

Project:

## **Customer Service Requests Analysis**

### **Question 1**

We will be using one-way ANOVA to test the similarity or difference in mean response time across complaint types (ie if the difference across their means is statistically significant or not).

Firstly, we will state our hypotheses:

#### **Hypotheses statements.**

**Null hypothesis:** The average response time across complaint types is equal or similar.

**Alternative hypothesis:** The average response time across complaint types is not equal or is different.

**Alpha** (Significance level): 0.05 (5%)

#### **Answers:**

**F-Statistic:** 132.46529732301363

**p-value:** 0.0

### **Question 2**

To test the relationship between location type and complaint type, I will use the chi square test for Independence.

**Null hypothesis:** There is no relationship/association between location types and complaint types.

**Alternative Hypothesis:** There is a relationship/an association between location type and complaint type.

**Alpha** (Significance level): 5%

**Chi square statistic:** 1,625,098.2311304228

**p-value:** 0.0

Table 1: Mean Request Closing Time ordered by Complaint Type and grouped by Location Types

	Location Type	Complaint Type	Request Closing Time
0	Bridge	Homeless Encampment	0.0
1	Street/Sidewalk	Squeegee	0.0
2	Store/Commercial	Posting Advertisement	0.0
3	Park/Playground	Panhandling	0.0
4	Roadway Tunnel	Homeless Encampment	0.0
5	Highway	Homeless Encampment	0.05263157894736842
6	Roadway Tunnel	Traffic	0.06451612903225806
7	Subway Station	Urinating in Public	0.07142857142857142
8	Store/Commercial	Urinating in Public	0.07246376811594203
9	Park/Playground	Urinating in Public	0.07317073170731707

From the table above, the complaint types with the fastest response time are complaints made about a Homeless Encampment around the Bridge, Roadway tunnel, Squeegee in street/sidewalk, panhandling around the park/playground and Posting Advertisement around store/commercials.

