



NEW YORK POLICE DEPARTMENT MOTOR VEHICLE COLLISION ANALYSIS

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BACKGROUND

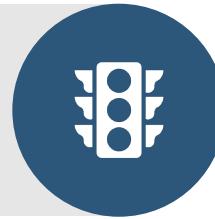
New York City has the highest population density in the United States with an estimated 8.5 million people. Maintaining and enhancing the transportation infrastructure to promote the safety of the city's millions of motorists, cyclists, and pedestrians is especially challenging given traffic volumes. To that end, our team performed an analysis of 2014-2018 NYPD motor vehicle collision data exploring the following:

- Relationship between the time of day and accident frequency
- Relationship between geographic location and accident frequency
- External factors that contribute to collisions
- Speed of travel and level of injury



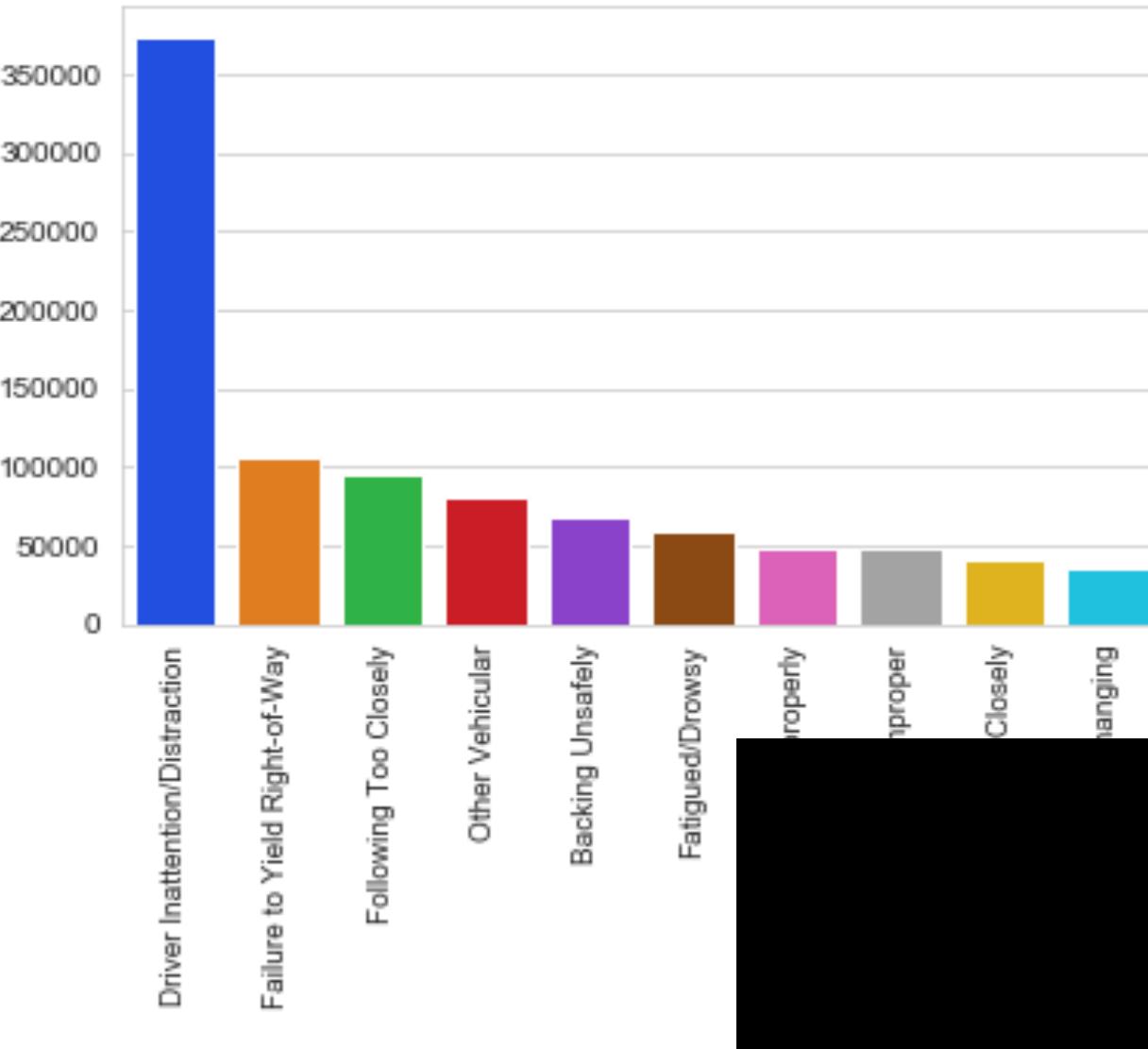
COLLISION CONTRIBUTING FACTORS

TOP CONTRIBUTING FACTORS TO COLLISIONS IN NYC

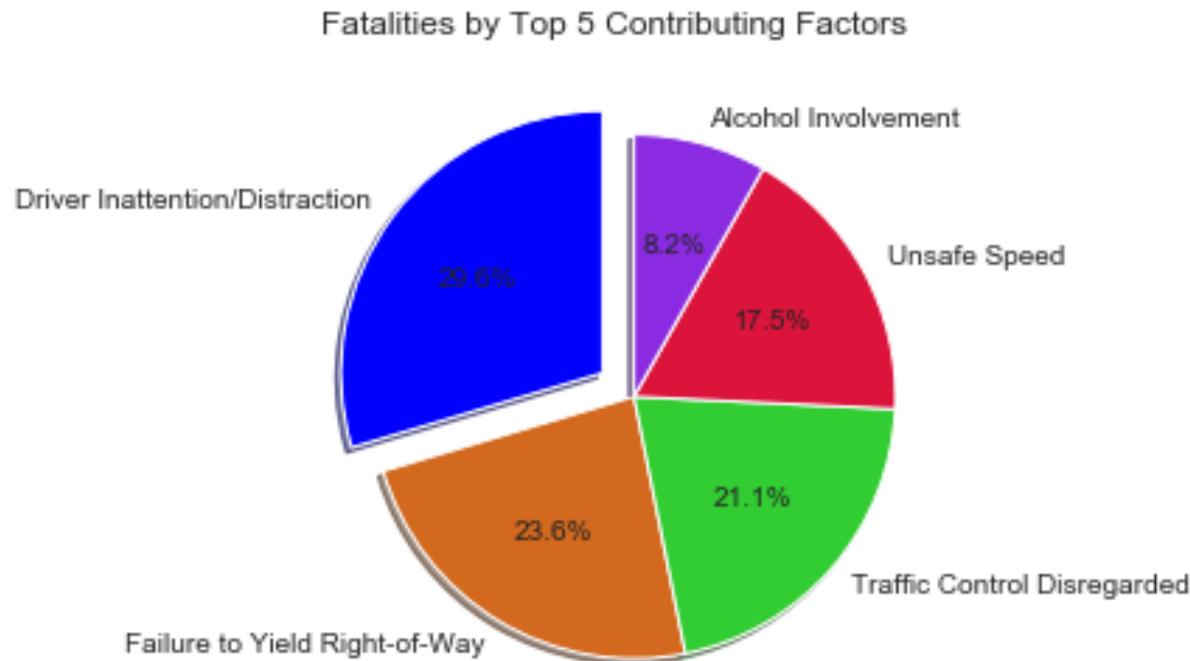


- Driver Inattention/Distraction is the leading factor which contributes to collisions in NYC
- Collisions due to driver distraction occurred at more than 3x the rate of the second leading cause, Failure to Yield Right of Way

Top 10 Contributing Factors to Collisions



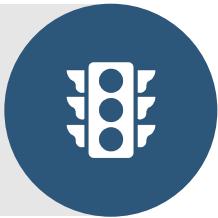
CONTRIBUTING FACTORS AND FATALITIES



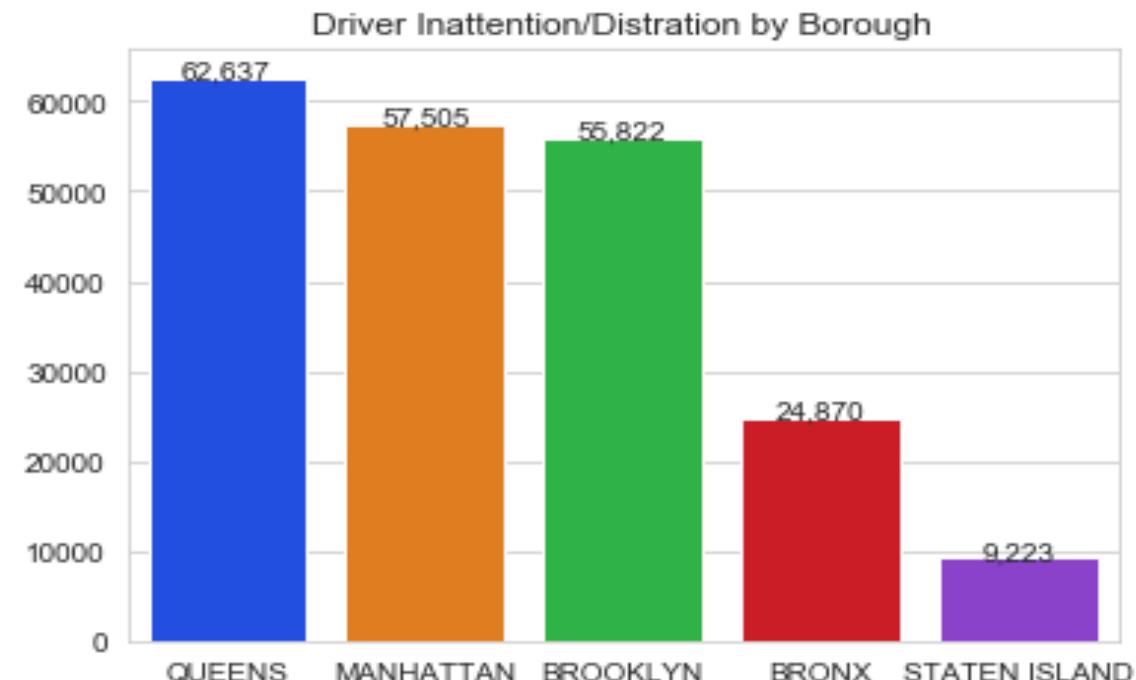
- Of the top 5 factors which contribute to fatal collisions in NYC, distracted driving had the greatest percentage at 29.6%
- Driver Inattention/Distraction and Failure to Yield Right of way accounted for over half of fatalities of the five factors captured

