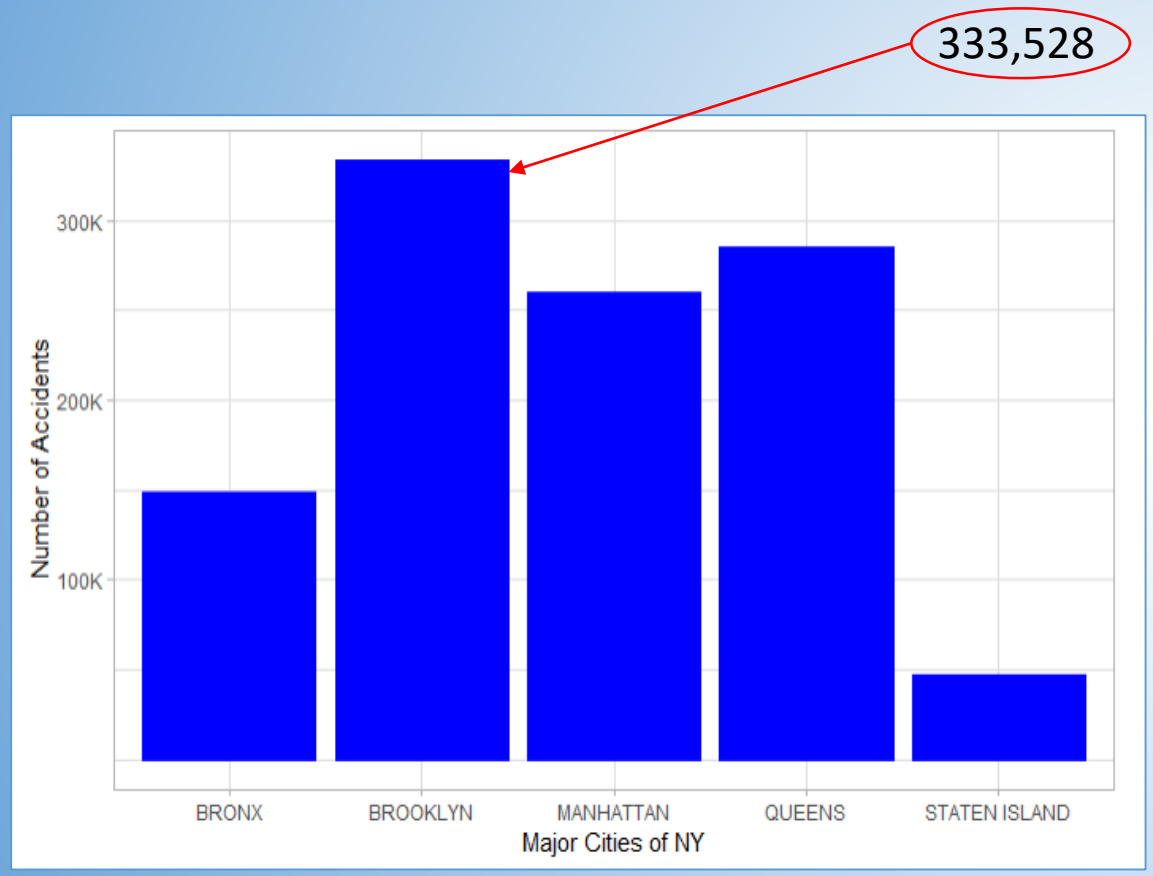