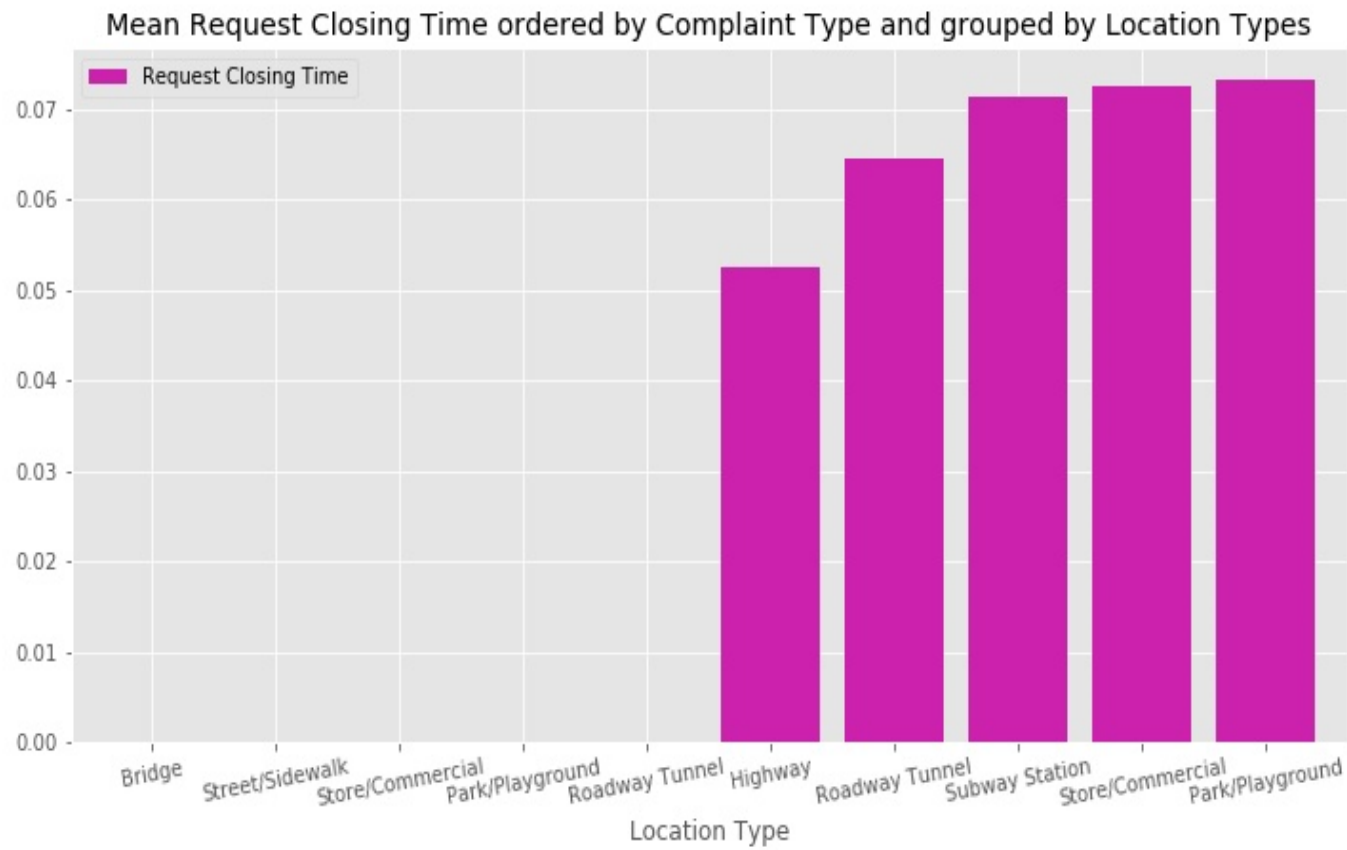


Fig 1: Mean Request Closing Time ordered by Complaint Type and grouped by Location Types

Table 2: Mean Request Closing Time grouped by Complaint Type

Complaint Type		Request Closing Time (in days)
<b>0</b>	Squeegee	0.0
<b>1</b>	Vending	0.1027479091995221
<b>2</b>	Traffic	0.10912240184757506
<b>3</b>	Urinating in Public	0.12324492979719189
<b>4</b>	Agency Issues	0.125
<b>5</b>	Bike/Roller/Skate Chronic	0.12842105263157894
<b>6</b>	Homeless Encampment	0.1485960237753638
<b>7</b>	Panhandling	0.16923076923076924
<b>8</b>	Noise - House of Worship	0.19101123595505617
<b>9</b>	Disorderly Youth	0.19682539682539682

From the table above, the complaint type with the fastest mean request closing time is Squeegee. This indicates that any complaint made about squeegee is quickly responded to and closed within a day.