COLLISION CONTRIBUTING FACTORS

A CLOSER LOOK AT DISTRACTED DRIVING



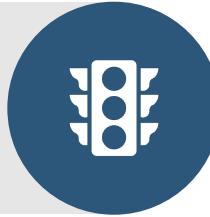
- Queens had the highest incidence of collisions caused by distracted driving with a total of 62,637 incidents between 2012 and 2019
- Although Brooklyn has the highest population density of the five boroughs with 2.63 million people, it ranked third in distracted driving incidents with 55,822 between 2012 and 2019



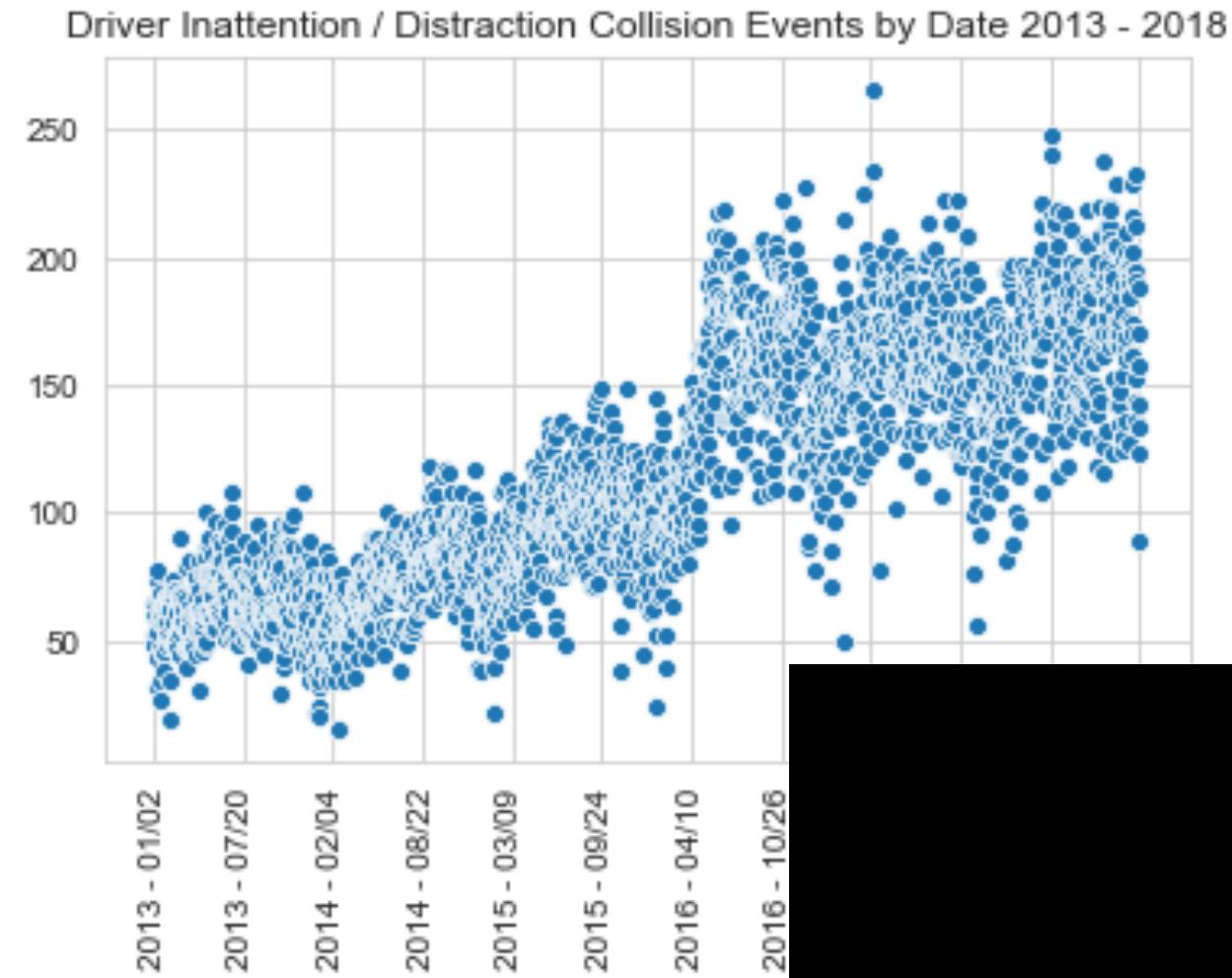
DISTRACTED DRIVING BY BOROUGH

DISTRACTED DRIVING EVENT FREQUENCY

DISTRACTED DRIVING IS ON THE RISE



- Occurrences of collision events attributable to driver inattention/distraction have steadily risen over the last 5 years
- Mitigating distracted driving incidents will be pivotal in curbing the overall incidence of crash events

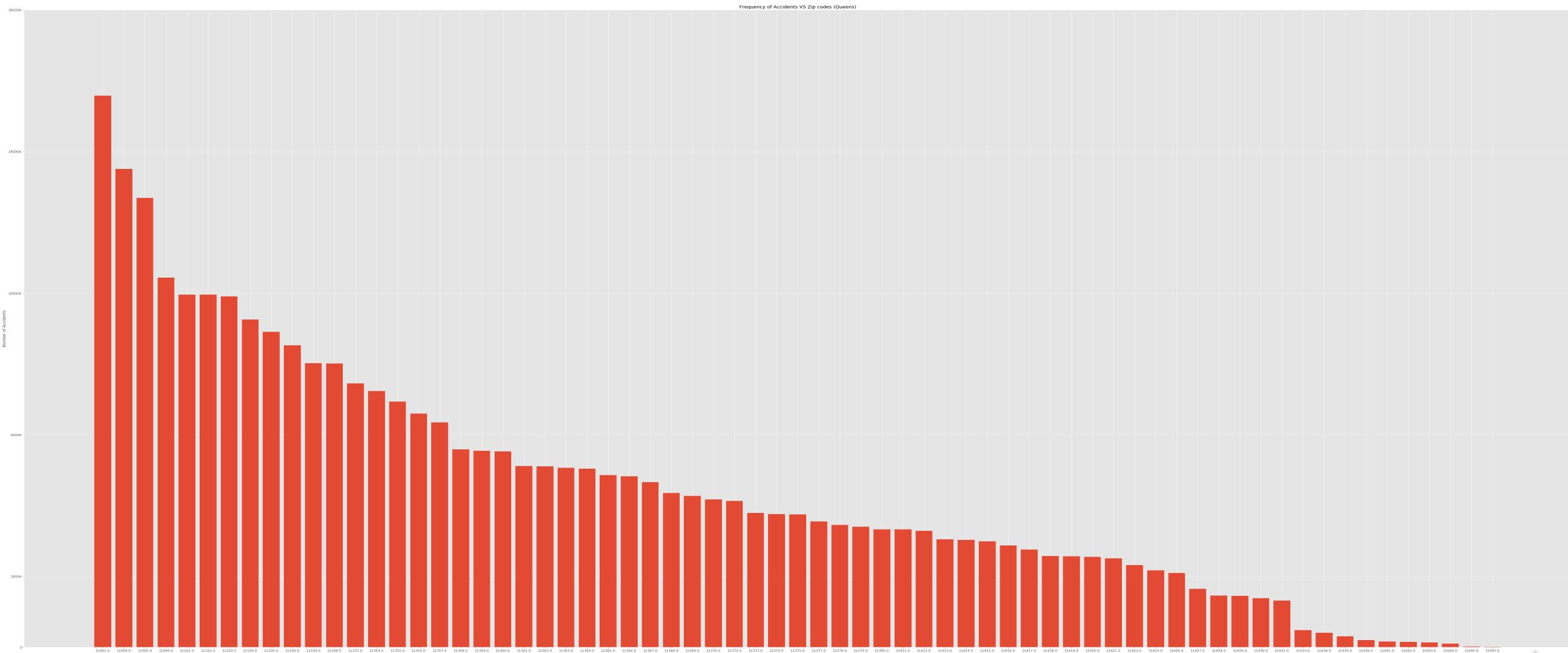


LOCATION & ACCIDENT FREQUENCY

This part demonstrates the location based on zip-codes and accident frequency and try to find the reasons behind the increased number of accidents.