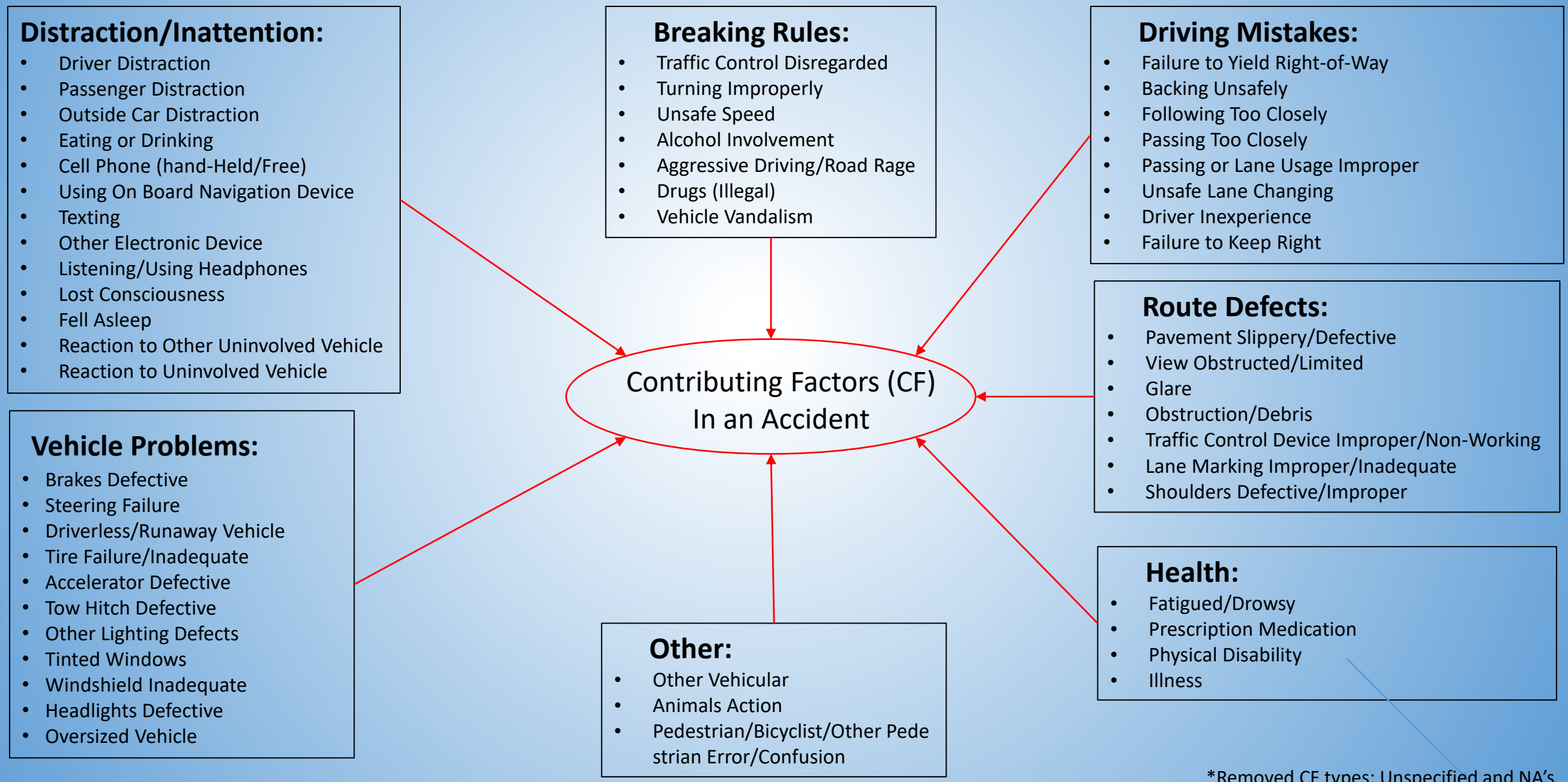
ANALYSIS of
ACCIDENTS IN BROOKLYN

