NYC 311 Analysis 2016-2020

Background

- 311 is a number where citizens can request non-emergency municipal services in many American cities
- NYC has made 311 request data open and accessible in the last 10 years
- Massive size of the 2016-2020 dataset (Over 10 million rows!) makes it a rich source of information on the problems and habits of NYC's population and the effectiveness of its public services

Problem Statement

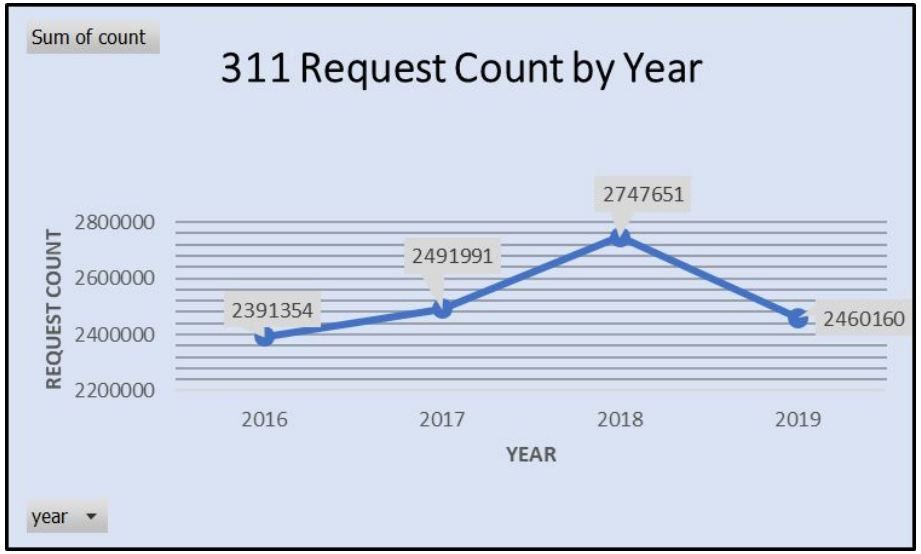
Goal: Determine how NYC can improve its services by cutting down on the time to close of 311 requests

Method: Examine trends in the data based on time, request type, responding agency, location etc. to identify areas to focus on

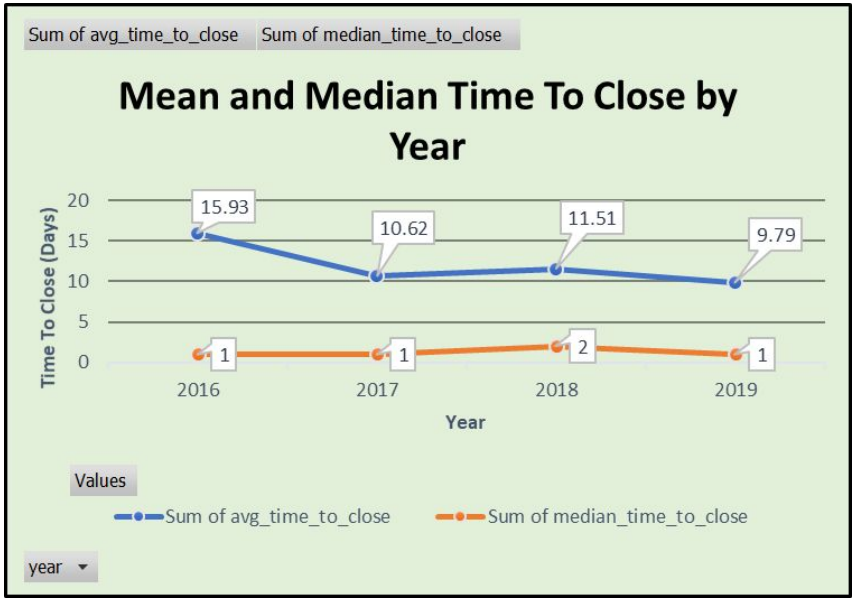
Assumptions: Time to close can be shortened for most 311 requests, negative time to close impossible