ZIP CODES & ACCIDENT FREQUENCY (QUEENS)



COMPARISON



QUEENS

Queens is a borough of New York city. Queens is the largest borough and geographically adjacent to Brooklyn

Although queen is the largest borough they have the second largest population.

Queens highest accident frequency based on zip codes are: 11001, 11004, 11005, 11040, and 11101



ZIP CODES

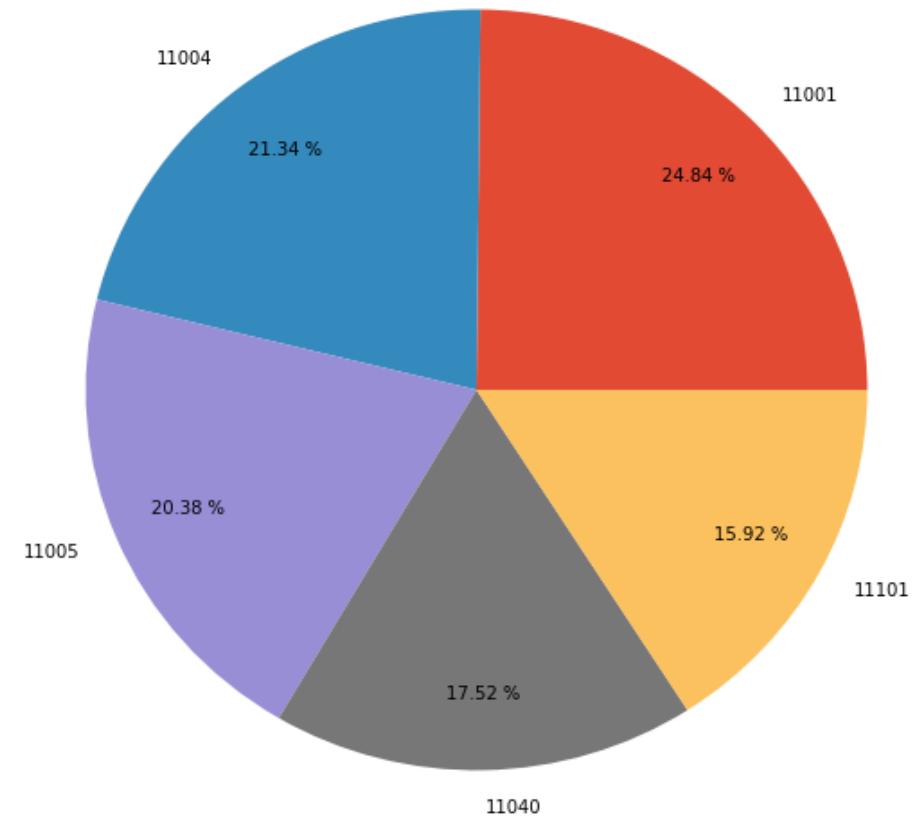
Queens highest accident frequency based on zip codes are: 11001 with 15600 accidents, 11004 with 13400 accidents, 11005 with 12800 accidents, 11040 with 11000 accidents, and 11101 with 10000 accidents

CHART

- Zip Code Info

- Nassau County/Queens/11001– 2.23 sq mi, with a population of 26,883, and 9,598 housing units. – unsafe intersections and aging roadways.
- Glen Oaks/Queens/11004– 0.95 sq mi, with a population of 14,016, and 5,152 housing units. Grand central pkw, cross island pkw
- Glen Oaks/Queens/11005 – 0.18 sq mi, with a population of 1,806, and 1,852 housing units.
- Nassau County/Queens/11006 – 4.76 sq mi, with a population of 40,782, and 13,900 housing units. – large projects to remove traffic lanes and extend sidewalks.
- Sunnyside/Queens/11101 – 2.52 sq mi, with a population of 25,484, and 12,317 housing units. Highway 495 and 278, many deadlocked roads.

% Highest # of Accidents by Zip Codes (Queens)



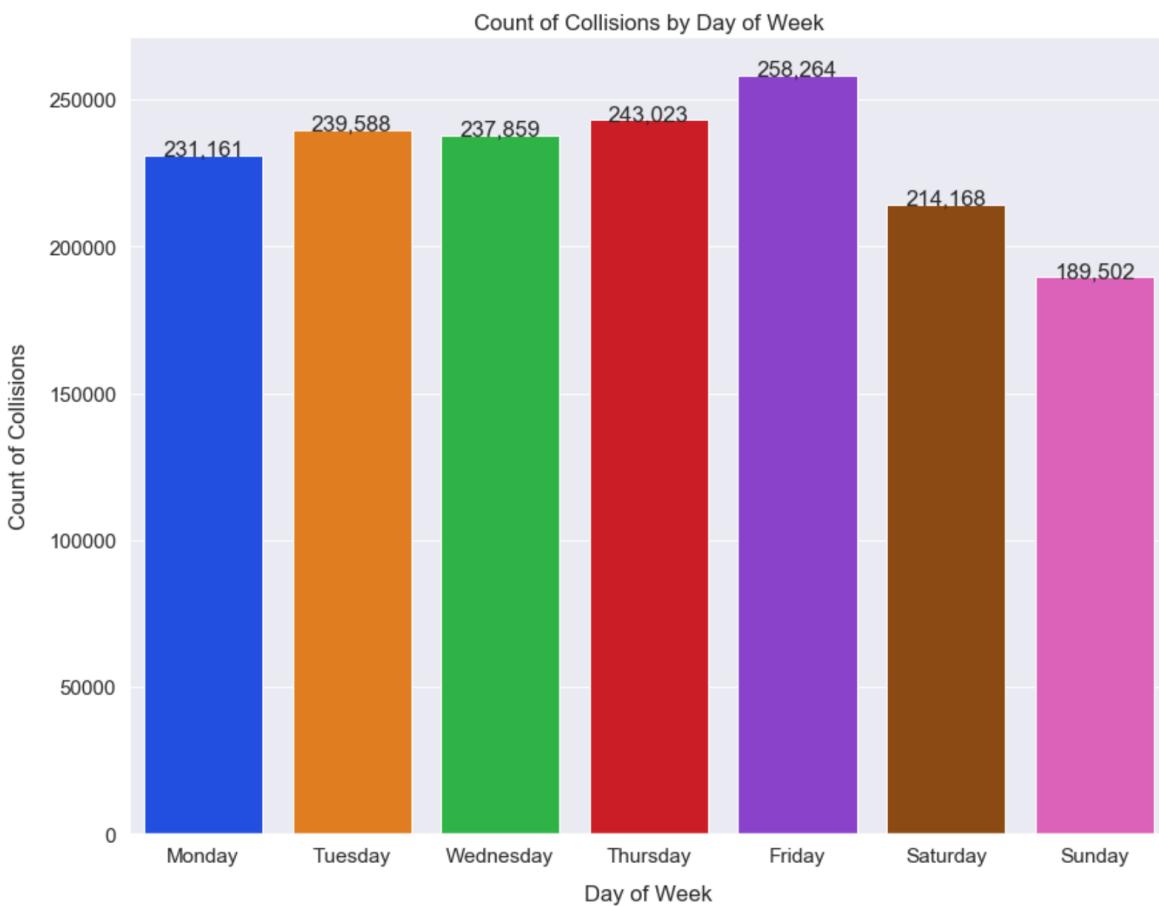
TIME OF DAY AND ACCIDENT FREQUENCY

- This section will determine if there is a relationship between time of day and accident frequency by testing the below stated hypothesis.