Across major cities of New York, number of Accidents happened in the city of Brooklyn were the most over the last seven year period (July, 2012-July, 2019).



How to Reduce Accidents in City of Brooklyn?

Analyzing Factors Causing Accidents

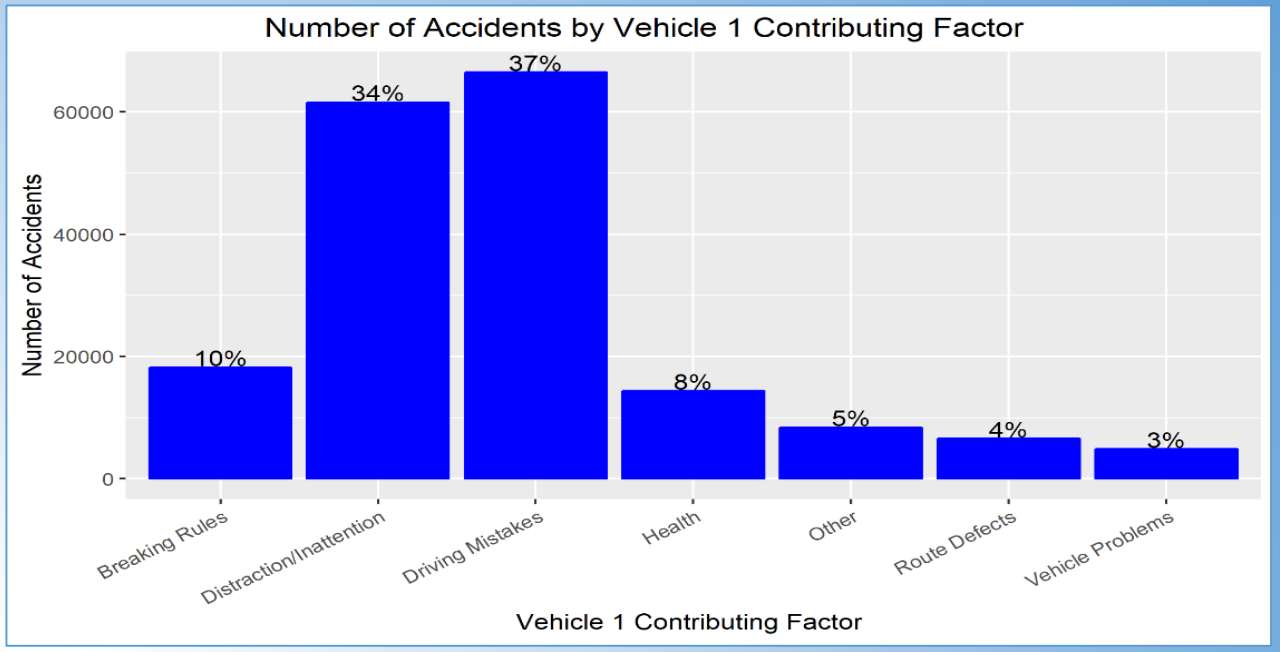


*Removed CF types: Unspecified and NA's

CF for Vehicle 1:

81% of Total Accidents

- Driving Mistakes (37%)
- Distraction/Inattention (34%)
- Breaking Rule (10%)

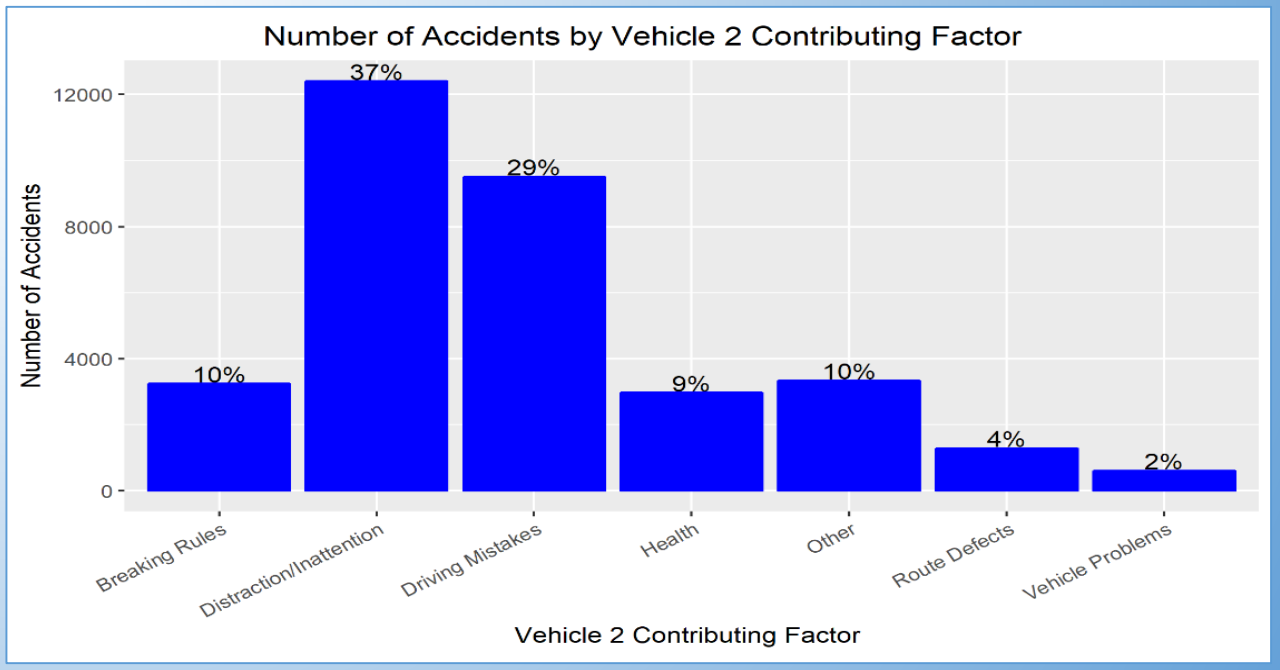


For both vehicles 1 and 2, Driving Mistakes, Distraction/Inattention and Breaking Rules are major factors of having an accident.

CF for Vehicle 2:

76% of Total Accidents

- Driving Mistakes (29%)
- Distraction/Inattention (37%)
- Breaking Rule (10%)



*CF: Contributing Factor

*Removed CF types: Unspecified and NA's

Below Table Shows Relationship between CF for Vehicle 1 vs CF for Vehicle 2:

	Contributing Factor Vehicle 2							
Contributing Factor Vehicle 1	Breaking Rules	Distraction/Inattention	Driving Mistakes	Health	Other	Route Defects	Vehicle Problems	Total
Breaking Rules	1425,(46.72%)	426,(13.96%)	806,(26.42%)	224,(7.34%)	127,(4.16%)	42,(1.37%)	36,(1.18%)	3050
Distraction/Inattention	545,(4.24%)	9165,(71.37%)	1890,(14.71%)	669,(5.21%)	452,(3.52%)	119,(0.92%)	132,(1.02%)	12840
Driving Mistakes	740,(8.73%)	1496,(17.66%)	5295,(62.51%)	298,(3.51%)	508,(5.99%)	133,(1.57%)	143,(1.68%)	8470