Audience: Residents, policy makers

– Year

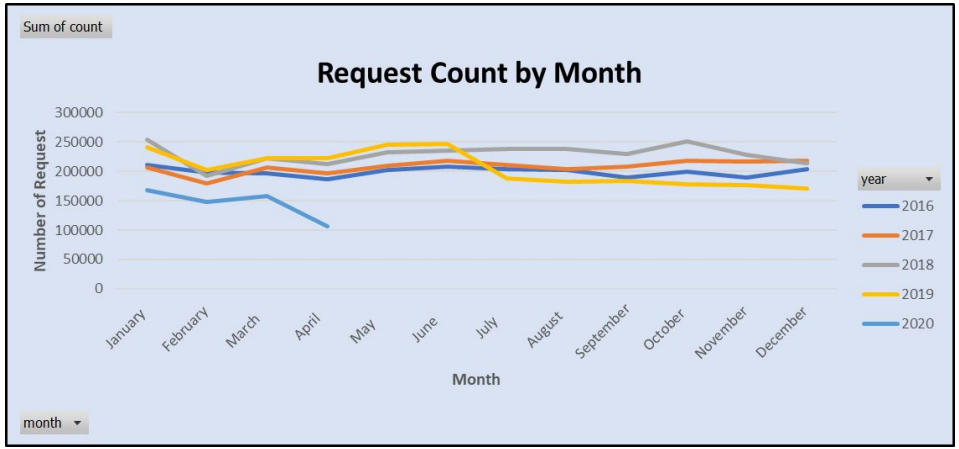


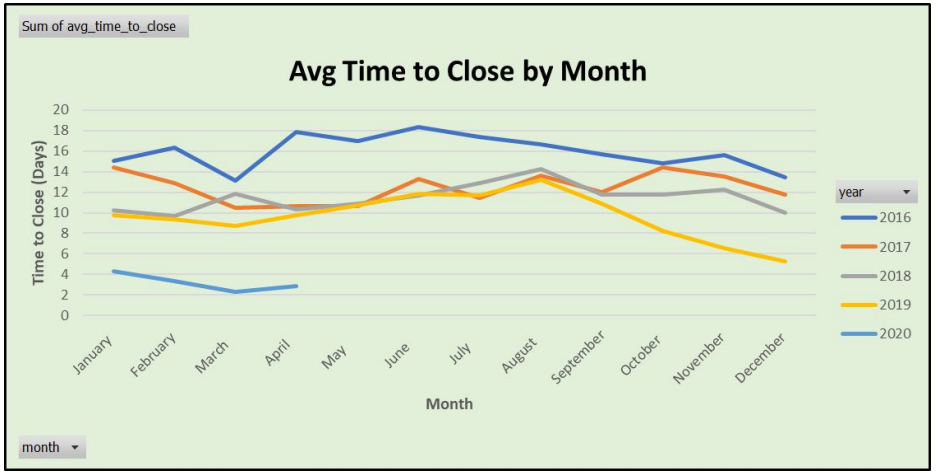
4 year avg request count	2522789

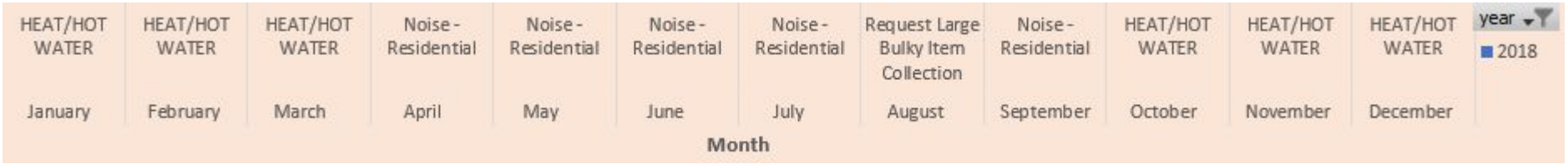


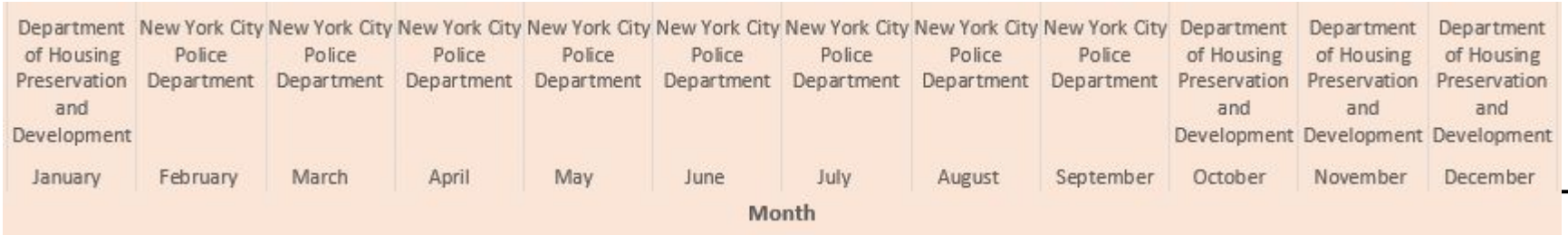
4-year avg time to close	11.96
4-year median time to close	1