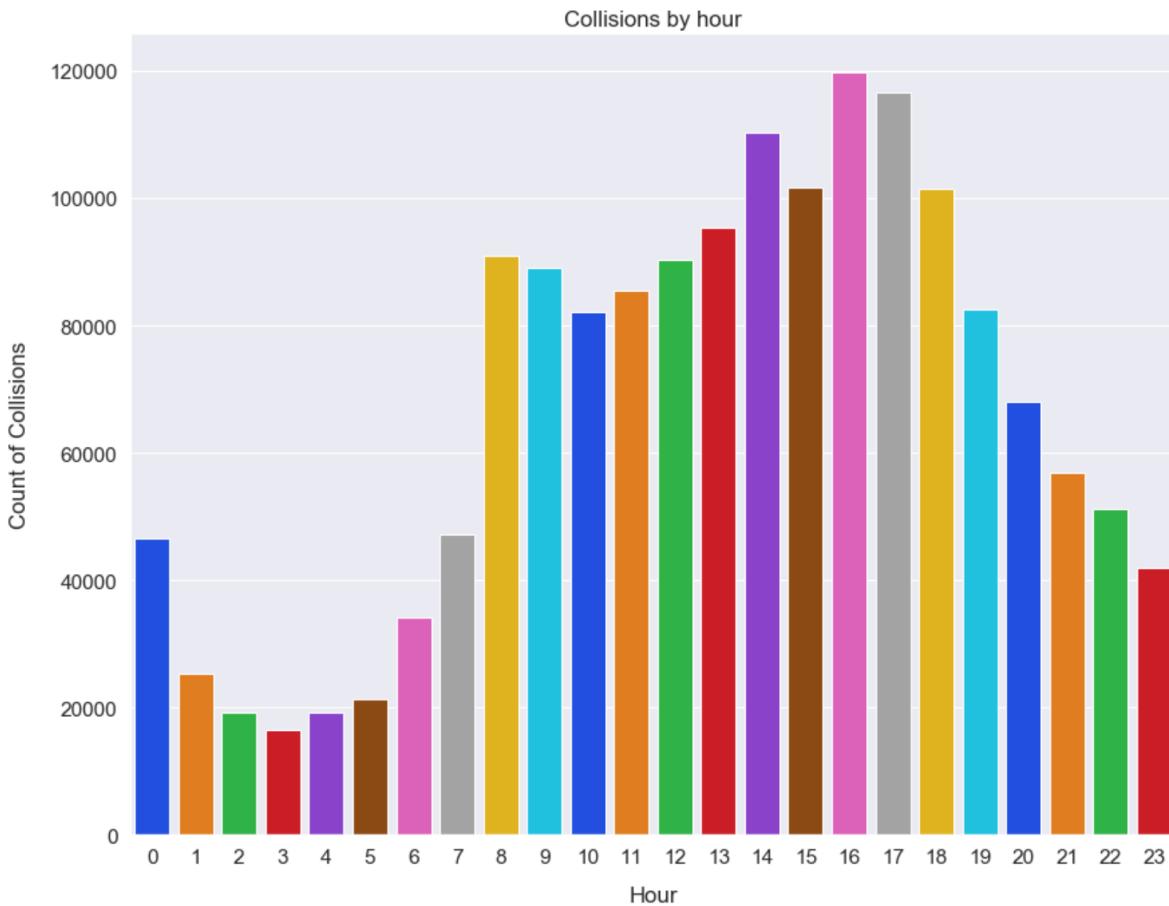
Hypothesis:

- We expect the count of collisions over the weekend to be less frequent than weekday.
- Overall, we expect the count of collisions to be the highest during the morning and evening rush hours.
- For the weekend, we expect to see a higher frequency in the count of collisions during the late night to early morning hours and the morning rush hour to be significantly less frequent than weekday.

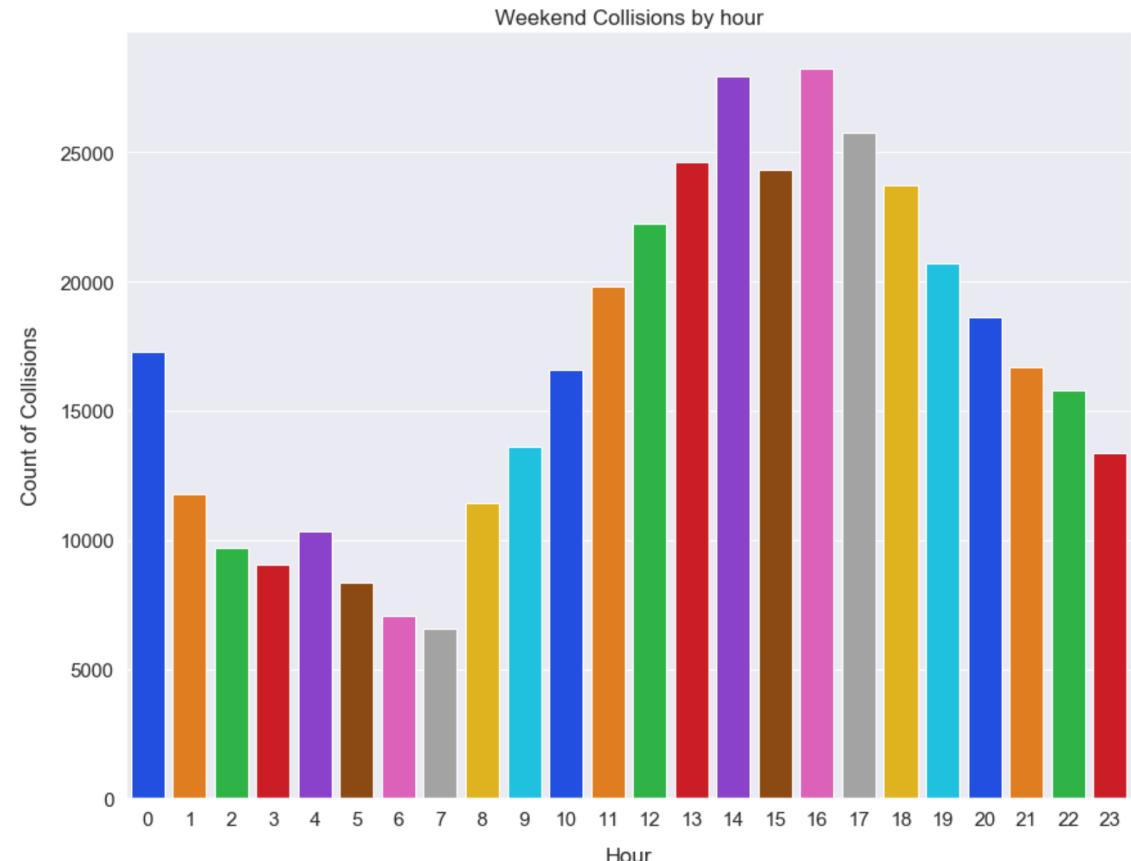
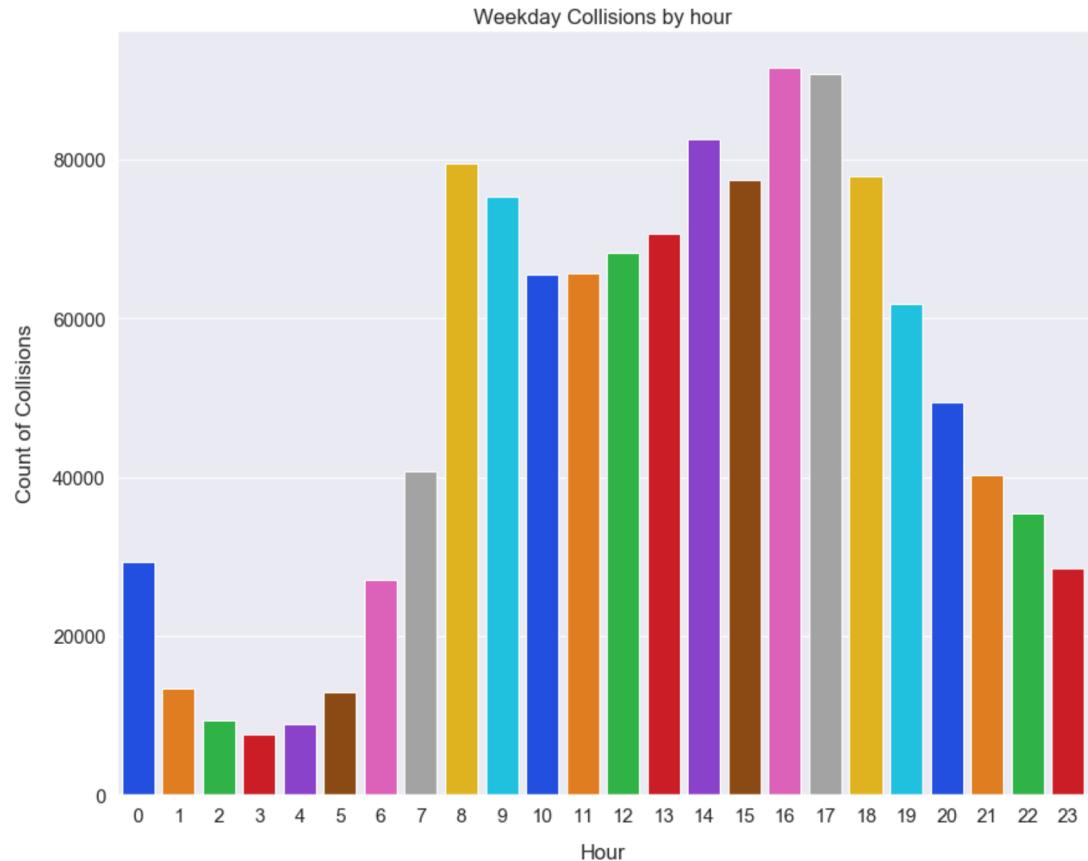
COUNT OF COLLISIONS BY DAY OF WEEK



