

# Boston 311 Final Presentation


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# Introduction

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**Illegal Parking at 1346 1352 Boylston St**  
Car illegally parked in a busy bike lane  
**OPENED** 2 minutes ago #101004600220

**Missed Trash or Recycling at 23 Elmira St, Brighton**  
Whole street | Scheduled recycling day: [Tuesday] How was the recycling placed out for collection: [Cart]  
Curbside pickup or an alley: [Curb Side Pickup]  
**CLOSED** Case Resolved. Constituent states recycling has been collected. - 2 minutes ago #101004600168


**Roadway Plowing/Salting at Intersection Of Exeter St & Commonwealth Ave**  
Constituent reports ice in Commonwealth Ave mall, on the walking path between the lanes of travel at this intersection. |  
**CLOSED** Noted. Checked all around no ice in roadway. - 5 minutes ago #101004599888


## How can we help?

**Help make Boston more beautiful**

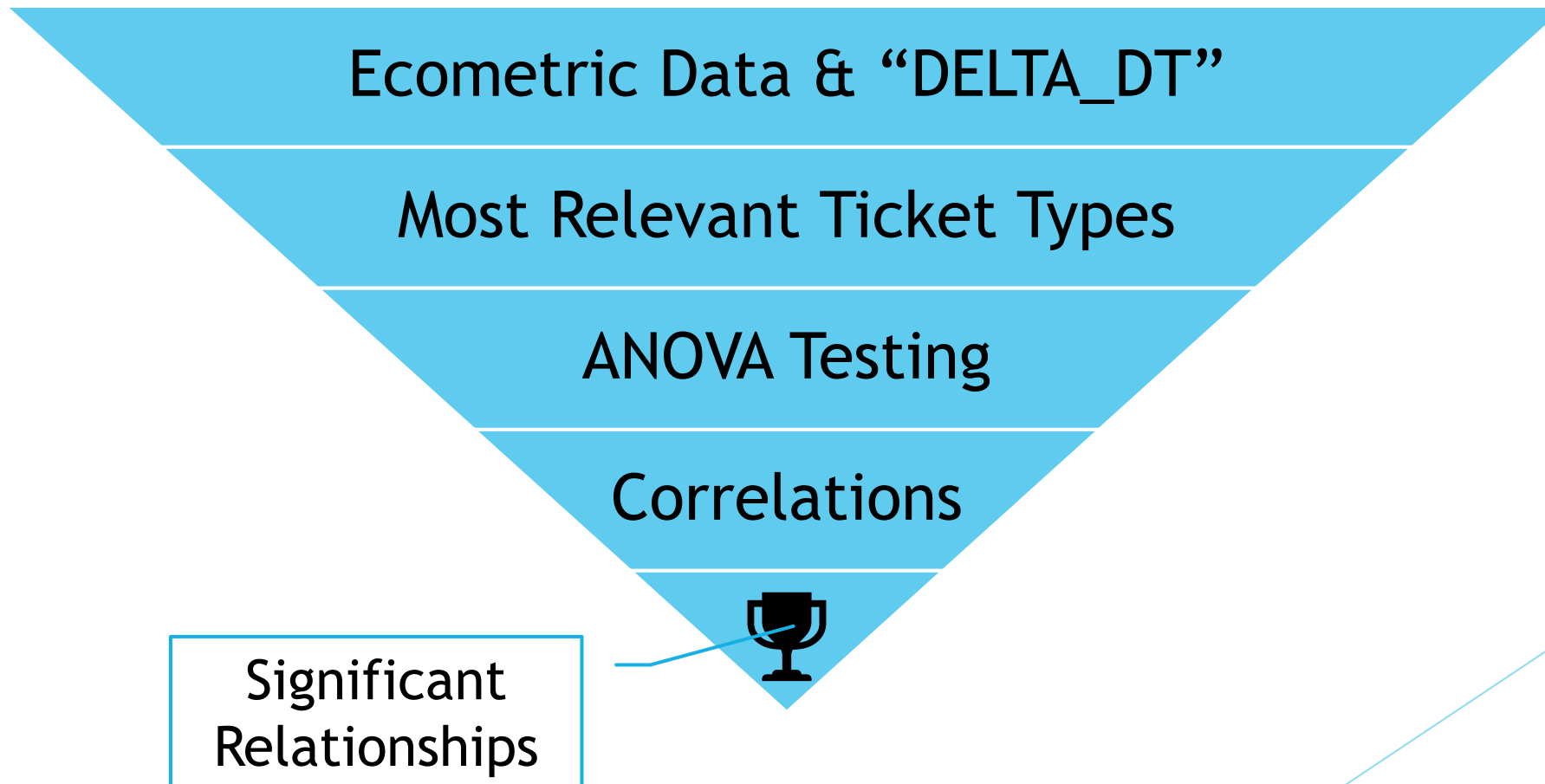
BOS:311 enables real-time collaboration with citizens, 'deputizing' mobile users to become the city's eyes and ears. Citizens report potholes, graffiti, and other issues from anywhere in the city using their mobile phone. Download the latest version by upgrading your app! To download the new app, visit: [boston.gov/311](http://boston.gov/311)