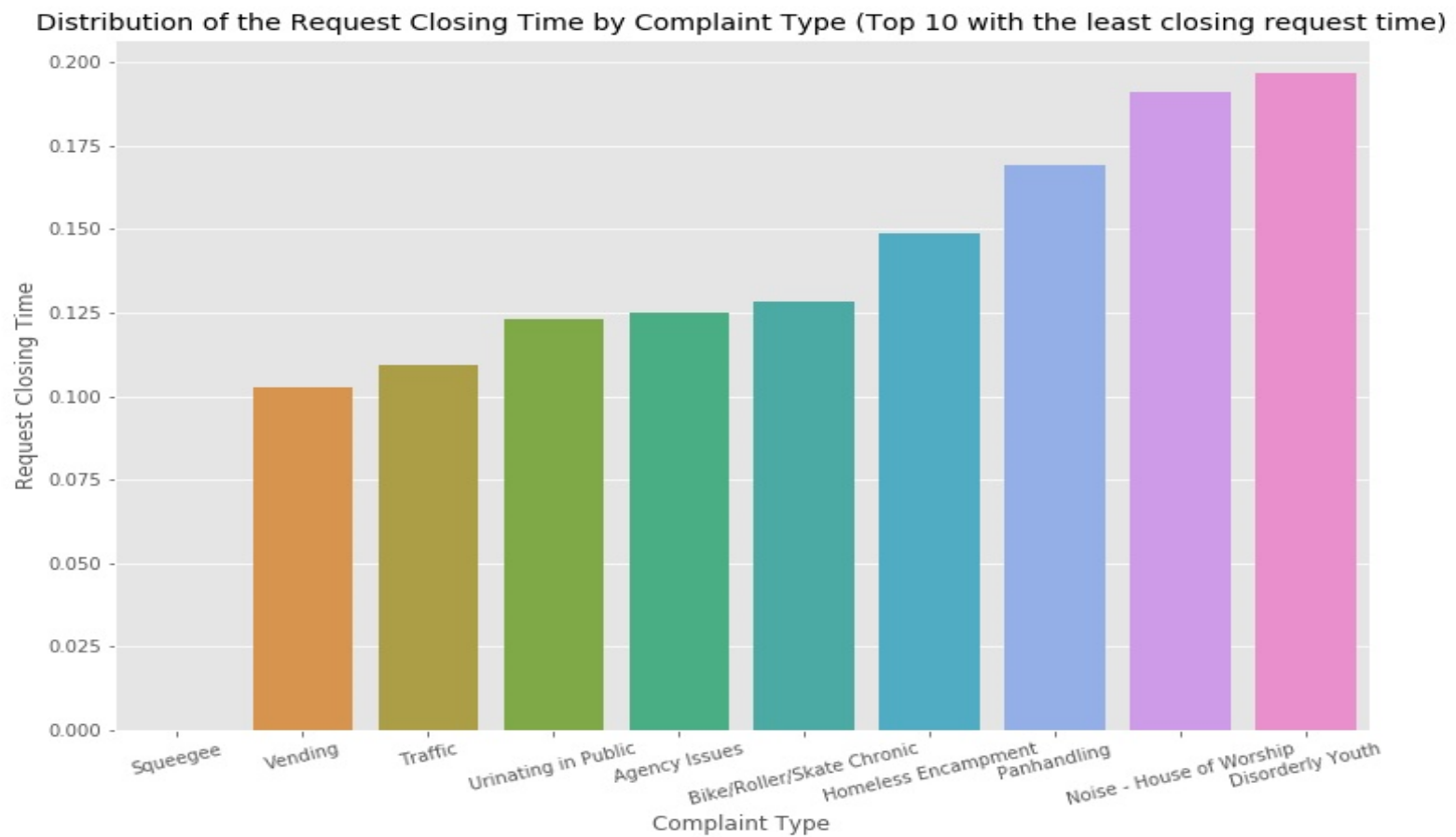


Fig 2: Mean Request Closing Time grouped by Complaint Type

Table 3: Top 10 Complaint Type by City

City		Total Complaint Types
0	BROOKLYN	118849
1	NEW YORK	77289
2	BRONX	49166
3	STATEN ISLAND	15335
4	JAMAICA	8930
5	ASTORIA	7991
6	FLUSHING	7486
7	RIDGEWOOD	6391
8	CORONA	5383
9	WOODSIDE	4357