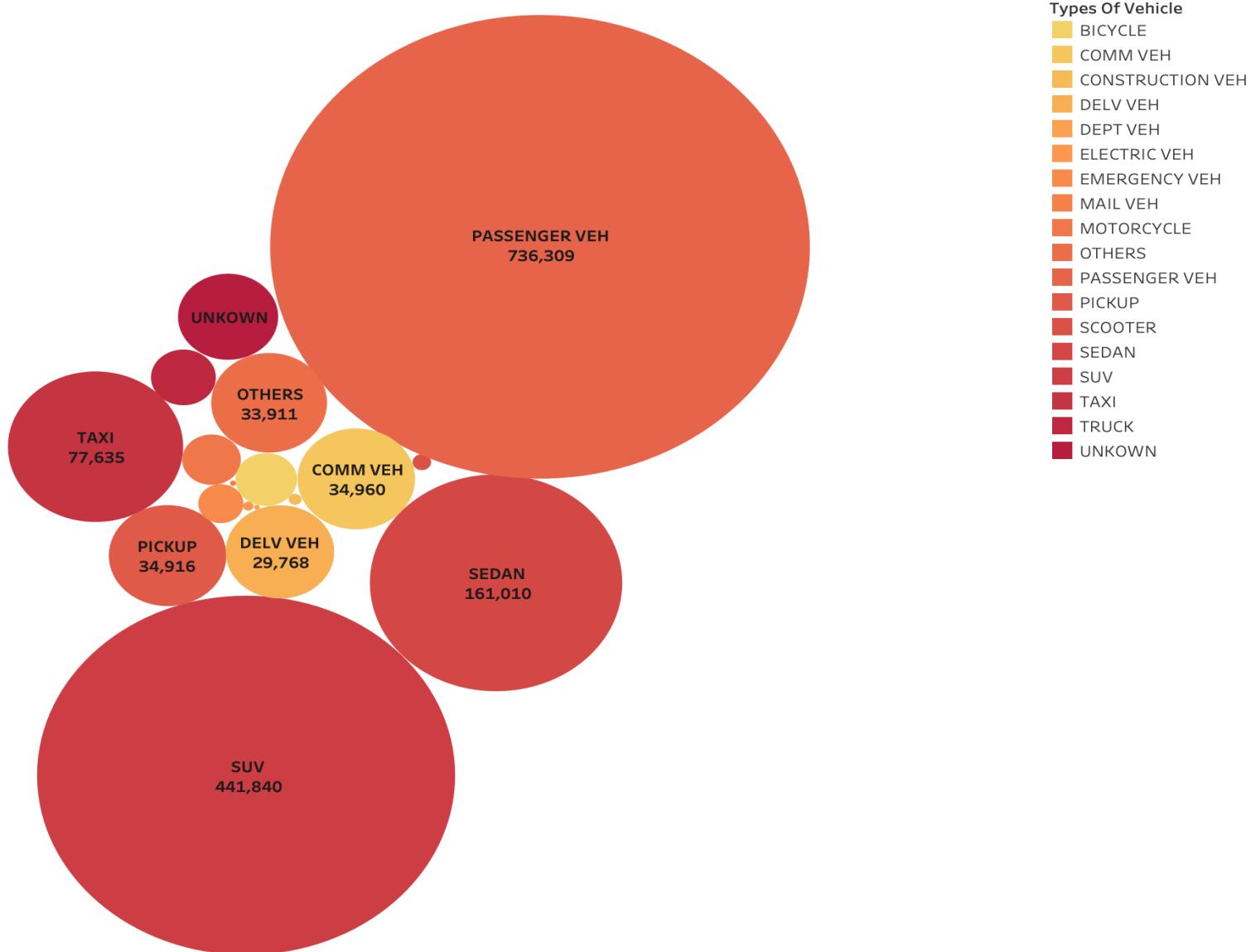
COLLISIONS BY HOUR



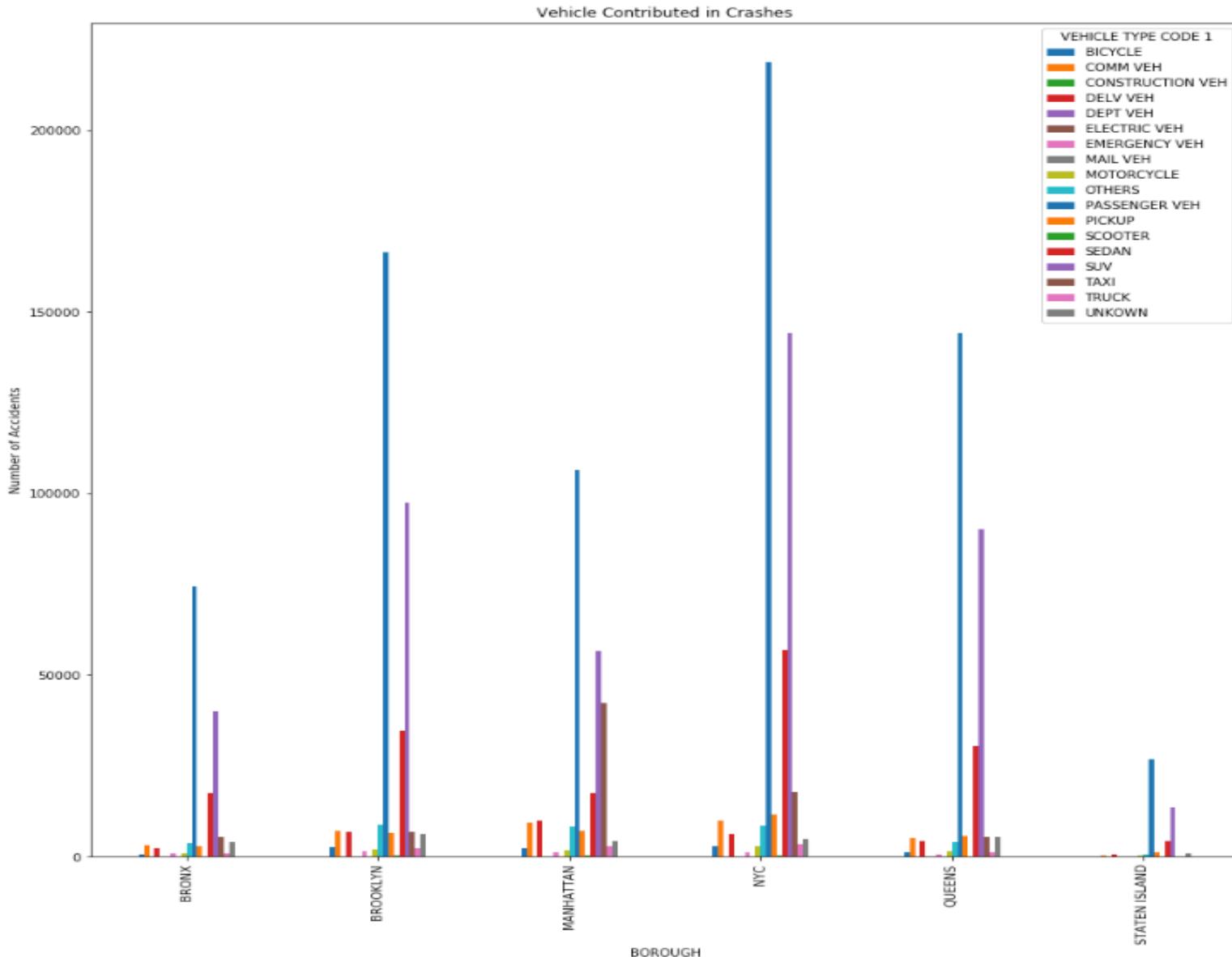
WEEKDAY & WEEKEND COLLISIONS BY HOUR



VEHICLES TYPE CATEGORY – INVOLVED IN ACCIDENTS



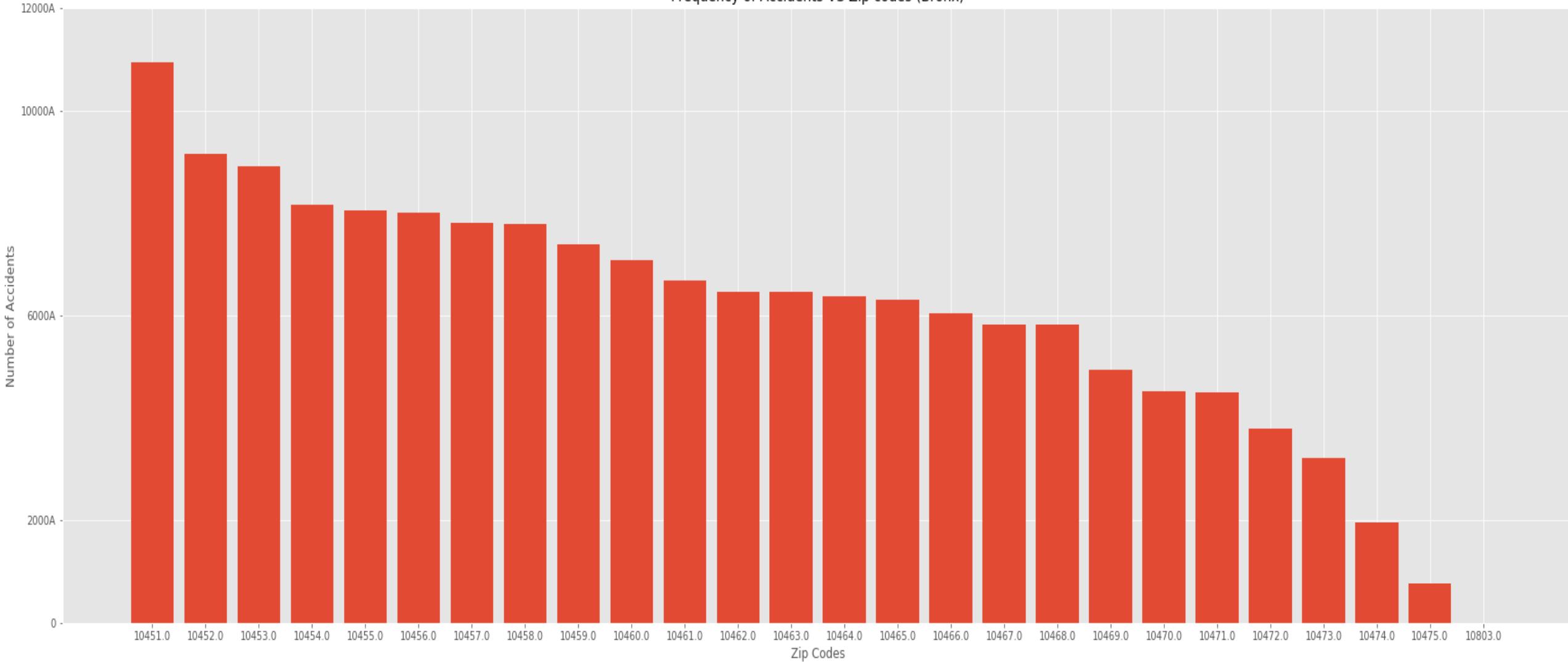
VEHICLES TYPE CATEGORY – BOROUGH



- Passenger vehicle is top ranked vehicle category contributed in Crashes
- With new restriction placed by Manhattan to off limit cars from 14 street intersection may reduce accidents.

ZIP CODES & ACCIDENT FREQUENCY (BRONX)

Frequency of Accidents VS Zip codes (Bronx)



COMPARISON



BRONX

Bronx is a borough of New York city. Bronx is the third-most densely populated county in the US

Bronx has a land area of 42 sq mi with a population of 1.5 Mn

Bronx highest accident frequency based on zip codes are: 10451, 10452, 10453, 10454, and 10455