## Start Reporting

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# Data & Methods





# Results & Discussion

# Variable Creation



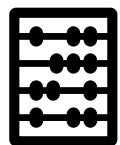
```
df_311$DELTA_DT <- ymd(df_311$CLOSED_DT)-  
(ymd(df_311$OPEN_DT))
```



```
df_311_eco <- df_311 %>%  
  filter(PUBLICDENIG == 1 | PRIVATENEGLECT == 1 | TYPE %in%  
    "Needle Pickup") %>%  
  subset(!is.na(BG_ID_10))
```



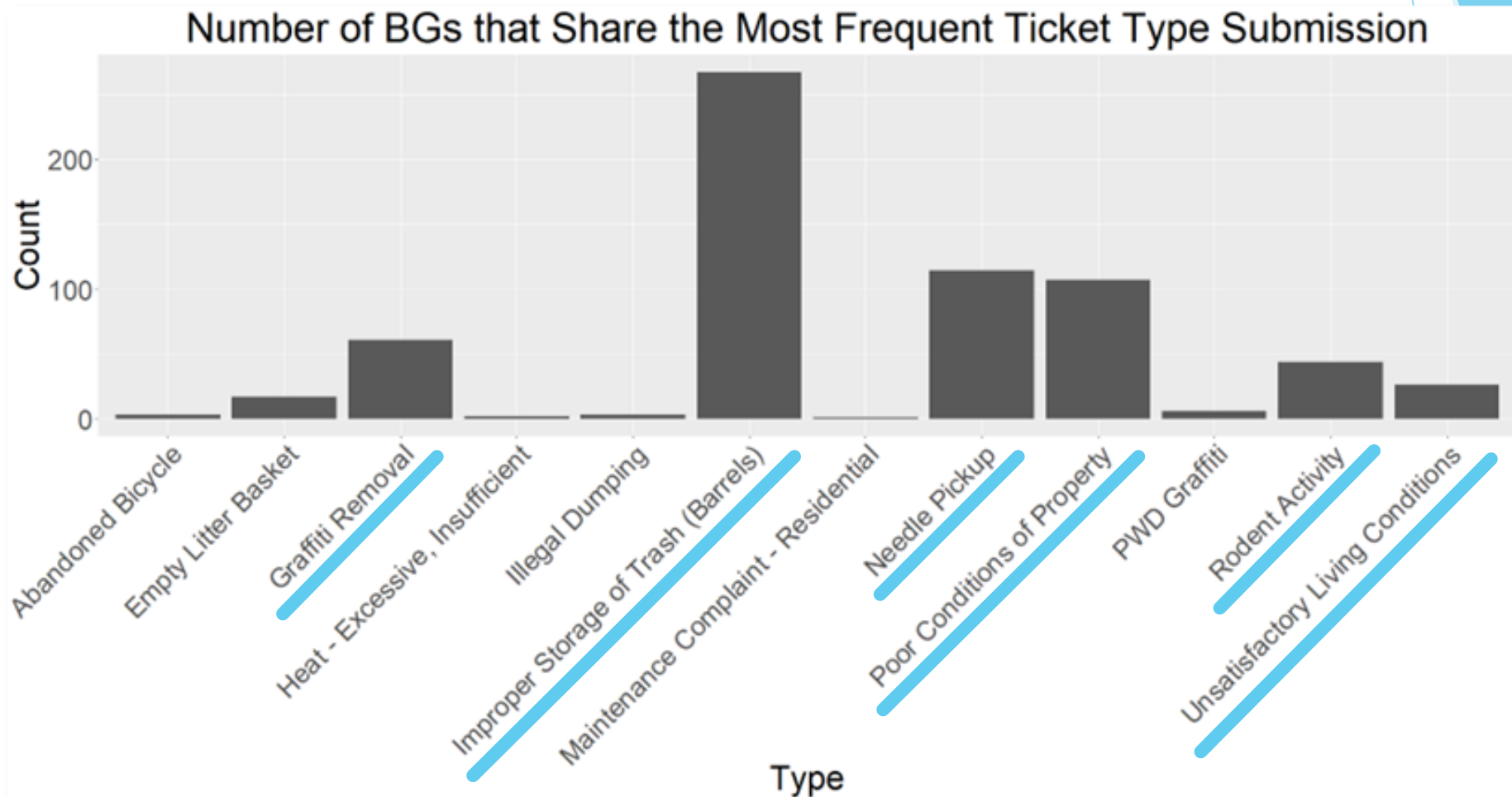
```
df_311_clean <- df_311_eco %>%  
  relocate(CLOSED_DT, .after = OPEN_DT) %>%  
  relocate(DELTA_DT, .after = CLOSED_DT)
```



```
df_bg_max_types <- df_311_clean %>%  
  count(BG_ID_10, TYPE, sort = TRUE) %>%  
  group_by(BG_ID_10) %>%  
