

Analysis of NYPD Motor Vehicle Collisions data

Reducing **accidents** in **Brooklyn**

- Number of accidents
- Injuries caused
- Deaths caused

Or combination and others

What's special about Brooklyn?

- One way streets

What's special about Brooklyn's data

Borough with highest

- **injuries per accident, specifically cyclists injured***

- **number of accidents**

What can be generalized to other boroughs or cities?

*Number of pedestrians injured per accident is slightly higher in Bronx than Brooklyn but the number of bicyclists injured per accident is by far the highest for Brooklyn

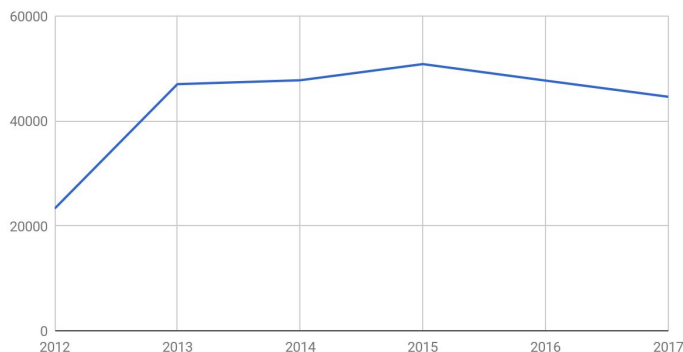
Exploratory Analysis

From 2012 to 2017 in Brooklyn

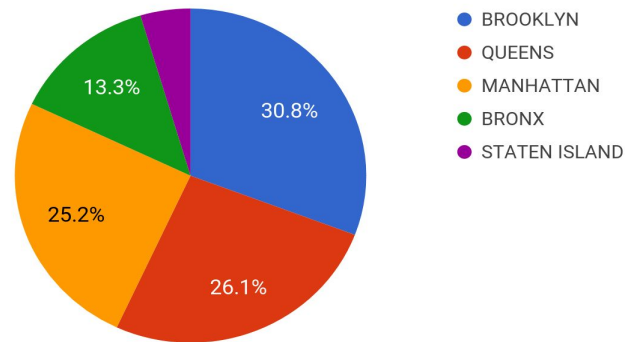
- Cyclists injured: 8103
- Cyclists killed: 29
- Motorist injured: 50,859
- Motorist killed: 101
- Pedestrians injured: 17,564
- Pedestrians killed: 176

15,3997 out of 261,224 incidents,
caused by Passenger vehicles
(~60% of total accidents)