*Removed CF types: Unspecified and NA's

Frequency,(Row%)

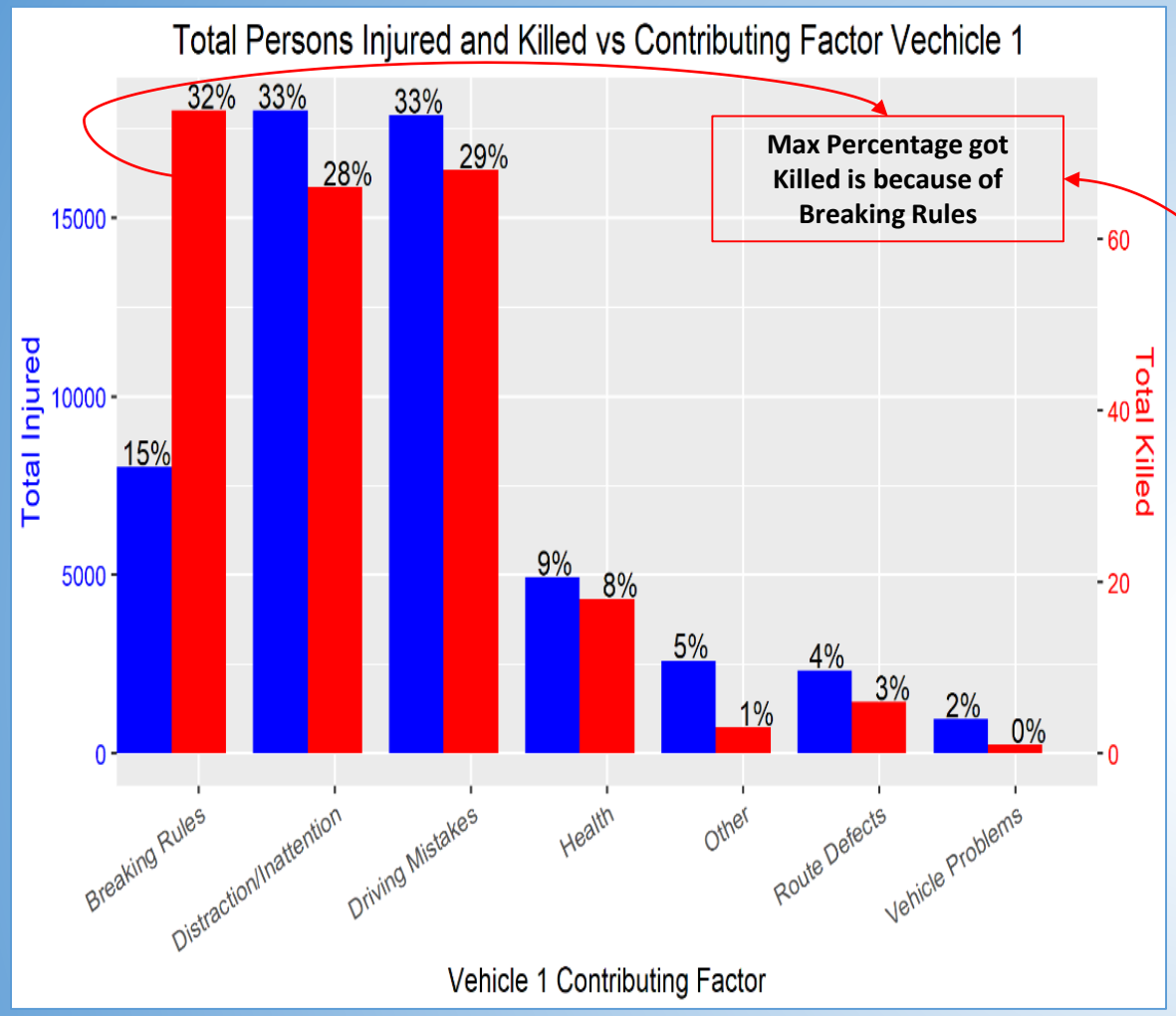
- Number of times breaking Rules as CF for Vehicle 1 had an accident with Vehicle 2 having same CF as breaking rules was 1425 (46.72%) times.
- Similarly, for Distraction/Inattention and Driving Mistakes it increases to 71.37% and 62.51% respectively.