  summarise(MAX_TYPE=TYPE[1],MAX_TYPE_n=n[1])
```

```
[1] 193 nrow(unique(df_311["TYPE"]))  
[1] 27  nrow(unique(df_311_clean["TYPE"]))  
[1] 12  nrow(unique(df_bg_max_types["MAX_TYPE"]))
```

# Tickets Types with Relevance



# ANOVA Testing

```

              Df    Sum Sq Mean Sq F value Pr(>F)
TYPE              5  97344921 19468984   7868 <2e-16 ***
Residuals      75148 185940599    2474
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
4481 observations deleted due to missingness
Tukey multiple comparisons of means
 95% family-wise confidence level

```

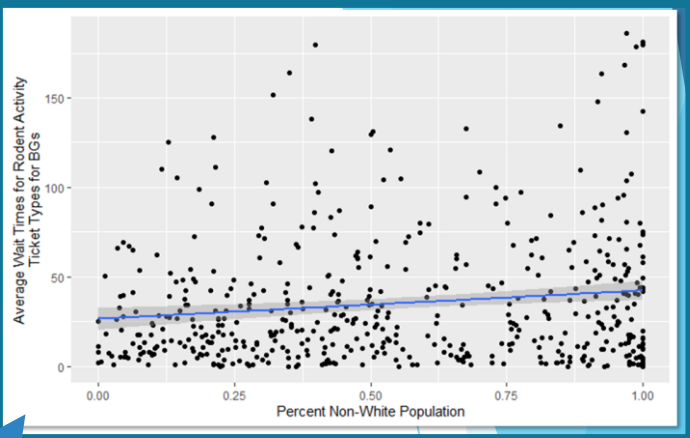
```
Fit: aov(formula = as.numeric(Delta_DT) ~ TYPE, data = df_311_clean_filter)
```