– Month

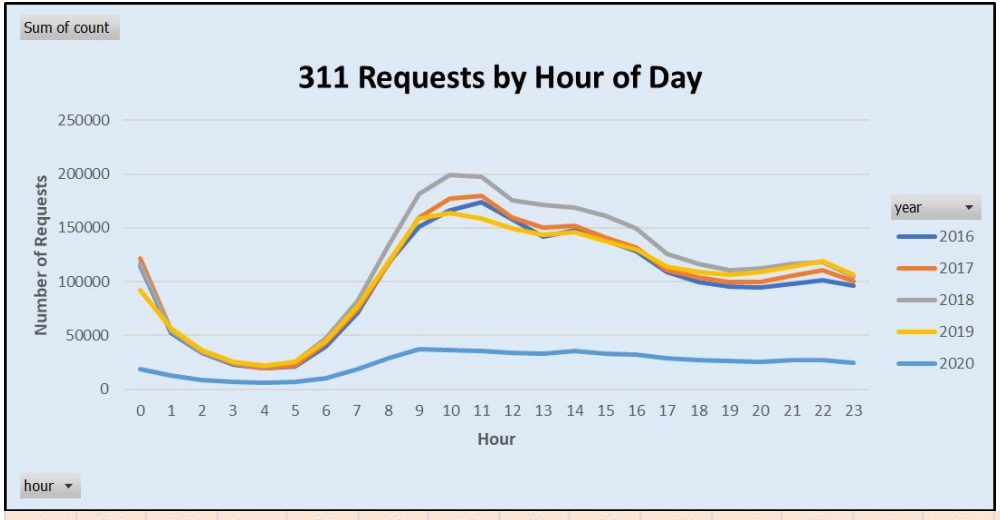

Sum of count
Request Count by Month
Number of Request
300000
250000
200000
150000
100000
50000
0
January
February
March
April
May
June
July
August
September
October
November
December
Month
year
2016
2017
2018
2019
2020
month

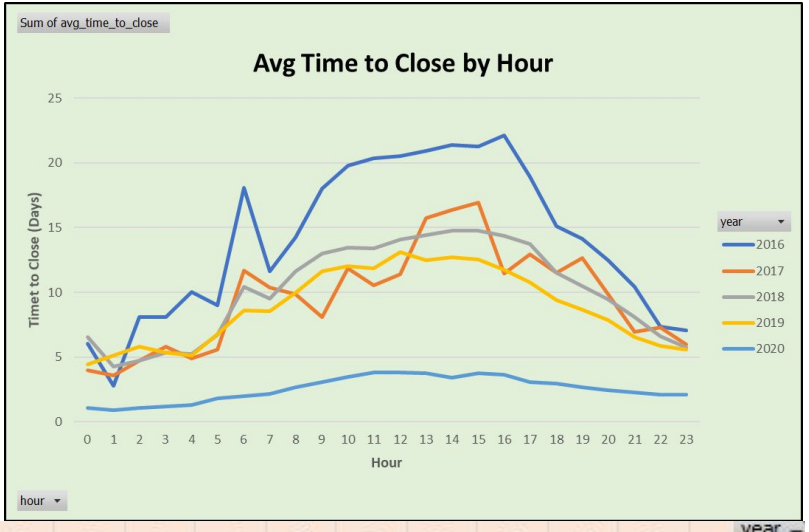

Sum of avg_time_to_close
Avg Time to Close by Month
Time to Close (Days)
20
18
16
14
12
10
8
6
4
2
0
January
February
March
April
May
June
July
August
September
October
November
December
Month
year
2016
2017
2018
2019
2020
month