ZIP CODES

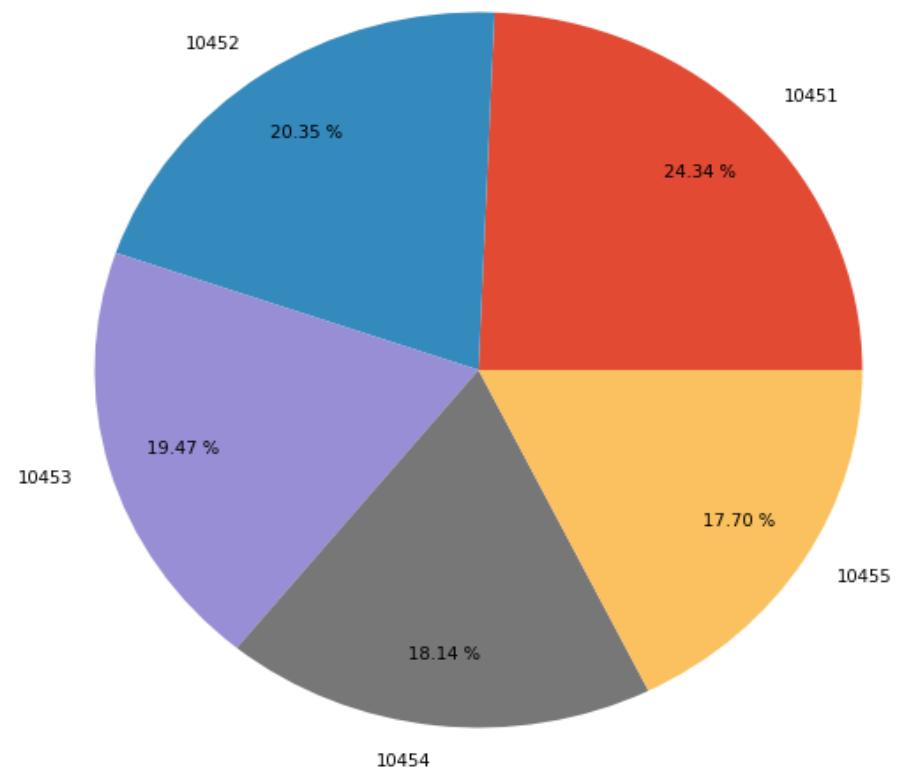
Bronx highest accident frequency based on zip codes are: 10451 with 11000 accidents, 10452 with 9200 accidents, 10453 with 8800 accidents, 10454 with 8200 accidents, and 10455 with 8000 accidents

CHART

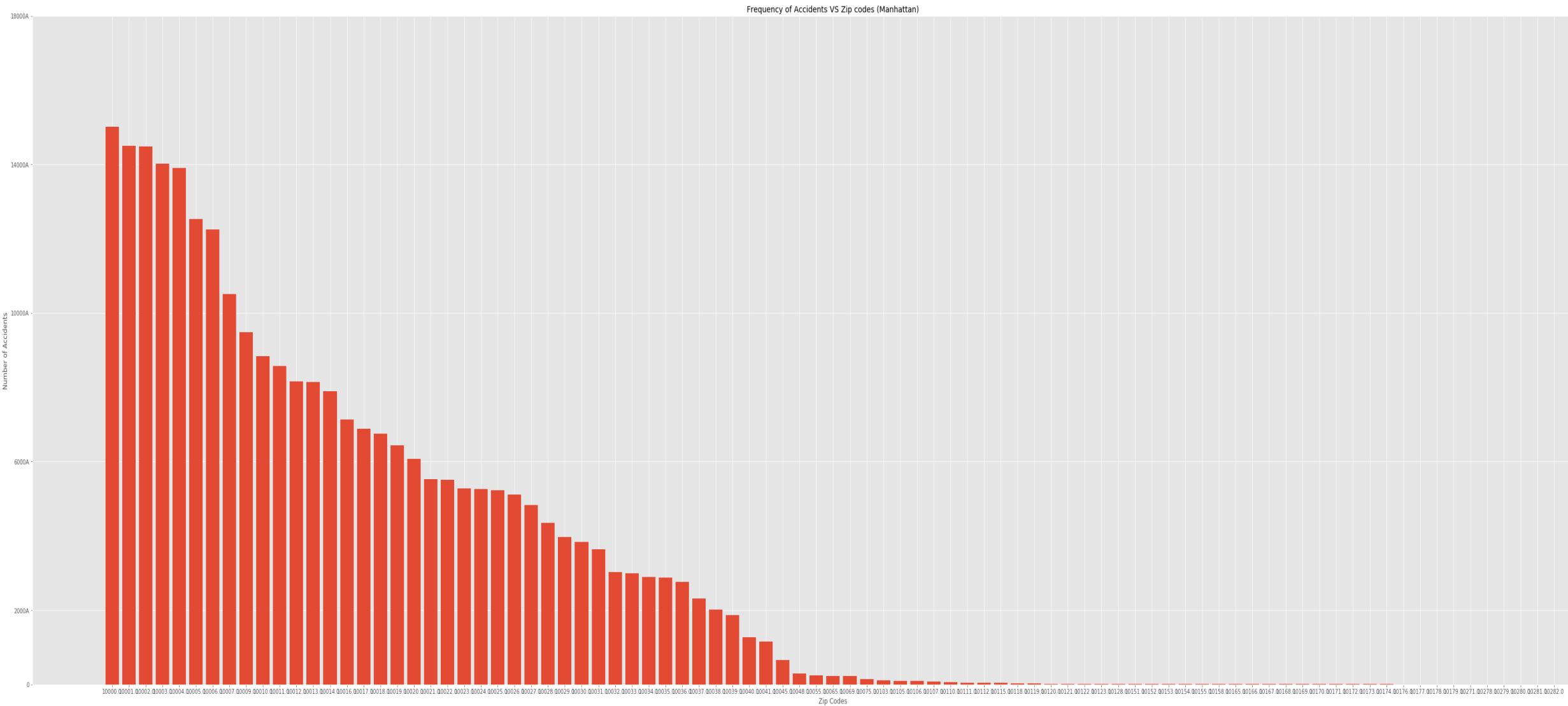
- Zip Code Info

- Melrose/Bronx/ 10451 – 1.01 sq mi, with a population of 45,713, and 17,779 housing units.
- Highbridge/Bronx/ 10452 – 0.98 sq mi, with a population of 75,371, and 25,866 housing units.
- Morris Heights/Bronx/10453 – 0.92 sq mi, with a population of 78,309, and 27,018 housing units.
- Mott Haven/Bronx/10454 – 1.04 sq mi, with a population of 37,337, and 12,772 housing units.
- Mott Haven/Bronx/10455 – 0.71 sq mi, with a population of 39,665, and 13,851 housing units.