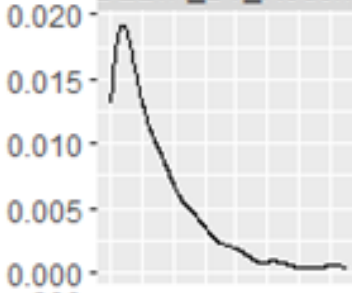

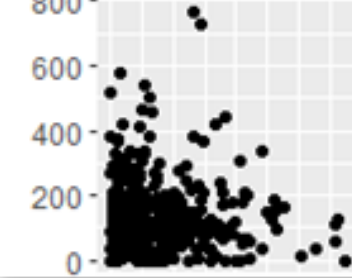
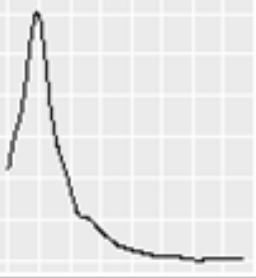
\$TYPE

	diff	lwr	upr	p adj
Improper Storage of Trash (Barrels)-Graffiti Removal	-125.7107183	-127.678881	-123.742555	0.0000000
Needle Pickup-Graffiti Removal	-125.9654896	-127.966072	-123.964907	0.0000000
Poor Conditions of Property-Graffiti Removal	-125.4849369	-127.657520	-123.312354	0.0000000
Rodent Activity-Graffiti Removal	-86.9491780	-89.390267	-84.508089	0.0000000
Unsatisfactory Living Conditions-Graffiti Removal	-107.6534882	-111.160490	-104.146487	0.0000000
Needle Pickup-Improper Storage of Trash (Barrels)	-0.2547713	-1.563332	1.053789	0.9937841
Poor Conditions of Property-Improper Storage of Trash (Barrels)	0.2257814	-1.333102	1.784665	0.9984734
Rodent Activity-Improper Storage of Trash (Barrels)	38.7615403	36.846099	40.676982	0.0000000
Unsatisfactory Living Conditions-Improper Storage of Trash (Barrels)	18.0572300	14.893520	21.220940	0.0000000
Poor Conditions of Property-Needle Pickup	0.4805527	-1.119067	2.080172	0.9567002
Rodent Activity-Needle Pickup	39.0163116	37.067573	40.965050	0.0000000
Unsatisfactory Living Conditions-Needle Pickup	18.3120014	15.128022	21.495981	0.0000000
Rodent Activity-Poor Conditions of Property	38.5357589	36.410819	40.660698	0.0000000
Unsatisfactory Living Conditions-Poor Conditions of Property	17.8314487	14.536679	21.126219	0.0000000
Unsatisfactory Living Conditions-Rodent Activity	-20.7043102	-24.181998	-17.226623	0.0000000



