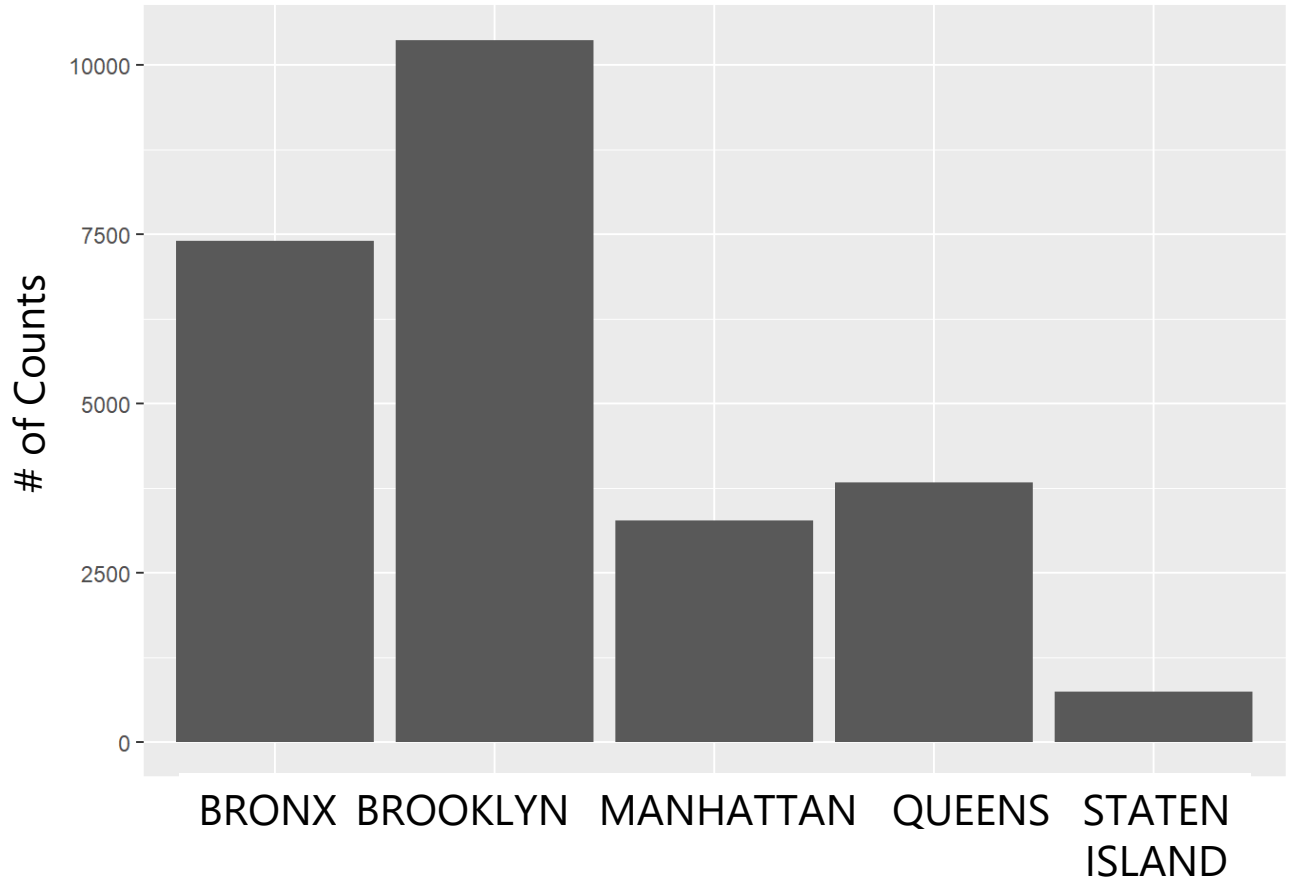
BORO	# of cases
BRONX	7402
BROOKLYN	10365
MANHATTAN	3264
QUEENS	3827
STATEN ISLAND	736

Group by OCCUR_TIME

hours	# of cases	hours	# of cases	hours	# of cases
0	2053	8	206	16	968
1	1981	9	199	17	1010
2	1726	10	273	18	1139
3	1544	11	345	19	1364
4	1374	12	462	20	1573
5	667	13	498	21	1859
6	332	14	733	22	2022
7	222	15	854	23	2190