% Highest # of Accidents by Zip Codes (Bronx)



ZIP CODES & ACCIDENT FREQUENCY (MANHATTAN)



COMPARISON



MANHATTAN

Manhattan referred as the city and the most densely populated of all the five boroughs

Manhattan has a land area of 22.83 sq mi with a population of 1.6 Mn

Manhattan highest accident frequency based on zip codes are: 10000, 10001, 10002, 10003, and 10004



ZIP CODES

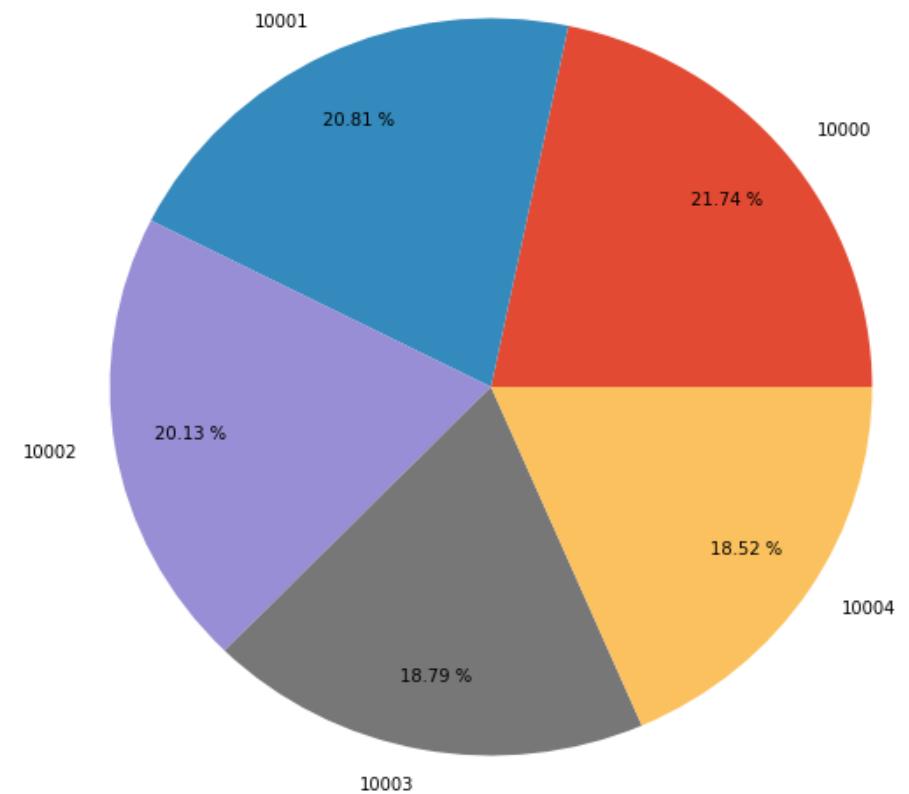
Manhattan highest accident frequency based on zip codes are: 10000 with 16200 accidents, 10001 with 15500 accidents, 10002 with 15000 accidents, 10003 with 14000 accidents, and 10004 with 13800 accidents

CHART

- Zip Code Info

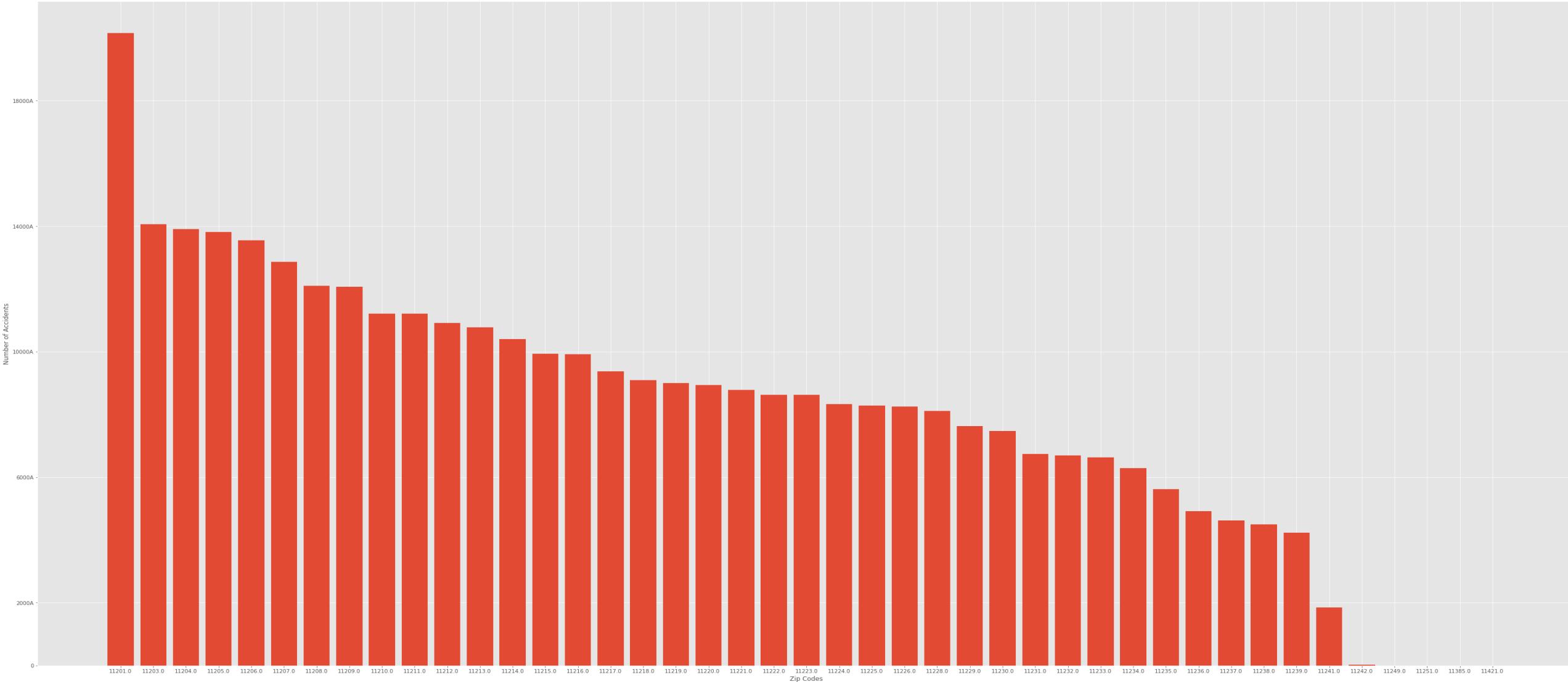
- Harlem/Manhattan/ 10035 – 1.4 sq mi, with a population of 33,969, and 13,935 housing units.
- Stuyvesant Park/Manhattan/ 10010 – 0.39 sq mi, with a population of 31,834, and 18,030 housing units.
- NoHo/SoHo/Downtown/Manhattan/ 10012 – 0.32 sq mi, with a population of 24,090, and 14,633 housing units.
- East Village/Downtown/Manhattan/ 10009 – 0.62 sq mi, with a population of 61,347, and 31,709 housing units.
- Morningside/Uptown/Manhattan/ 10027 – 0.87 sq mi, with a population of 59,707, and 25,071 housing units.

% Highest # of Accidents by Zip Codes (Manhattan)



ZIP CODES & ACCIDENT FREQUENCY (BROOKLYN)

Frequency of Accidents VS Zip codes (Brooklyn)



COMPARISON



BROOKLYN

Brooklyn also known coterminous with Kings County, it's the most populous county and the second most densely populated county in the US

Brooklyn has a land area of 70.28 sq mi with a population of 2.5 Mn

Brooklyn highest accident frequency based on zip codes are: 11201, 11203, 11204, 11205, and 11206



ZIP CODES

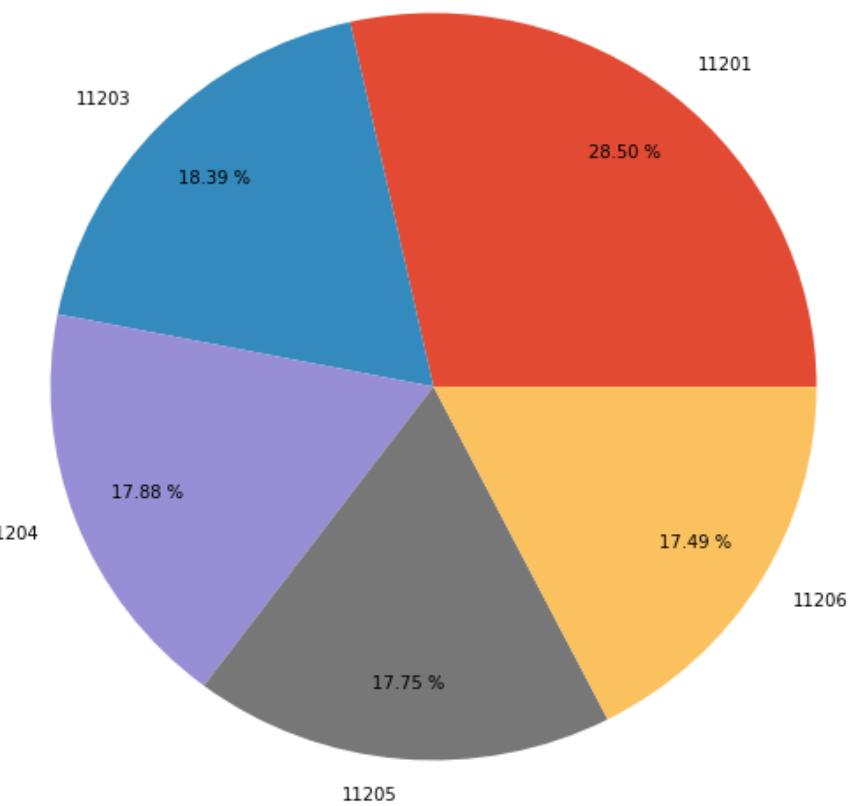
Brooklyn highest accident frequency based on zip codes are: 11201 with 22000 accidents, 11203 with 14200 accidents, 11204 with 13800 accidents, 11205 with 13700 accidents, and 11206 with 13500 accidents