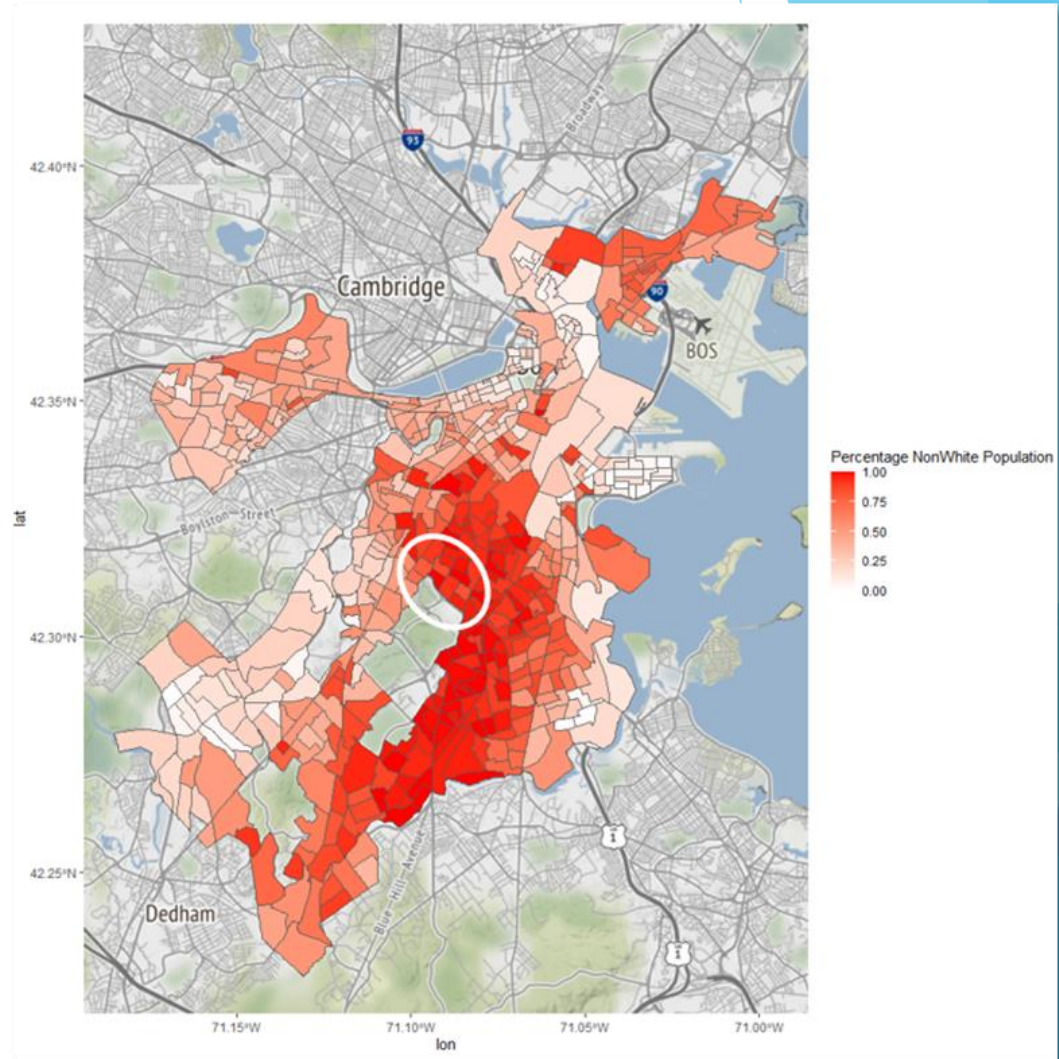