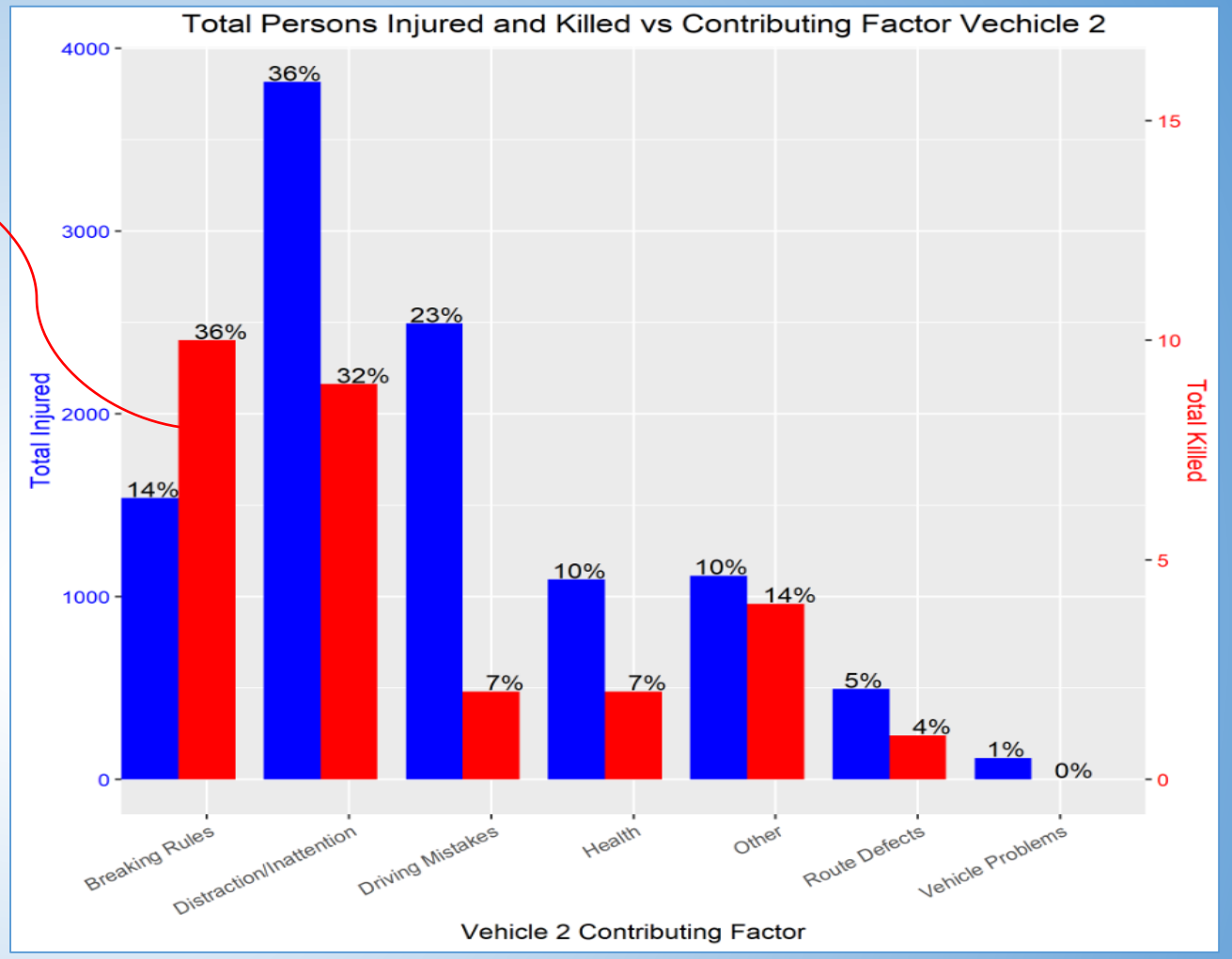
Key Takeaways:

- Number of Accidents can be reduced heavily, if both Vehicle 1 and Vehicle 2 drivers avoid mistakes, stay more alert and don't break rules.

*CF: Contributing Factor

Contributing Factor for Vehicle 1 and 2 vs Total Injured and Total Killed





- Percentage of people get killed because of Breaking Rules is highest for both Vehicle 1 and Vehicle 2.
- Percentage of people get injured because of Distraction/Inattention is highest for both Vehicle 1 and Vehicle 2.

*Removed CF types: Unspecified and NA's

Relationship of Top 5 Vehicle 1 Types with Major CF of Vehicle 1's :

Top 5 Vehicle 1 Types	Major Contributing Factor Vehicle 1		
	Breaking Rules	Distraction/Inattention	Driving Mistakes
PASSENGER VEHICLE	9024 (55.11%)	27035 (49.7%)	28890 (48.64%)
SPORTS CAR/STATION WAGON	4908 (29.97%)	18360 (33.75%)	19702 (33.17%)
SEDAN	1897 (11.58%)	6634 (12.2%)	8424 (14.18%)
PICK-UP TRUCK	286 (1.75%)	1184 (2.18%)	1512 (2.55%)
VAN	260 (1.59%)	1180 (2.17%)	871 (1.47%)

Frequency,(Column%)

- Passenger Vehicle and Sports Car/Station Wagon both have a high percentage of accidents because of major contributing factor.