CHART

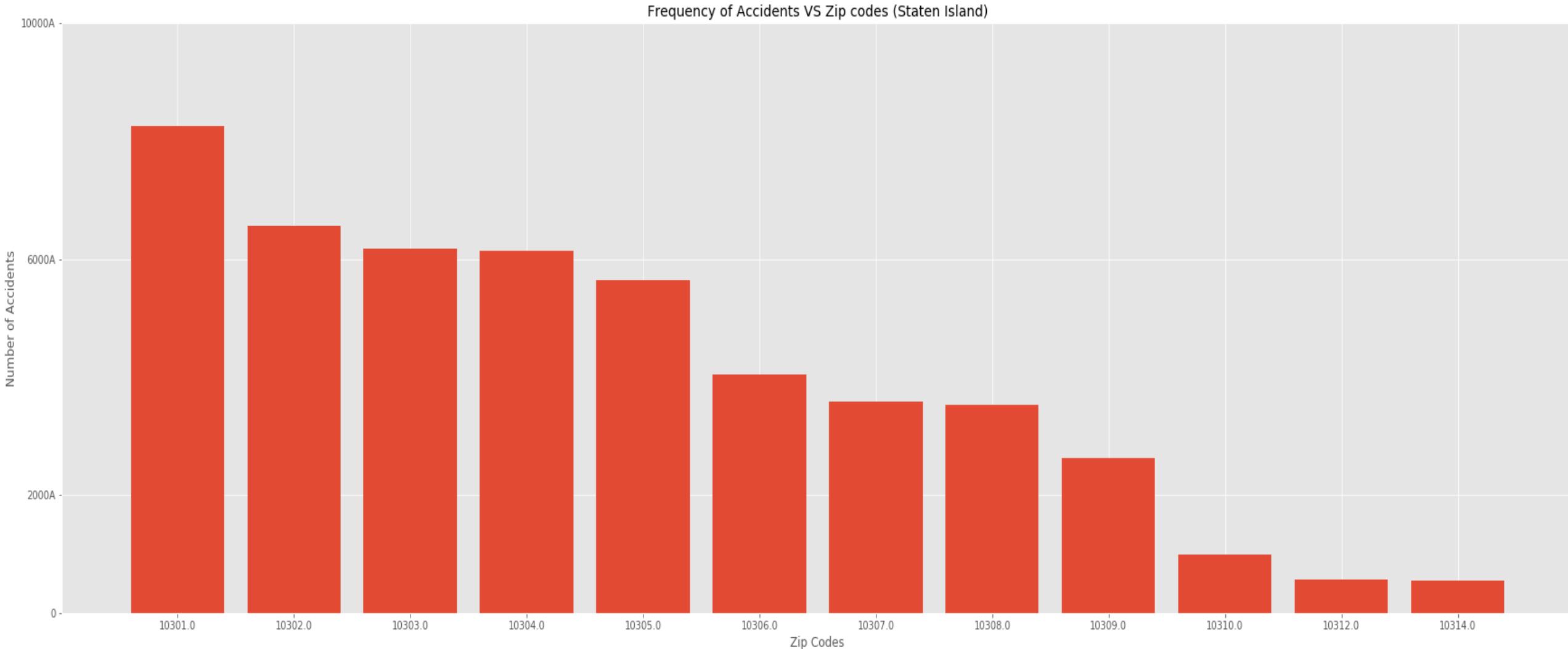
- Zip Code Info

- Navy Hill/Brooklyn/ 11205 – 0.95 sq mi, with a population of 40,366, and 16,409 housing units.
- Bayridge/Brooklyn/ 11209 – 2.16 sq mi, with a population of 68,853, and 34,679 housing units.
- Little Poland/Brooklyn/ 11222 – 1.52 sq mi, with a population of 36,934, and 18,756 housing units.
- Coney Island/Brooklyn/ 11224 – 1.54 sq mi, with a population of 47,621, and 20,768 housing units.
- Prospect Leffert/Brooklyn/ 11225 – 0.88 sq mi, with a population of 56,829, and 23,588 housing units.

% Highest # of Accidents by Zip Codes (Brooklyn)



ZIP CODES & ACCIDENT FREQUENCY (STATEN ISLAND)



COMPARISON



STATEN ISLAND

Staten Island also coterminous with Richmond County

Staten Island has a land area of 58.5 sq mi with a population of 0.5 Mn

Manhattan highest accident frequency based on zip codes are: 10301, 10302, 10303, 10304, and 10305



ZIP CODES

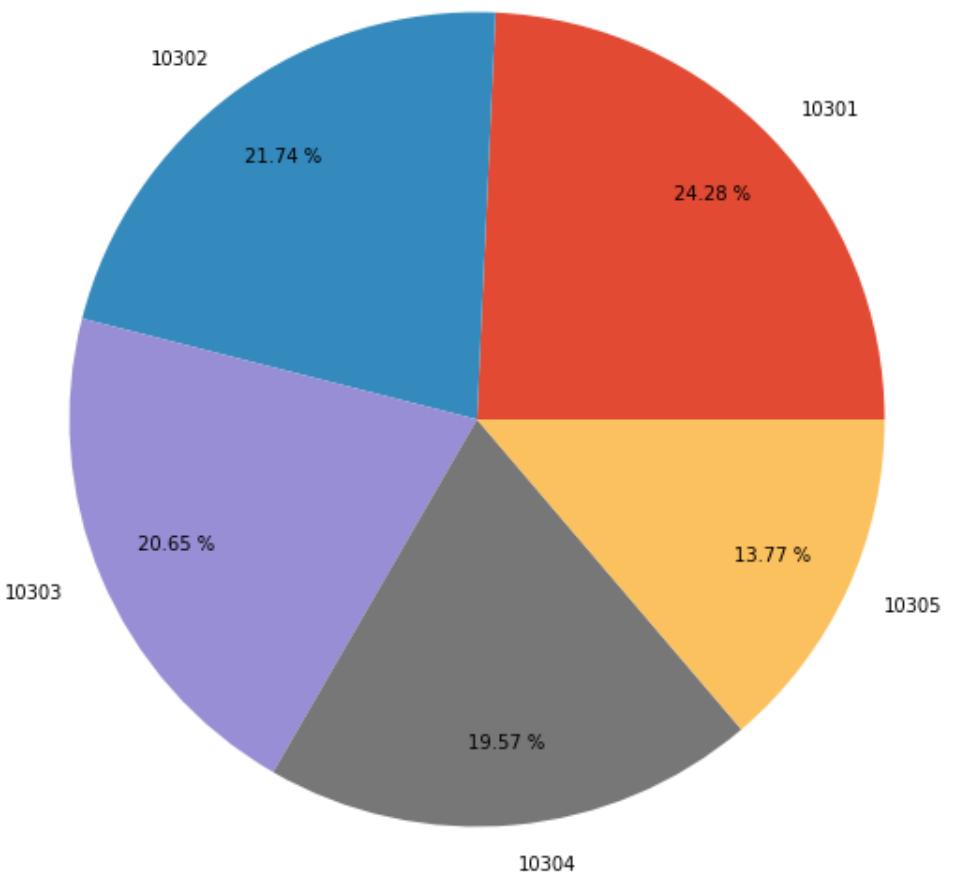
Staten Island highest accident frequency based on zip codes are: 10301 with 9000 accidents, 10302 with 7000 accidents, 10303 with 6500 accidents, 10304 with 6400 accidents, and 10305 with 5000 accidents

CHART

- Zip Code Info

- Silver Lake/Staten Island/ 10301 – 3.66 sq mi, with a population of 39,706, and 16,261 housing units.
- West Brighton/Staten Island/ 10302 – 1.19 sq mi, with a population of 19,088 and 6,427 housing units.
- Mariners Park/Staten Island/ 10303 – 3.14 sq mi, with a population of 26,337, and 8,811 housing units.
- Grymes Hill/Staten Island/ 10304 – 3.87 sq mi, with a population of 42,193, and 15,467 housing units.
- Rosebank/Manhattan/ 10027 – 4.25 sq mi, with a population of 41,749, and 16,187 housing units.

% Highest # of Accidents by Zip Codes (Staten Island)



TABLE

| TOPIC 01 | TOPIC 02 | TOPIC 03 | TOPIC 04 | TOPIC 05 |
|--------------|-------------|-------------|-------------|-------------|
| Item 01 | Text | Text | Text | Text |
| Item 02 | Text | Text | Text | Text |
| Item 03 | Text | Text | Text | Text |
| Item 04 | Text | Text | Text | Text |
| Item 05 | Text | Text | Text | Text |
| Item 06 | Text | Text | Text | Text |
| Item 07 | Text | Text | Text | Text |
| Item 08 | Text | Text | Text | Text |
| TOTAL | Text | Text | Text | Text |

TEAM



ALEXANDER MARTENSSON

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VICTORIA LINDQVIST

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MIRJAM NILSSON

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ANGELICA ASTROM

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THANK YOU

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