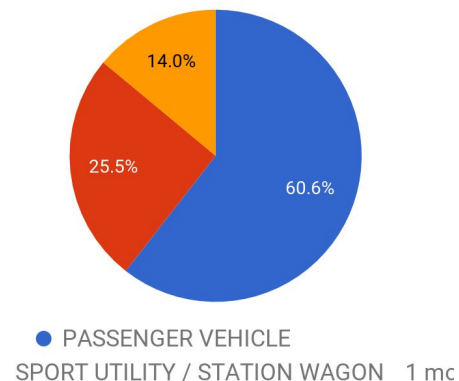
Number of Incidents by Year



Incidents by Borough

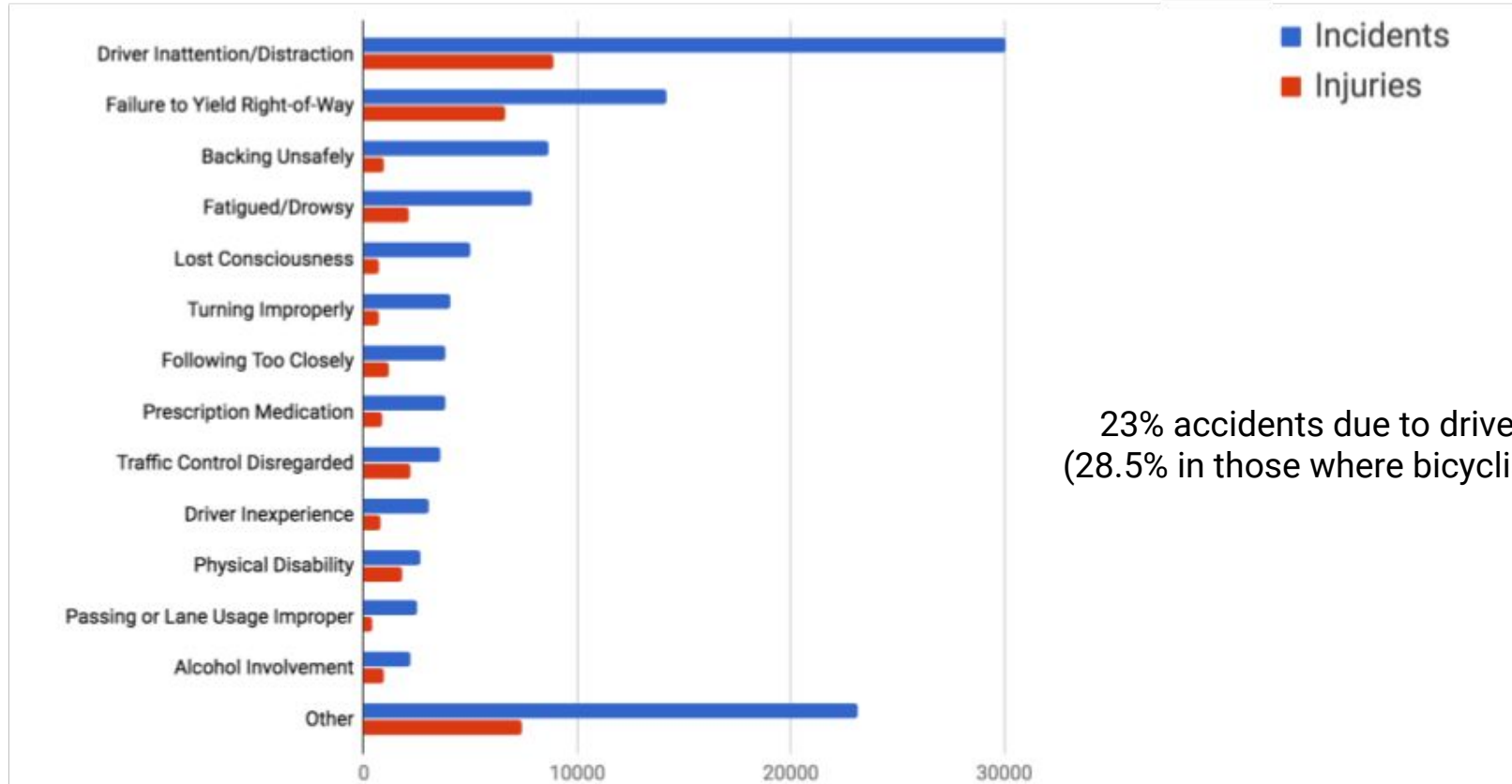


Incidents by vehicle type



*removed 2018 as data is incomplete for the year

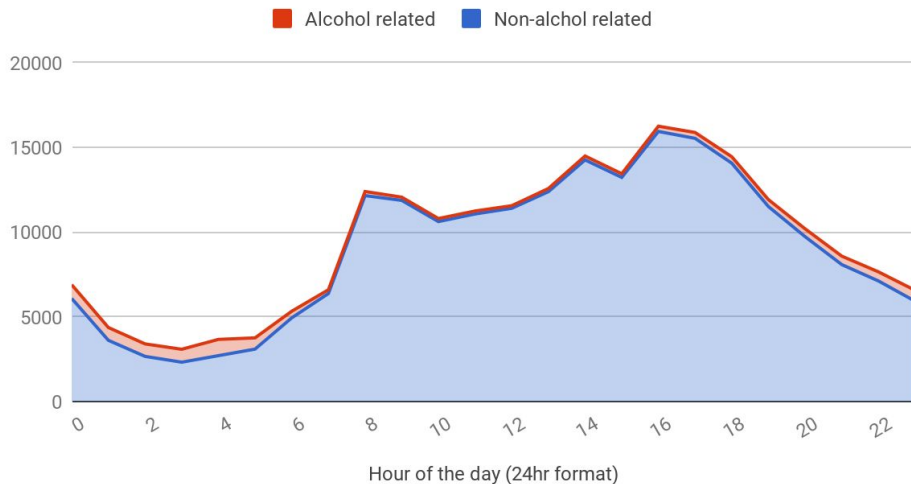
Causes of accidents



23% accidents due to driver inattention
(28.5% in those where bicyclist is injured)