Relationship between Top 5 Vehicle 1 Types with Top 5 Vehicle 2 Types

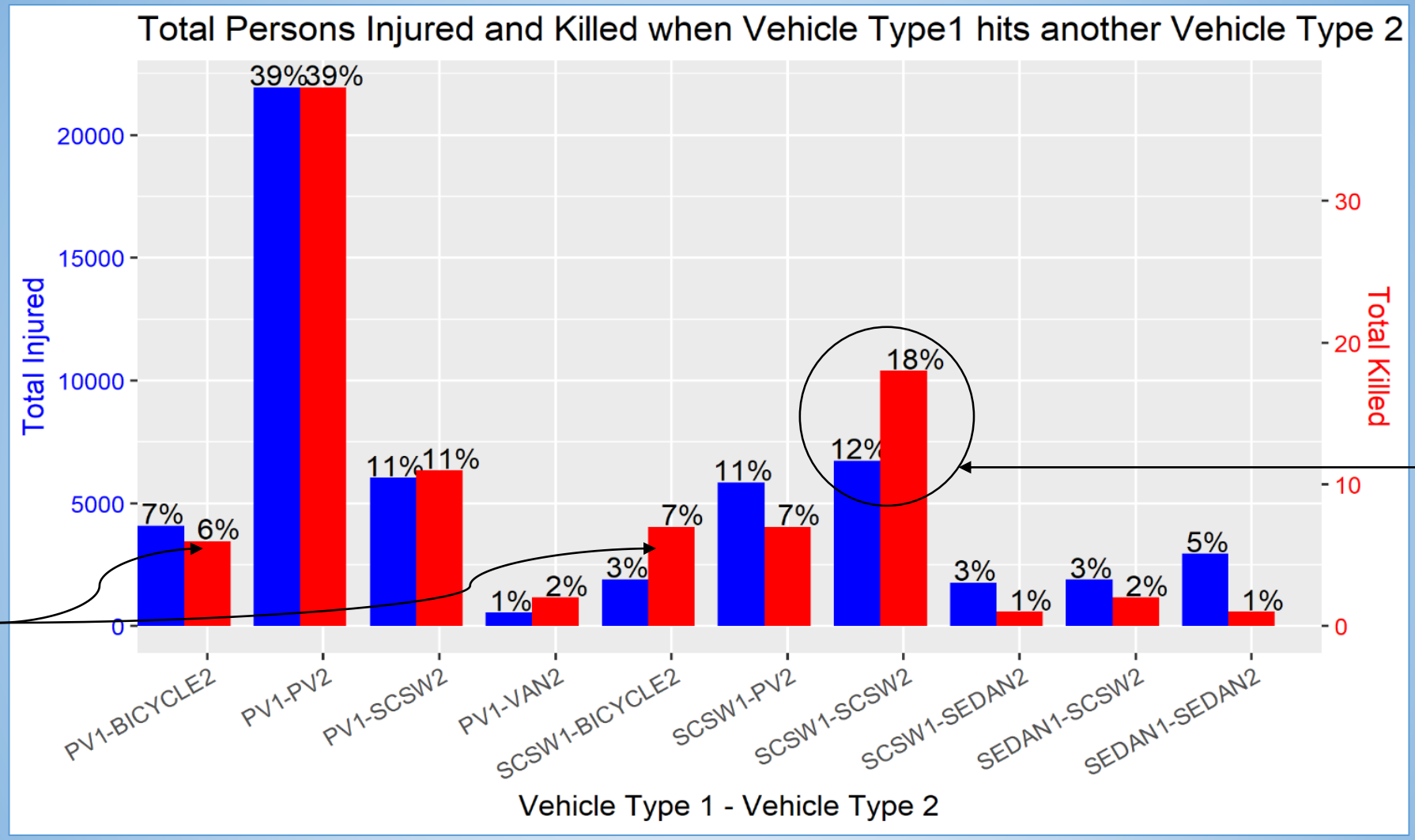
Top 5 Vehicle 2 Types	Top 5 Vehicle 1 Types				
	SPORTS CAR/STATION WAGON	PASSENGER VEHICLE	SEDAN	PICK-UP TRUCK	VAN
SPORTS CAR/STATION WAGON	**27578 (46.02%)**	22885 (20.94%)	6619 (39.38%)	1297 (33.61%)	1329 (29.52%)
PASSENGER VEHICLE	22142 (36.95%)	**78644 (71.97%)**	0	1761 (45.63%)	2369 (52.62%)
SEDAN	6457 (10.78%)	0	10020 (59.61%)	605 (15.68%)	130 (2.89%)
BICYCLE	2270 (3.79%)	4904 (4.49%)	0	95 (2.46%)	186 (4.13%)
VAN	1474 (2.46%)	2846 (2.6%)	170 (1.01%)	101 (2.62%)	488 (10.84%)

Frequency,(Column%)

- Number of times Vehicle 1 Type as "Sports Car/Station Wagon" had an accident with vehicle 2 having same type was 27,578 (46.02%) times.
- Similarly, this values increases to 71.97% for Passenger Vehicles.