HEAT/HOT WATER
HEAT/HOT WATER
HEAT/HOT WATER
Noise - Residential
Noise - Residential
Noise - Residential
Noise - Residential
Request Large Bulky Item Collection
Noise - Residential
HEAT/HOT WATER
HEAT/HOT WATER
HEAT/HOT WATER
January
February
March
April
May
June
July
August
September
October
November
December
Month
year
2018


Department of Housing Preservation and Development
New York City Police Department
New York City Police Department
New York City Police Department
New York City Police Department
New York City Police Department
New York City Police Department
New York City Police Department
New York City Police Department
Department of Housing Preservation and Development
Department of Housing Preservation and Development
Department of Housing Preservation and Development
January
February
March
April
May
June
July
August
September
October
November
December
Month

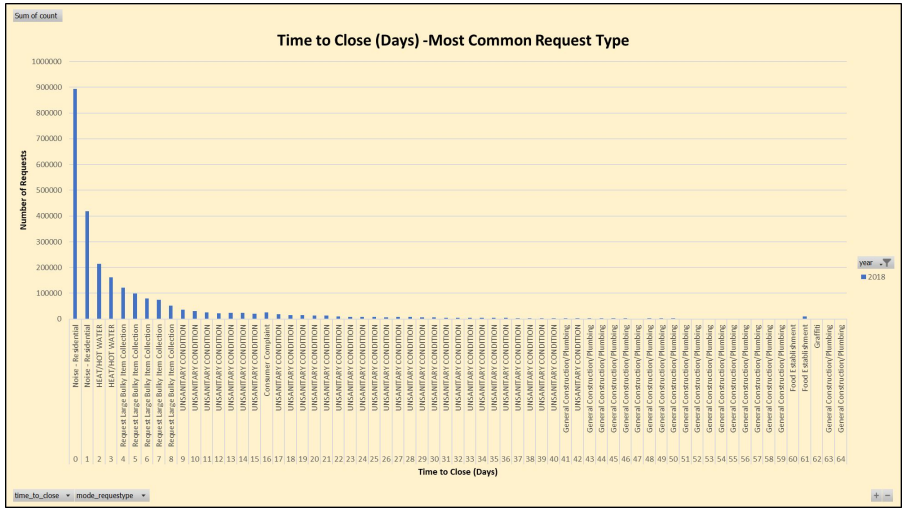
– Hour

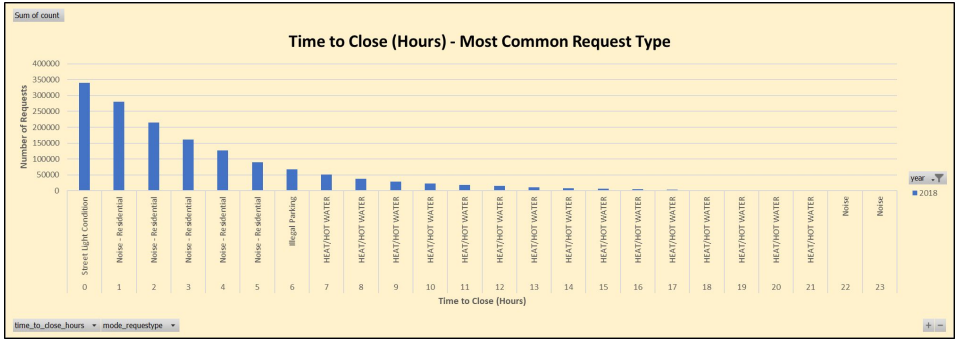

Sum of count
311 Requests by Hour of Day
Number of Requests
250000
200000
150000
100000
50000
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour
year
2016
2017
2018
2019
2020
hour


Sum of avg_time_to_close
Avg Time to Close by Hour
Timet to Close (Days)
25
20
15
10
5
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour
year
2016
2017
2018
2019
2020
hour

Rodent
Noise - Residential
Noise - Residential
Noise - Residential
Noise - Residential
HEAT/HOT WATER
HEAT/HOT WATER
HEAT/HOT WATER
HEAT/HOT WATER
Request Large Bulky Item Collection
Street Light Condition
Street Light Condition
Request Large Bulky Item Collection
Request Large Bulky Item Collection
Request Large Bulky Item Collection
Request Large Bulky Item Collection
Request Large Bulky Item Collection
Request Large Bulky Item Collection
HEAT/HOT WATER
HEAT/HOT WATER
Noise - Residential
Noise - Residential
Noise - Residential
Noise - Residential
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour
year
2018