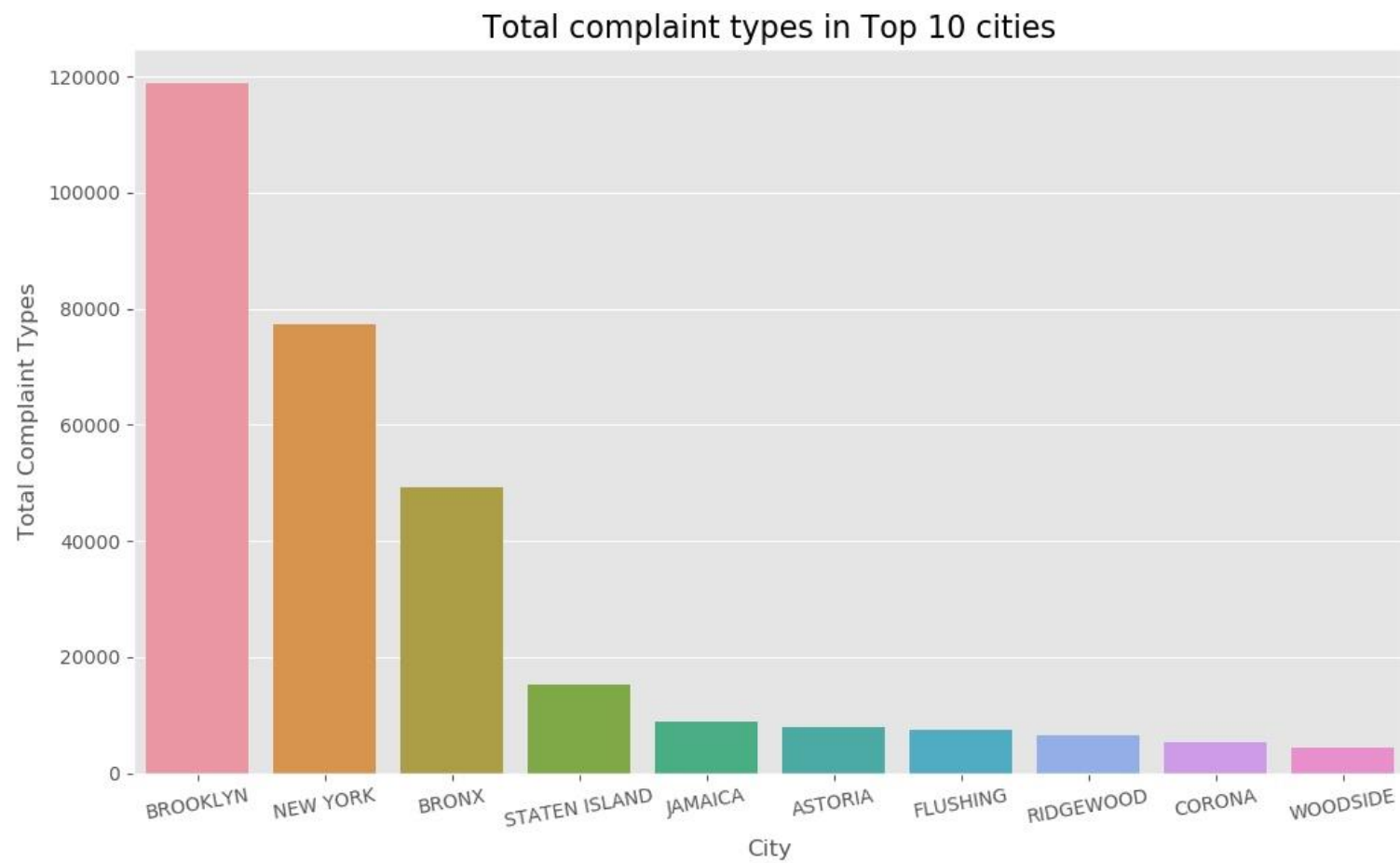


Fig 3: Total complaint types in top 10 cities

Table: Total Complaint Types

Complaint Types		
<b>0</b>	Blocked Driveway	100624
<b>1</b>	Illegal Parking	91716
<b>2</b>	Noise - Street/Sidewalk	51139
<b>3</b>	Noise - Commercial	43751
<b>4</b>	Derelict Vehicle	21518
<b>5</b>	Noise - Vehicle	19301
<b>6</b>	Animal Abuse	10530
<b>7</b>	Traffic	5196
<b>8</b>	Homeless Encampment	4879
<b>9</b>	Vending	4185
<b>10</b>	Noise - Park	4089
<b>11</b>	Drinking	1404
<b>12</b>	Noise - House of Worship	1068
<b>13</b>	Posting Advertisement	679
<b>14</b>	Urinating in Public	641
<b>15</b>	Bike/Roller/Skate Chronic	475
<b>16</b>	Panhandling	325
<b>17</b>	Disorderly Youth	315
<b>18</b>	Illegal Fireworks	172
<b>19</b>	Graffiti	157
<b>20</b>	Agency Issues	8
<b>21</b>	Squeegee	4
<b>22</b>	Animal in a Park	1