*Removed CF types: Unspecified and NA's

Vehicle Type 1 – Vehicle Type 2 Pairings:



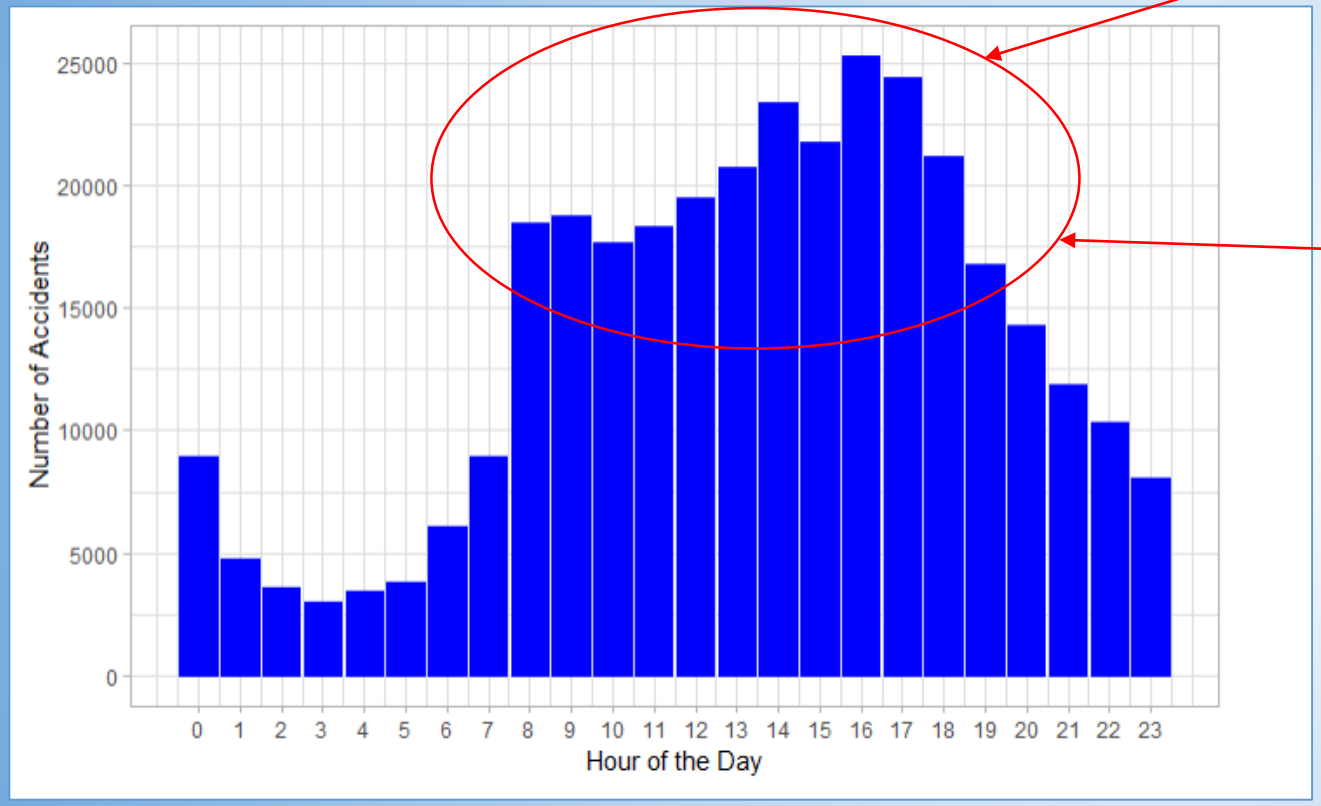
Sports Car/Station Wagon accident with Bicycle has more percentage of killed (7%) than passenger vehicle accident with bicycle (6%).

Two "Sports Car/Statin Wagon" having an accident has higher percentage of deaths (18%) as compared to injuries (12%)

- Passenger Vehicle (PV1) having an accident with another Passenger Vehicle (PV2) has highest number of injuries and deaths.
- Sports Car/Station Wagon(SCSG1) accidents with SCSW2 has the 2nd highest number of injuries and deaths.
- A PV1-Bicycle2 Deaths has lower number as compared to SCSW1-Bicycle2

*PV: Passenger Vehicle, SCSG: Sports Car/Station Wagon

What hour of the day do we have most number of accidents?