4. Visualize data (1/2)

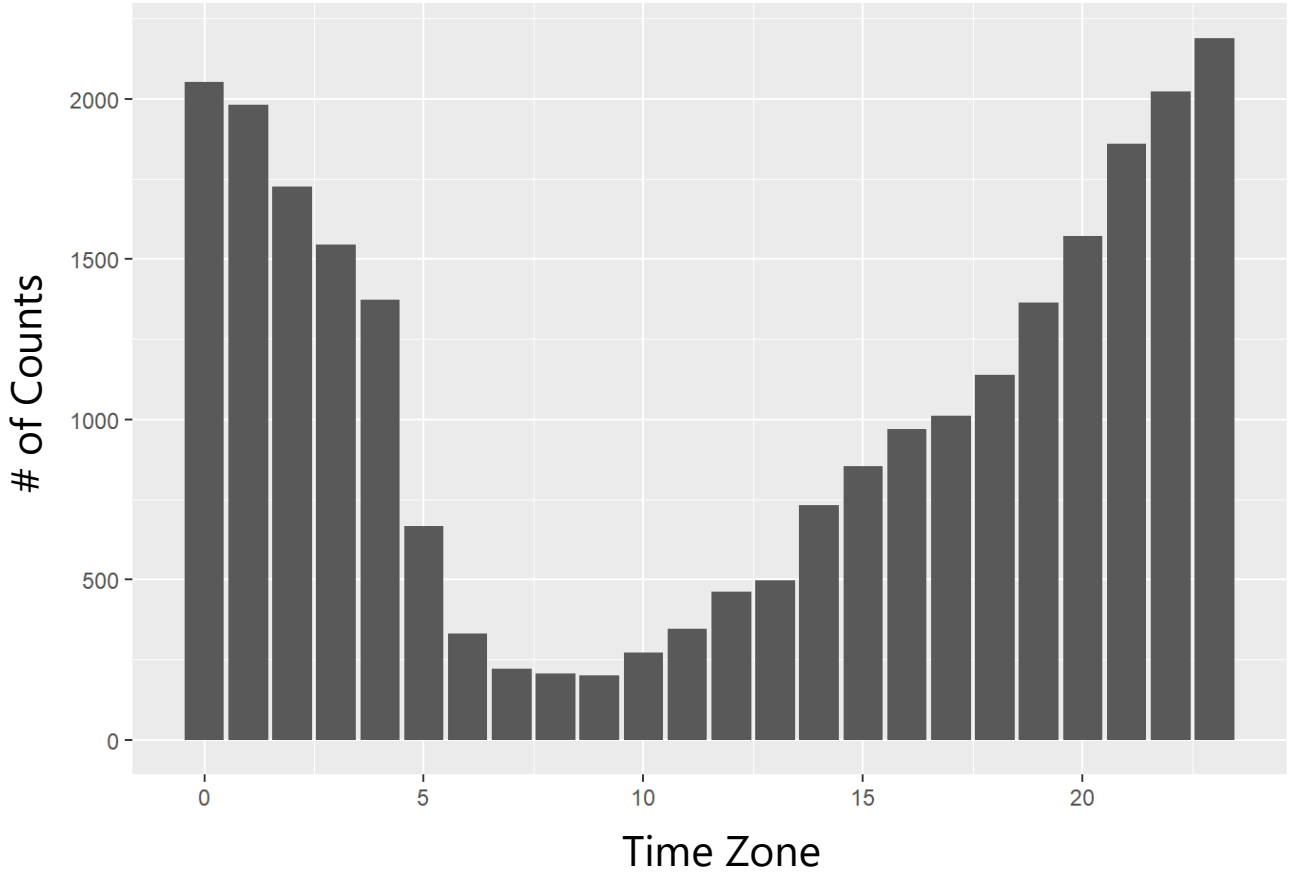
Shooting incidents counts by **Borough**



- **Brooklyn** and **Bronx** have many Shooting incidents
- **Staten Island** is safe with few shooting incidents

