For the project, you will work with **311NYC data**. Here is a short explanation of NYC311 copied from my paper:

[Calling 311: evaluating the performance of municipal services after disasters.Links to an external site.](http://idl.iscram.org/files/christopherwzobel/2017/2008_ChristopherW.Zobel_etal2017.pdf)  WiPe Paper – Analytical Modeling and Simulation. Proceedings of the 14th ISCRAM Conference – Albi, France, May 2017, p. 164-172.

New York City is the most densely populated city in the United States, and one of the most socially and economically diverse (City of New York, 2016a). It is located at the mouth of the Hudson River, and is made up of five different boroughs: Manhattan, Queens, Brooklyn, the Bronx, and Staten Island. Each borough has a varying mixture of both businesses and residential neighborhoods, with Brooklyn being the most heavily populated borough, followed by Queens and then Manhattan, which serves as the center of many of the more well- known financial and cultural activities in the city (City of New York, 2016b).

New York City has an Open Data service ([https://opendata.cityofnewyork.us/Links to an external site.](https://opendata.cityofnewyork.us/)) that makes a large number of different municipal data sources freely available to the public. Among these is a data set that details each of the non-emergency service calls made through the City's 311 service. From this data set, we collected individual data on municipal service calls in New York City for the period covering years 2010 – 2012. A total of around 5.7 million call records were retrieved, in CSV format, each including characteristics such as the time and date of the call, the agency called, the complaint type, the street address, the borough, how and if the call was resolved, the resolution date, and the latitude and longitude of the incident, as shown in Table 1.

**Table 1**

|  |  |
| --- | --- |
| **Table 1.**Selected 311 call attributes | |
| **Attribute name** | **Description** |
| Unique Key | Unique identifier |
| Created Date | Date and time the record was created |
| Closed Date | Date and time the record was closed |
| Agency | Overall agency abbreviation |
| Agency Name | Specific agency name |
| Complaint Type | Category of complaint type |
| Descriptor | Detailed description of complaint |
| Incident Zip | Zip code of incident location |
| Incident Address | Street address of incident location |
| City | City of incident location |
| Borough | Borough of incident location |
| Due Date | Date and time the request is due |
| Resolution Description | Description of call resolution update |
| Resolution Action Updated Date | Date of call resolution update |
| Latitude | Latitude of incident location |
| Longitude | Longitude of incident location |

**Table 2**

Table 2 lists the top ten agencies that received service calls, along with each one's top complaint types, in terms of the number of calls made in 2012. We also report, in Table 3, the top 20 complaints overall (based on number of calls) for this same year.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 2.**Top ten agencies based on number of calls in 2012 | | | |
| **Agency** | **Agency name** | **N. of calls 2012** | **Top complaint types** |
| HPD | Department of Housing Preservation and Development | 562,761 | Heating, General Construction, Plumbing, Paint – Plaster, Non Construction |
| NYPD | New York City Police Department | 294,053 | Noise – Residential, Blocked Driveway, Illegal Parking, Noise – Commercial |
| DOT | Department of Transportation | 256,972 | Street Light Condition, Street Condition, Traffic Signal Condition, Broken Meter |
| DEP | Department of Environmental Protection | 147,084 | Water System, Sewer, Noise, Air Quality, Hazardous Materials |
| DS | Department of Sanitation | 112,008 | Dirty Conditions, Sanitation Condition, Graffiti, Missed Collection |
| DPR | Department of Parks and Recreation | 106,055 | Damaged Tree, Maintenance, Overgrown Tree/Branches, Sidewalk Condition |
| DOB | Department of Buildings | 88,235 | General Construction/Plumbing, Elevator, Special Enforcement, Construction |
| DOF | Department of Finance | 83,040 | DOF Literature Request, SCRIE, DOF Property Issue, DOF Payment Issue |
| DOHMH | Department of Health and Mental Hygiene | 47,563 | Rodent, Food Establishment, Indoor Air Quality, Standing Water, Food Poisoning |
| TLC | Correspondence - Taxi and Limousine Commission | 22,918 | Taxi Complaint, For Hire Vehicle Complaint, Taxi Compliment, Found Property |

**Table 3**

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 3.** Top 20 complaint types in 2012 | | | |
| **Rank** | **Complaint type** | **Agency** | **N. of calls in 2012** |
| 1 | Heating | HPD | 182,974 |
| 2 | Noise - Residential | BYPD | 127,524 |
| 3 | General Construction | HPD | 112,436 |
| 4 | Street Light Condition | DOT | 93,866 |
| 5 | Plumbing | DOB | 91,192 |
| 6 | Paint - Plaster | HPD | 77,287 |
| 7 | Street Condition | DOT | 67,050 |
| 8 | Non-Construction | HPD | 60,055 |
| 9 | Water System | DEP | 57,600 |
| 10 | Blocked Driveway | NYPD | 50,645 |
| 11 | Damaged Tree | DPR | 50,394 |
| 12 | Traffic Signal Condition | DOT | 47,484 |
| 13 | Sewer | DEP | 36,895 |
| 14 | Electric | HPD | 35,398 |
| 15 | Noise | DEP | 34,137 |
| 16 | Dirty Conditions | DSNY | 33,605 |
| 17 | Illegal Parking | NYPD | 31,934 |
| 18 | Building/Use | DOB | 26,113 |
| 19 | General Construction/Plumbing | DOB | 25,286 |
| 20 | Sanitation Condition | DSNY | 24,402 |

**Note: Please use either Python or R for your final project.**