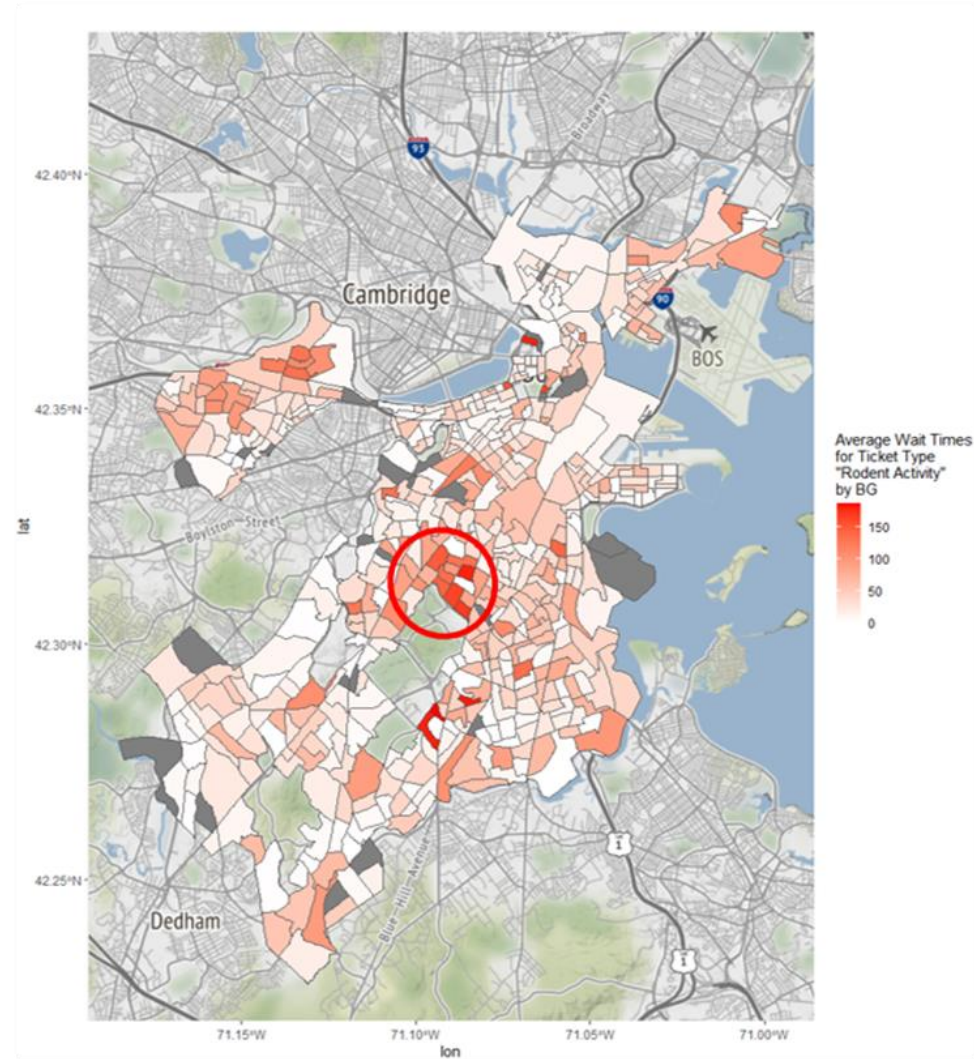
# Correlations and Significance