4. Visualize data (2/2)

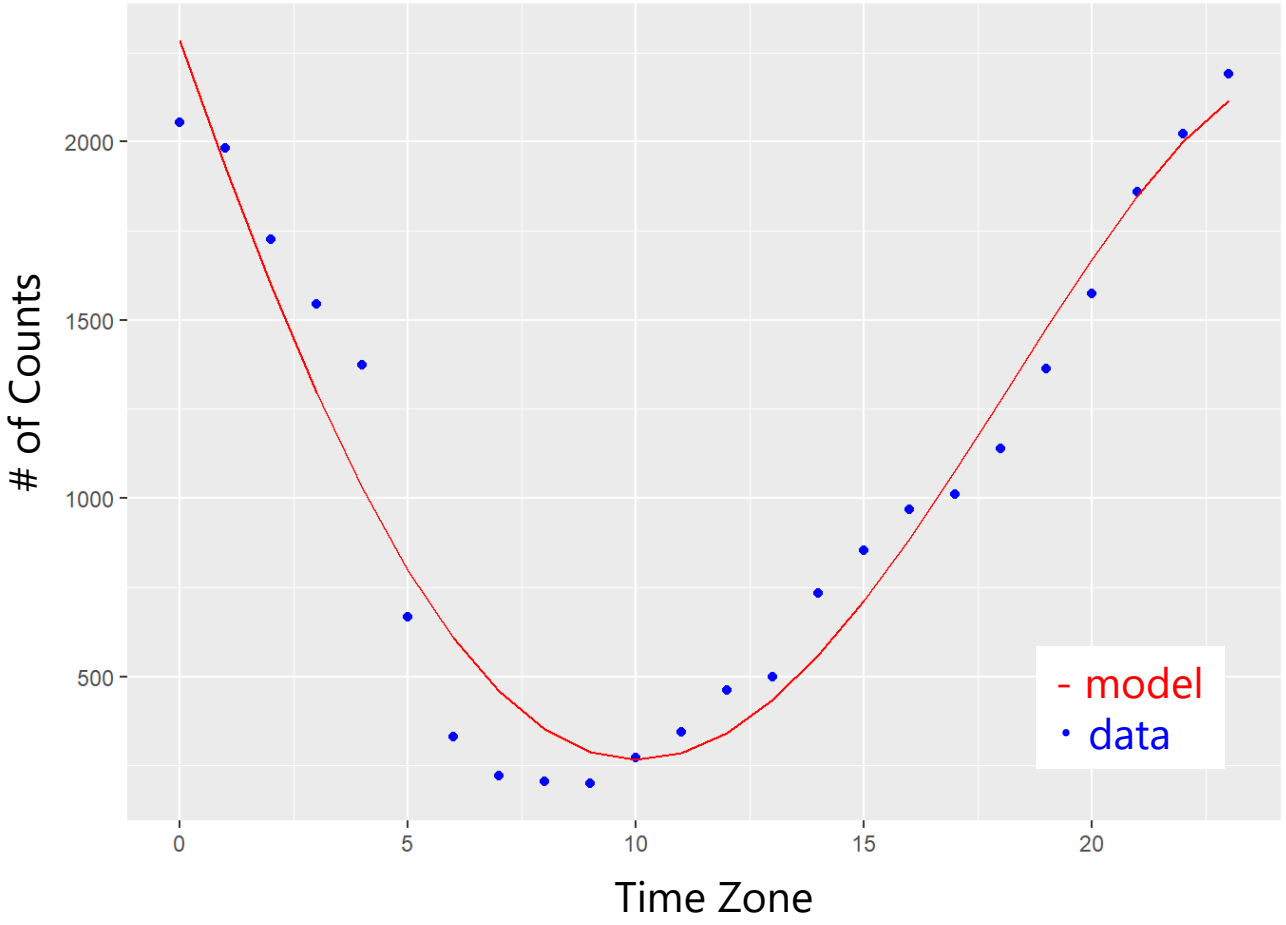
Shooting incidents counts by [Time Zone]



- **In the morning**, 9 o'clock is the minimum, and few shooting incidents
- Increases from **evening to night, peaking at 23:00**

5. Modeling

Shooting incidents counts by [Time Zome]



- 4-order polynomial model fit was performed
- Trends can be represented by models

6. Potential biases and future analysis

- Regarding bias, necessary to investigate the effects of **races**, **residents income**, **educational level**, etc. with objective data
- Brooklyn has the highest number of gun crimes and has the most population, so next need to look at **the number of crimes per capita**.
- **Cross analysis of time zone and borough** is required
- Trends in Serious Crime by **Correlation Analysis with Murder Cases**

Further in-depth analysis is required

7. Summary

- Brooklyn has the highest number of gun crimes in New York City by borough. Bronx is the second worst.

-> **Travelers should be careful in these areas**

- Staten Island is safe with the fewest shooting incidents
- The number of crimes is low in the morning, with a minimum at 9:00 a.m., increasing in the evening and peaking at 11:00 p.m.

-> **Travelers should avoid unnecessary outings late at night**

The end of my presentation