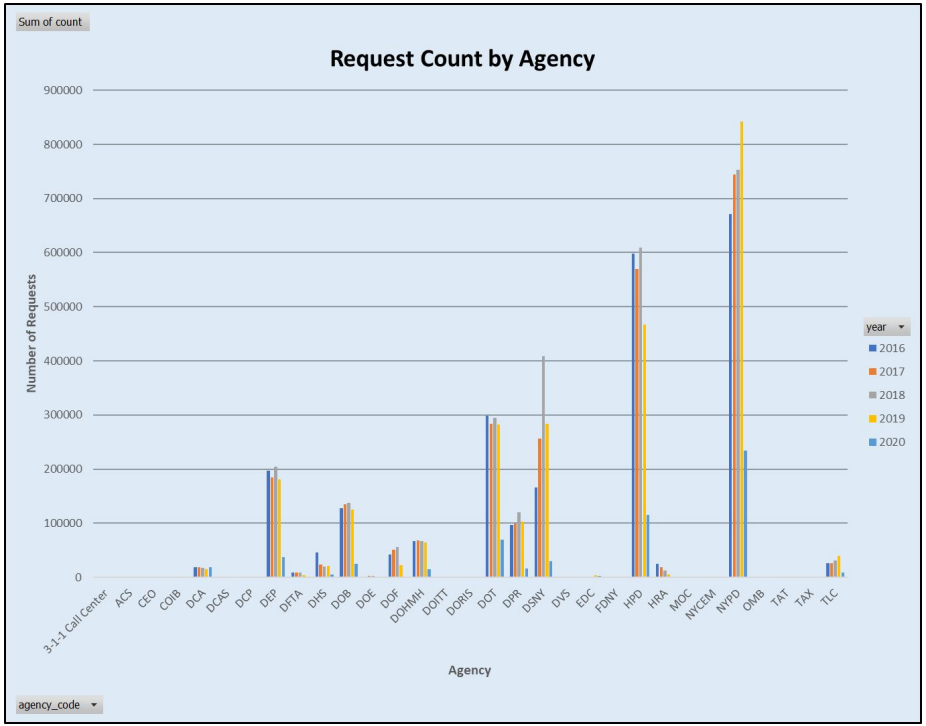
Time to Close

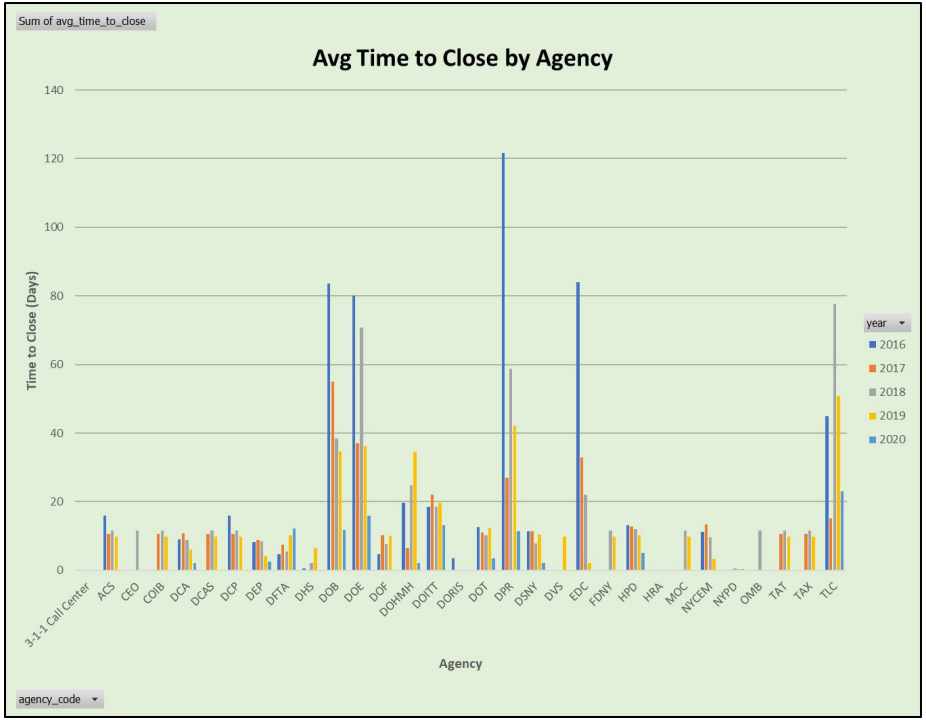




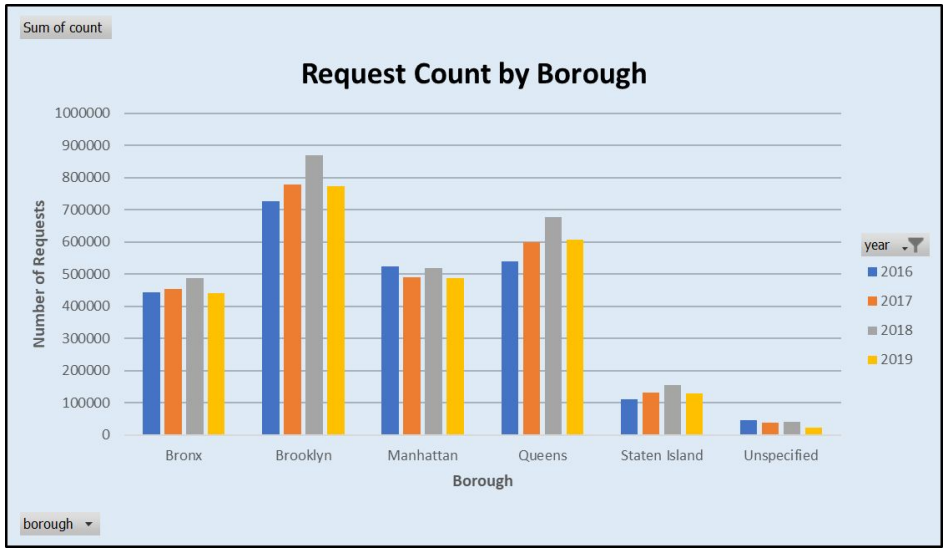
Request Type

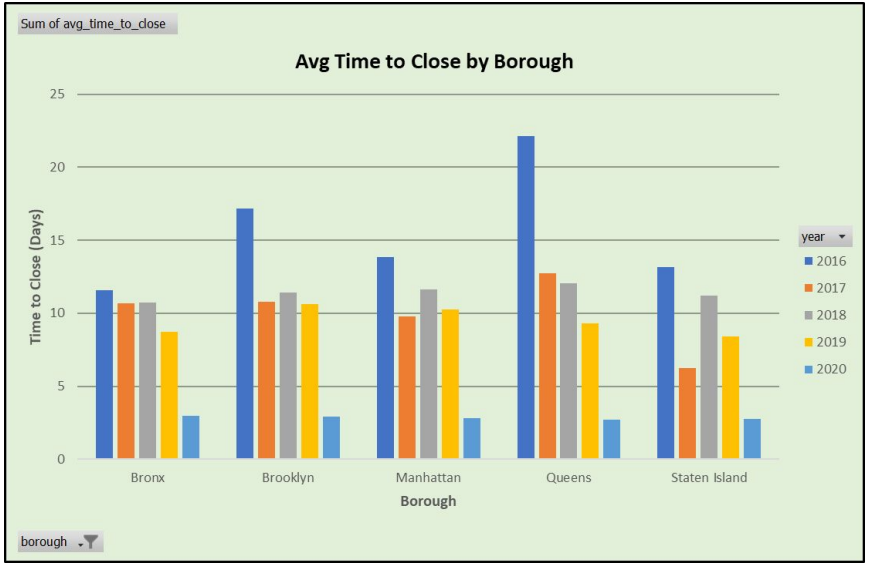
– Agency


Sum of count
Request Count by Agency
Number of Requests
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
3-1-1 Call Center
ACS
CEO
COIB
DCA
DCAS
DCP
DEP
DFTA
DHS
DOB
DOE
DOF
DOHMH
DOITT
DORIS
DOT
DPR
DSNY
DVS
EDC
FDNY
HPD
HRA
MOC
NYCEM
NYPD
OMB
TAT
TAX
TLC
Agency
year
2016
2017
2018
2019
2020
agency_code