DELTA_DT_Rodent	DELTA_DT_Graffiti	LessThanHS	Master	NonWhite	Black	UnempRate	FamPovPer	
	Corr: -0.026	Corr: 0.122**	Corr: -0.119**	<div>  </div> Corr: 0.140**	Corr: 0.126**	Corr: 0.115**	Corr: 0.105*	DELTA_DT_Rodent
		Corr: -0.071	Corr: 0.049	Corr: -0.137**	Corr: -0.131**	Corr: -0.096.	Corr: -0.170***	DELTA_DT_Graffiti



# Mapping Results



# Conclusion

- ▶ The inequities discovered in the data could be unintentional, but they do exist.
- ▶ The population density, the proximity to green space, and trash on the street could be contributing to the rodent problem in Roxbury making it a difficult problem to fix.
- ▶ This discovery can be brought to the Boston 311 department for further analysis, further explanation, and hopefully action to correct the inequities in customer service for “Rodent Activity” ticket types.

Thank you!



# BOS 311 Dataset

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
1	CASE_ENQUIR	OPEN_C	CLOSED_C	SUBJECT	REASON	TYPE	LOCATION	propid	SOURCE	X	Y	LocationID	ObjectID	TLID	BLK_ID_10	BG_ID_10	CT_ID_10	NSA_NAME	BRA_PD	PUBLIC	HOUSING	UNCIVILUSE	BIGBUILD	GRAFFITI	TRASH	PRIVATENEGL	PUBLICDEN	PROBLE	
2	101003E+11	1/12/2020	3/12/2020	Mayor's 24 Hour	Abandoned Bicycle	Abandoned Bicycle	70 Burbank St, Bost	A623736	Mobile Request	-71.08892	42.34423	401476000	6.39E+08	2.5025E+14	2.5025E+11	2.5025E+10	Fenway	Fenway/Kenmc	1	0	0	0	0	0	1	0	1	1	
3	101003E+11	1/12/2020	1/13/2020	Mayor's 24 Hour	Abandoned Bicycle	Abandoned Bicycle	461 Gallivan Blvd, Dr	A62325	Constituent Call	-71.05798	42.28201	1605083000	85715454	2.5025E+14	2.5025E+11	2.5025E+10	East Lower Mills	South Dorches	1	0	0	0	0	0	1	0	1	1	
4	101003E+11	1/12/2020	1/13/2020	Transportation - 1	Enforcement & Aban	Abandoned Vehicles	INTERSECTION OF	I1842	Mobile Request	-71.0578023	42.2822983		6769	85715455	2.5025E+14	2.5025E+11	2.5025E+10			1	0	0	0	0	0	0	0	0	
5	101003E+11	1/12/2020	1/18/2020	Transportation - 1	Enforcement & Aban	Abandoned Vehicles	10 Stanbro St, Hyde I	A130087	Mobile Request	-71.13241	42.23553	1809755000	85704712	2.5025E+14	2.5025E+11	2.5025E+10	Readville	Hyde Park	1	0	0	0	0	0	0	0	0	0	
6	101003E+11	1/12/2020	1/22/2020	Transportation - 1	Enforcement & Aban	Abandoned Vehicles	8 Pleasanton St, Do	A111359	Mobile Request	-71.08727	42.31086	1202261000	85701390	2.5025E+14	2.5025E+11	2.5025E+10	Washington Park	Roxbury	1	0	0	0	0	0	0	0	0	0	
7	101003E+11	1/12/2020	1/16/2020	Transportation - 1	Enforcement & Aban	Abandoned Vehicles	1857 Hyde Park Ave	A77234	Mobile Request	-71.13287	42.23573	1809497000	85704719	2.5025E+14	2.5025E+11	2.5025E+10	Readville	Hyde Park	1	0	0	0	0	0	0	0	0	0	
8	101003E+11	1/12/2020	1/22/2020	Transportation - 1	Enforcement & Aban	Abandoned Vehicles	8 Pleasanton St, Do	A111359	Mobile Request	-71.08727	42.31086	1202261000	85701390	2.5025E+14	2.5025E+11	2.5025E+10	Washington Park	Roxbury	1	0	0	0	0	0	0	0	0	0	
9	101003E+11	1/12/2020	1/22/2020	Transportation - 1	Enforcement & Aban	Abandoned Vehicles	8 Montana St, Dorc	A276585	Mobile Request	-71.0859	42.31017	1202494000	85701394	2.5025E+14	2.5025E+11	2.5025E+10	Washington Park	Roxbury	1	0	0	0	0	0	0	0	0	0	
10	101003E+11	1/12/2020	1/10/2020	Transportation - 1	Enforcement & Aban	Abandoned Vehicles	82 Marlboro St, Dor	A62325	Mobile Request	-71.0859	42.31017	1202494000	85701394	2.5025E+14	2.5025E+11	2.5025E+10	Washington Park	Roxbury	1	0	0	0	0	0	0	0	0	0	