## Pie and Bar charts for Top 10 Complaint Types

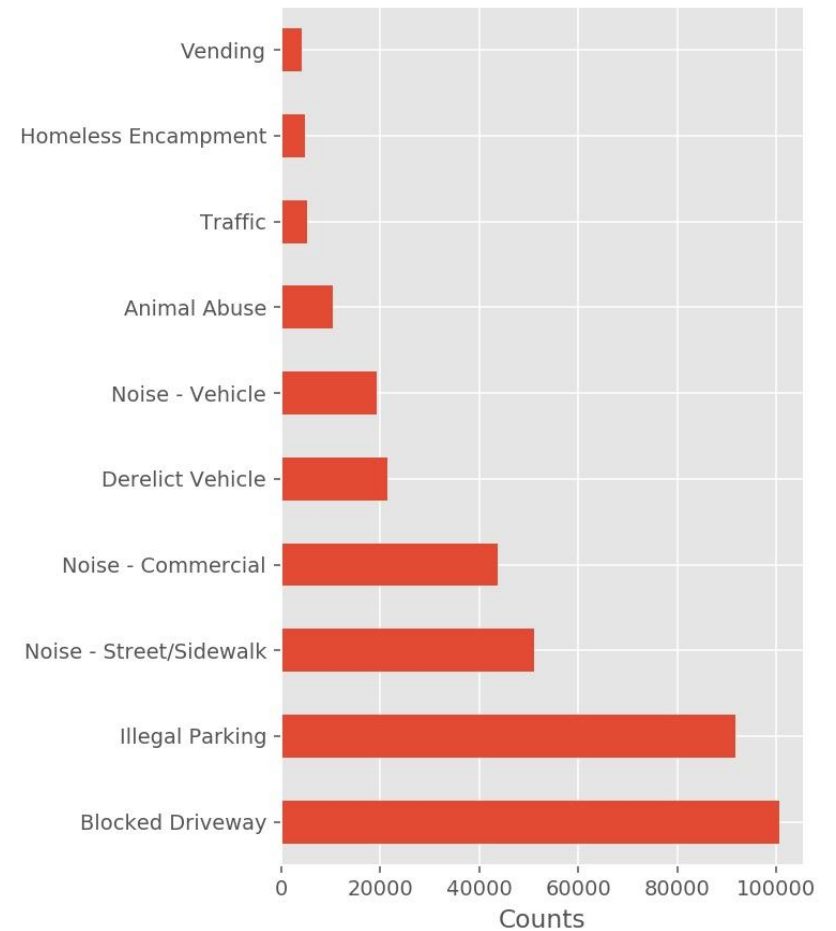
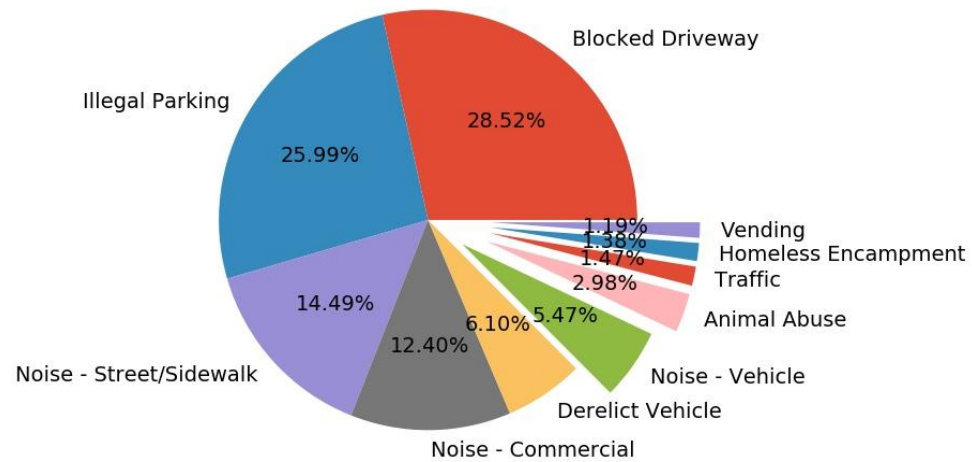


Fig 4: Top 10 Complaint Types