Sum of avg_time_to_close
Avg Time to Close by Agency
Time to Close (Days)
140
120
100
80
60
40
20
0
3-1-1 Call Center
ACS
CEO
COIB
DCA
DCAS
DCP
DEP
DFTA
DHS
DOB
DOE
DOF
DOHMH
DOITT
DORIS
DOT
DPR
DSNY
DVS
EDC
FDNY
HPD
HRA
MOC
NYCEM
NYPD
OMB
TAT
TAX
TLC
Agency
year
2016
2017
2018
2019
2020
agency_code

– Borough



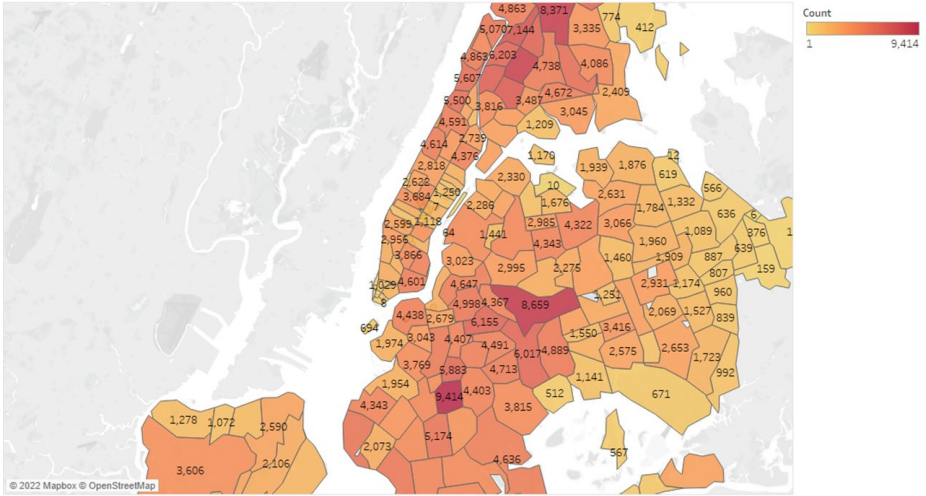


Name	Status	Population Census 1990-04-01	Population Census 2000-04-01	Population Census 2010-04-01	Population Census 2020-04-01
Bronx	Borough	1,203,789	1,332,650	1,385,108	1,472,654
Brooklyn (Kings County)	Borough	2,300,664	2,465,326	2,504,700	2,736,074
Manhattan (New York County)	Borough	1,487,536	1,537,195	1,585,873	1,694,251
Queens	Borough	1,951,598	2,229,379	2,230,722	2,405,464
Staten Island (Richmond County)	Borough	378,977	443,728	468,730	495,747
New York City	**City**	**7,322,564**	**8,008,278**	**8,175,133**	**8,804,190**

Source: U.S. Census Bureau (web).