11	101003E+11	1/12/2020	1/22/2020	Transportation - 1	Enforcement & Aban	Abandoned Vehicles															0	0	0	0	0	0	0	0	
12	101003E+11	1/12/2020	1/10/2020	Transportation - 1	Enforcement & Aban	Abandoned Vehicles															0	0	0	0	0	0	0	0	
13	101003E+11	1/12/2020	1/3/2020	Transportation - 1	Enforcement & Aban	Abandoned Vehicles															0	0	0	0	0	0	0	0	
14	101003E+11	1/12/2020	1/13/2020	Transportation - 1	Enforcement & Aban	Abandoned Vehicles															0	0	0	0	0	0	0	0	
15	101003E+11	1/12/2020		Animal Control	A																0	0	0	0	0	0	0	0	
16	101003E+11	1/12/2020		Animal Control	A																0	0	0	0	0	0	0	0	
17	101003E+11	1/12/2020		Animal Control	A																0	0	0	0	0	0	0	0	
18	101003E+11	1/12/2020		Animal Control	A																0	0	0	0	0	0	0	0	
19	101003E+11	1/12/2020		Animal Control	A																0	0	0	0	0	0	0	0	
20	101003E+11	1/12/2020		Animal Control	A																0	0	0	0	0	0	0	0	
21	101003E+11	1/12/2020		Animal Control	A																0	0	0	0	0	0	0	0	
22	101003E+11	1/12/2020		Animal Control	A																0	0	0	0	0	0	0	0	
23	101003E+11	1/12/2020		Animal Control	A																0	0	0	0	0	0	0	0	
24	101003E+11	1/12/2020		Inspectional Servi	B																0	0	0	0	0	0	0	0	
25	101003E+11	1/12/2020	1/31/2022	Inspectional Servi	B																0	0	0	0	0	0	0	0	
26	101003E+11	1/12/2020		Boston Water & S	A																0	0	0	0	0	0	0	0	
27	101003E+11	1/12/2020	1/22/2020	Public Works Dep	Si																0	0	0	0	0	0	0	0	
28	101003E+11	1/12/2020	1/12/2020	Public Works Dep	Si																0	0	0	0	0	0	0	0	
29	101003E+11	1/12/2020	1/22/2020	Public Works Dep	Si																0	0	0	0	0	0	0	0	
30	101003E+11	1/12/2020		Inspectional Servi	B																0	0	0	0	0	0	0	0	
31	101003E+11	1/12/2020	5/29/2021	Inspectional Servi	B																0	0	0	0	0	0	0	0	
32	101003E+11	1/12/2020	1/12/2020	Inspectional Servi	B																0	0	0	0	0	0	0	0	
33	101003E+11	1/12/2020	1/12/2020	Public Works Dep	H																0	0	1	0	0	1	1		
34	101003E+11	1/12/2020	1/22/2020	Parks & Recreati	P																0	0	0	0	0	0	0	0	
35	101003E+11	1/12/2020	1/22/2020	Parks & Recreati	P																0	0	0	0	0	0	0	0	
36	101003E+11	1/12/2020	1/3/2020	Parks & Recreati	P																0	0	0	0	0	0	0	0	
37	101003E+11	1/12/2020	1/3/2020	Parks & Recreati	P																0	0	0	0	0	0	0	0	
38	101003E+11	1/12/2020	1/3/2020	Parks & Recreati	P																0	0	0	0	0	0	0	0	
39	101003E+11	1/12/2020	1/12/2020	Mayor's 24 Hour	I G																0	0	0	0	0	0	0	0	
40	101003E+11	1/12/2020	1/12/2020	Mayor's 24 Hour	I G																0	0	0	0	0	0	0	0	
41	101003E+11	1/12/2020	1/12/2020	Mayor's 24 Hour	I G																0	0	0	0	0	0	0	0	
42	101003E+11	1/12/2020	1/12/2020	Mayor's 24 Hour	I G																0	0	0	0	0	0	0	0	
43	101003E+11	1/12/2020	7/13/2020	Mayor's 24 Hour	I G																0	0	0	0	0	0	0	0	
44	101003E+11	1/12/2020	1/12/2020	Mayor's 24 Hour	I G																0	0	0	0	0	0	0	0	
45	101003E+11	1/12/2020	1/22/2020	Mayor's 24 Hour	I G																0	0	0	0	0	0	0	0	
46	101003E+11	1/12/2020	1/12/2020	Mayor's 24 Hour	I G																0	0	0	0	0	0	0	0	
47	101003E+11	1/12/2020	1/12/2020	Mayor's 24 Hour	I G																0	0	0	0	0	0	0	0	
48	101003E+11	1/12/2020	1/16/2020	Mayor's 24 Hour	I G																0	0	0	0	0	0	0	0	
49	101003E+11	1/12/2020	1/12/2020	Mayor's 24 Hour	I G																0	0	0	0	0	0	0	0	