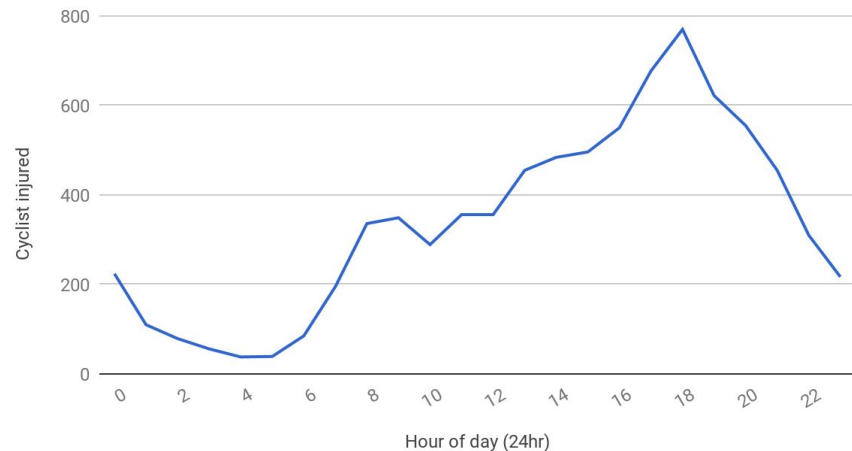
Temporal Analysis

Incidents by time, and share of alcohol-related incidents

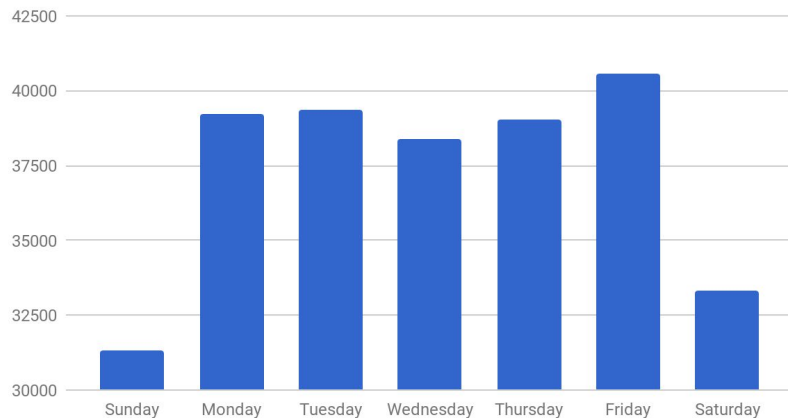


- Alcohol related accidents happen more around midnight
- Cyclists are injured more in the evening time
- Fridays seem to have most accidents
- Even though it seems intuitive that there would be a strong seasonal pattern over months, there isn't a strong correlation in accidents over months

Cyclists injured by hour of day



Incidents by day of week



Insights

- Brooklyn has highest incidents of all boroughs (30% of all incidents)
- Overall increase in accidents from 2013 - 2017
- **Bike injury rate** extremely high for Brooklyn
- Incidents due to driver distraction tops, followed by failure to yield
 - Cause for roughly 1/4th of bicyclist injuries
- Incidents involving alcohol generally occur at midnights
- Accidents on Friday are generally higher than rest of the week
- Most accidents
 - Zip codes with most accidents: 11207, 11203, 11236, 11226
 - Streets:
 - Bedford Avenue: Changes from one lane st to two lane
 - 5th Avenue: Change from two way st to one-way traffic south of 135th Street
 - Atlantic Avenue: Truck route across Brooklyn
 - Nostrand Avenue: Between Kings Highway and Avenue X, it is a two-way street, One-way two-lane street going southbound elsewhere
 - Change in traffic pattern from one-way to two-way could be one possible cause of confusion

Recommendations to reduce number of accidents

Bike Safety

Since rate of bike injury is extremely high and driver distraction is the major cause

- Additional signals at the intersections where yield is required at zip codes with high injury rate as failure to yield is the second major cause for accidents
- With growing usage of e-bikes, some states like California have special laws for e-bikes due to their growing usage. Helps in reducing number of accidents, as e-bikes go much faster than normal bikes
- Bike lane construction, bike safety awareness

Street and route planning

- Provide accident data to navigation apps that could route bike and walking navigation via safer intersections on Google Maps, Strava, Waze etc.
- Countdown pedestrian signals instead of regular signals, specially helps disabled
- Conversion of crowded streets into one way streets as Brooklyn has grown a lot in traffic