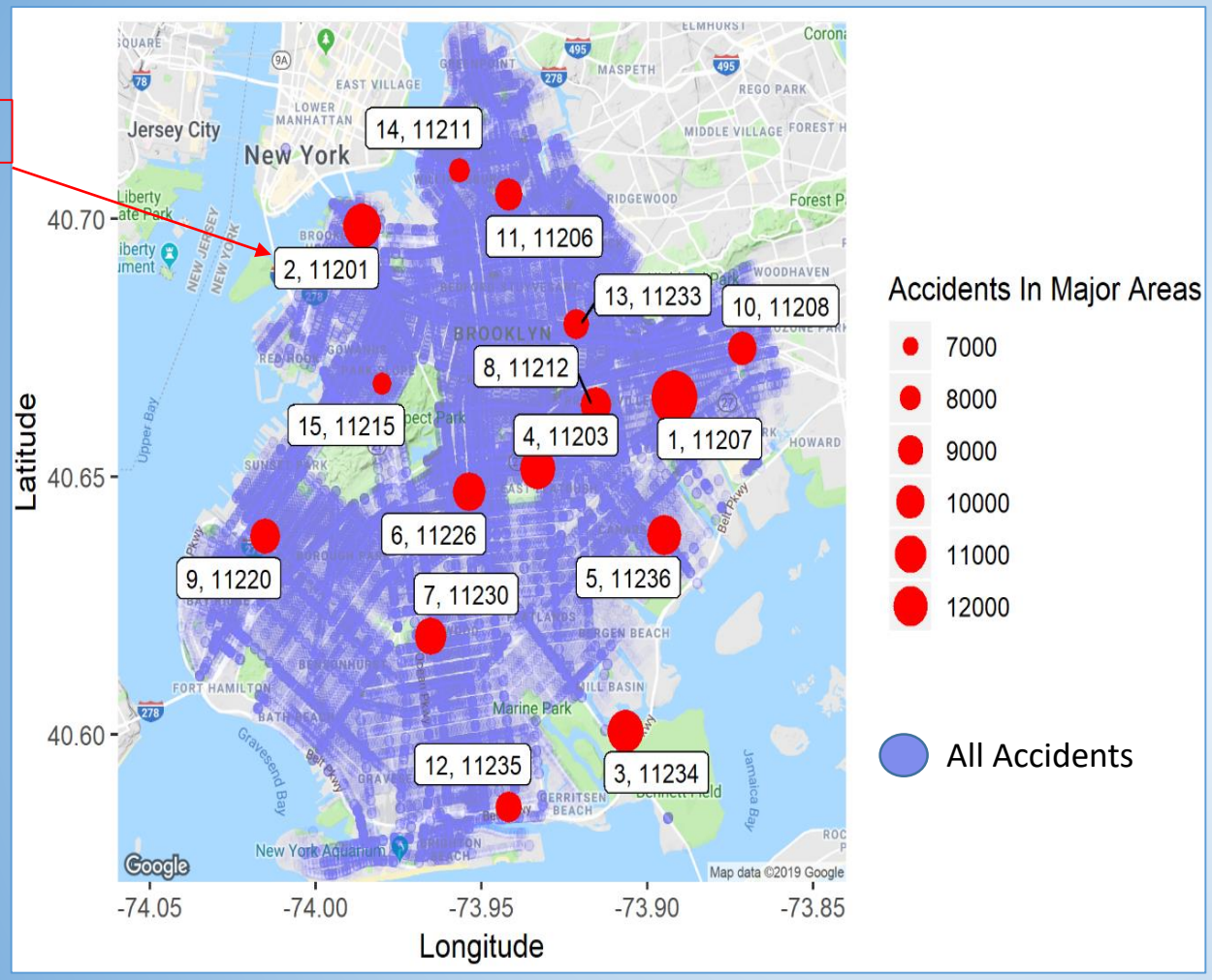
More than
~69% Accidents happen
Between 8 am to 6 pm

Total Accident: 229,761

What are the main location where this Accidents happen?

Major Areas Having Accidents During Peak Hours (8 am to 6pm):

Rank, Zip code



Total Accidents in Major Areas highlighted by red: 119,933

Findings:

- More than 50% of total peak hour accidents happen in these areas.
- This major areas of accidents during peak hour overlap ~94% of the areas across all accidents.

Around this major(danger zone) areas:

- Government agencies can make rules more strict.
- Increasing the number of patrolling.
- This actions can help reduce the number of accidents in this areas.

Recommendations:

- The three major contributing factor for an accident were Breaking Rules, Driving Mistakes and Distraction/Inattention.
  - Driving mistakes can be avoided if city council can re-assess the process in which people gets license to drive.
  - Increase patrolling in the areas identified where maximum number of accident happen and catch more people who are breaking rules as because of this most people get killed than any other factors.
  - Increase awareness about the drawbacks of being distracted while driving as because of this most people get injured.

- Sports Car/Station Wagon and Passenger Cars has the majority of accidents because of above contributing factors.
  - Agencies who are issuing licenses to drivers of this cars should make their process more strict.
  - Patrolling officers should keep an eye on people driving sports car as they are more easier to identify as compared to passenger cars and also a sports car having an accident with another sports car has high percentage.

- Around 2% of accidents happened because of “Route Defects” agencies should work on fixing the areas which have route defects.

Thank You