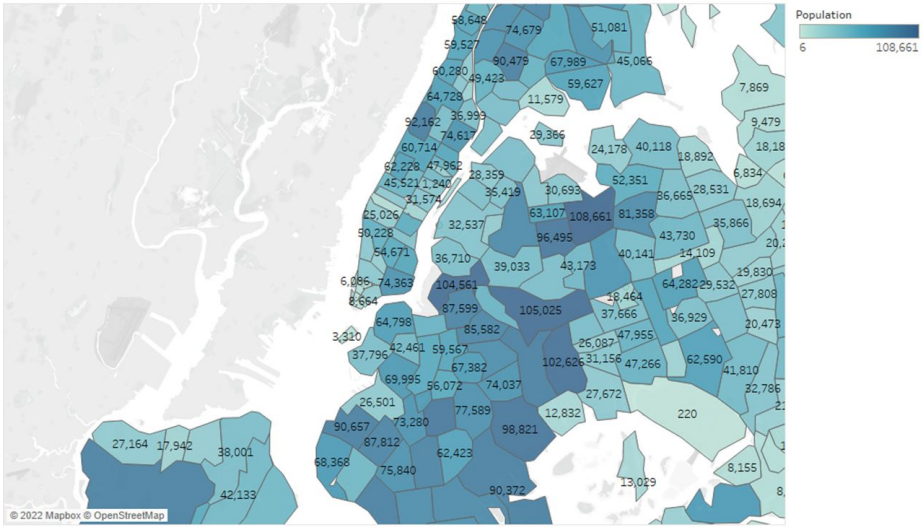
Zip Code

2020 Requests by Zip Code



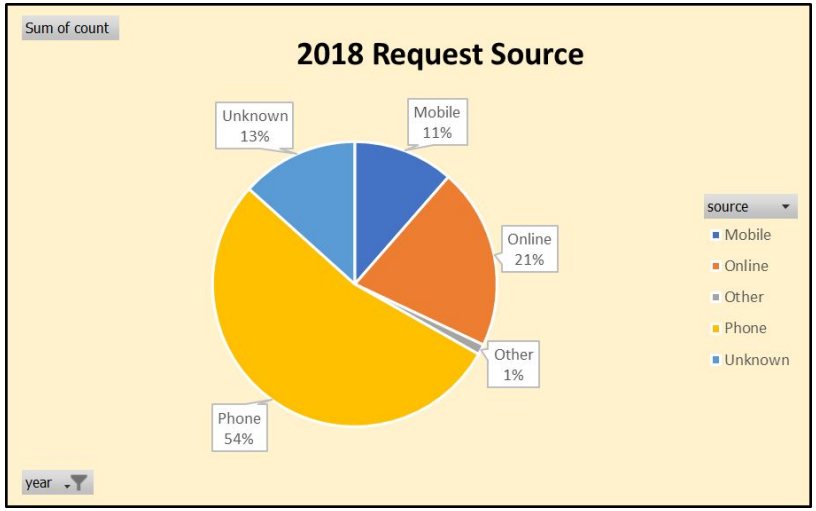
Map based on Longitude (generated) and Latitude (generated). Color shows sum of Count. Details are shown for Zip Code. The data is filtered on Year, which ranges from 2020 to 2020. The view is filtered on sum of Count, which ranges from 1 to 50,000.

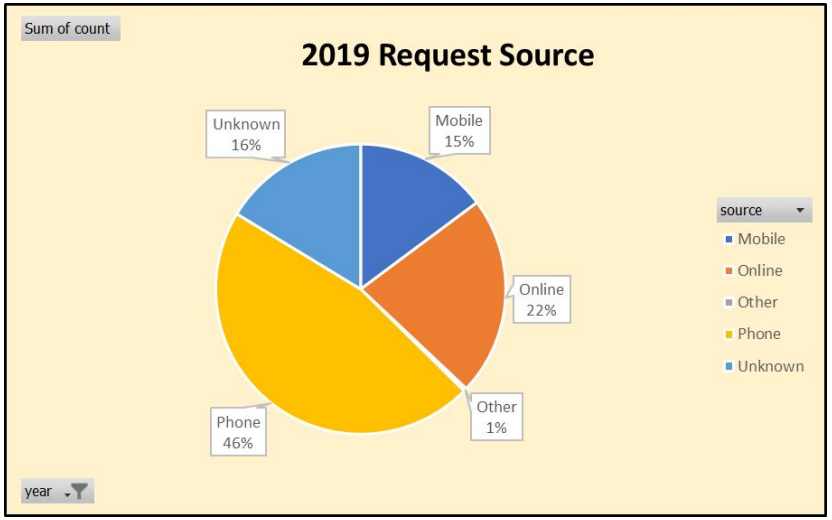
NYC 2020 Population Density



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Population. Details are shown for Zip Code.

Source


Sum of count
2018 Request Source
Unknown 13%
Mobile 11%
Online 21%
Other 1%
Phone 54%
source
Mobile
Online
Other
Phone
Unknown
year


Sum of count
2019 Request Source
Unknown 16%
Mobile 15%
Online 22%
Other 1%
Phone 46%
source
Mobile
Online
Other
Phone
Unknown
year

Conclusions and Recommendations

- Time to close has generally decreased since 2016
- Higher volume of requests doesn't always mean higher time to close
- Specialty requests (planting trees, investigations) take longer

- Focus on promotion of mobile app and online resources
- Deadline for request closure or update on the status based on request type

Further Analysis

- More granular geospatial analysis based on latitude and longitude data
- Metric to assess citizen satisfaction with 311 request service
- Separate analysis for noise complaints and heat/hot water because they constituted such a large number of requests

Citations

Images

- https://www.stocksy.com/896471/new-york-city---lower-manhattan-skyline-brooklyn-bridge-and-afterglow-sky
- https://play.google.com/store/apps/details?id=gov.nyc.doitt.ThreeOneOne&hl=en_US&gl=US

Data:

- https://opendata.cityofnewyork.us/open-data-law/
- https://www.newyork-demographics.com/zip_codes_by_population