



Capstone Project Week 2: Examining animal rescue data from the London Fire Brigade

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Introduction

- Established in 1865, the London Fire Brigade is one of the largest fire fighting and rescue services
- They also assist with animal rescue where they have capacity
- Data is available relating to the location and description of all the incidents related to animal rescue since 2009
- It was thought that this data could be used to determine the need to establish additional support to assist the London Fire Brigade
- Also could give insights as to if specialist veterinary services are required if many of the rescues are wild or exotic animals



The dataset

- The dataset was downloaded from the London Datastore
- The data is available to the general public for use
- The co-ordinates were kindly transformed by the London Fire Brigade into Latitude and Longitude

Description of the data

- Only the following columns were retained to analyse. The rest were cleaned and removed.
- A pandas dataframe was created
- Burroughs Croydon and Enfield were selected to analyse as they had the most incidents (Croydon=264 and Enfield=275) – very few for the past 10 years

CalYear
PumpHoursTotal
HourlyNotionalCost(£)
WardCode
Ward
AnimalGroupParent
BoroughCode
Borough
PostcodeDistrict
Latitude
Longitude

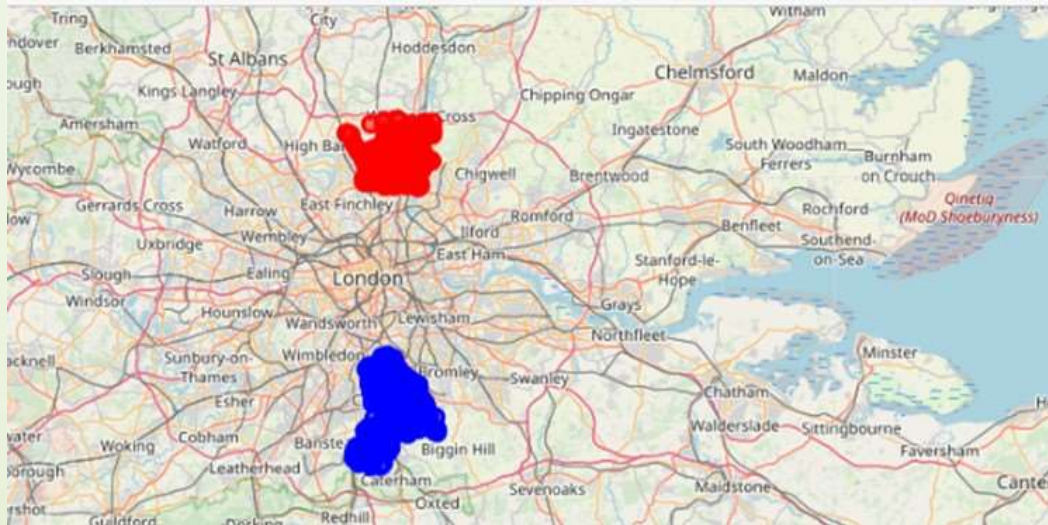
Animal rescue coding

- The incidents were coded as per the type of animal rescued

AnimalGroupCode	Code
Cat	0
cat	0
Bird	1
Pigeon	1
Dog	2
Fox	3
Unknown - Domestic Animal Or Pet	4
Unknown - Heavy Livestock Animal	4
Unknown - Wild Animal	4
Deer	6
Squirrel	7
Rabbit	10
Snake	11
Ferret	12
Cow	13
Sheep	15
Fish	16
Lamb	17
Horse	18
Goat	19

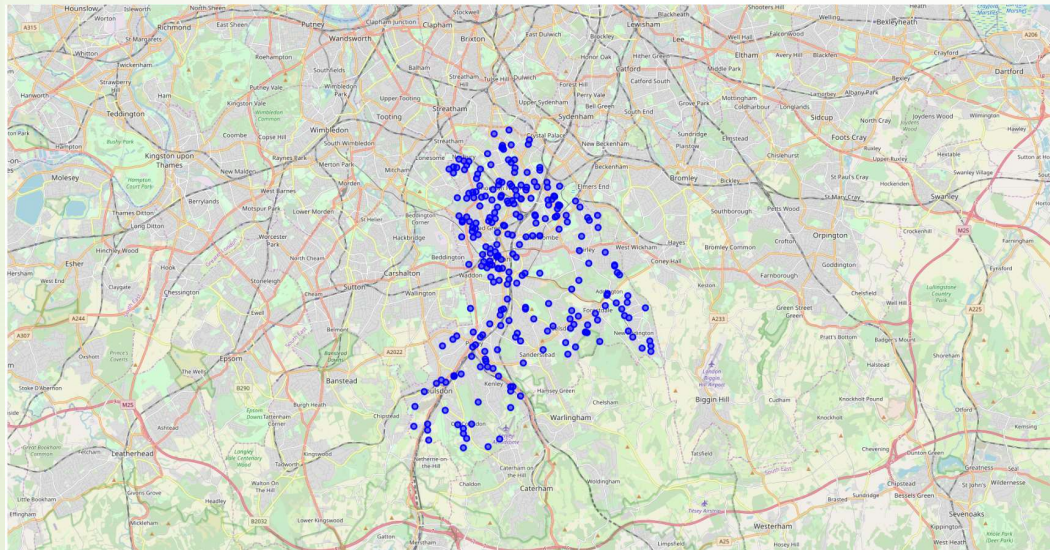
Location of incidents

➤ Croydon = Blue points Enfield = Red points



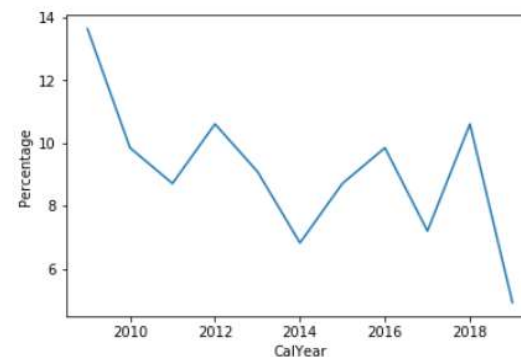
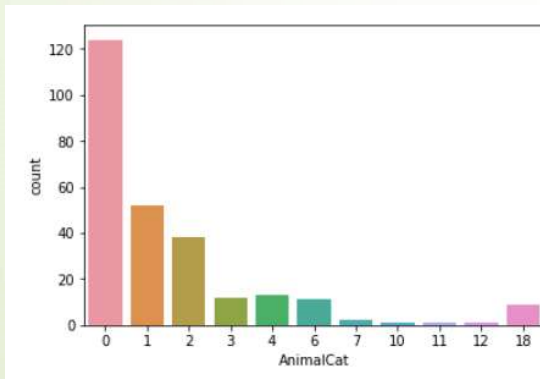
Croydon

- Higher density of incidents in the build up areas
- Less incidents close to parks



Croydon

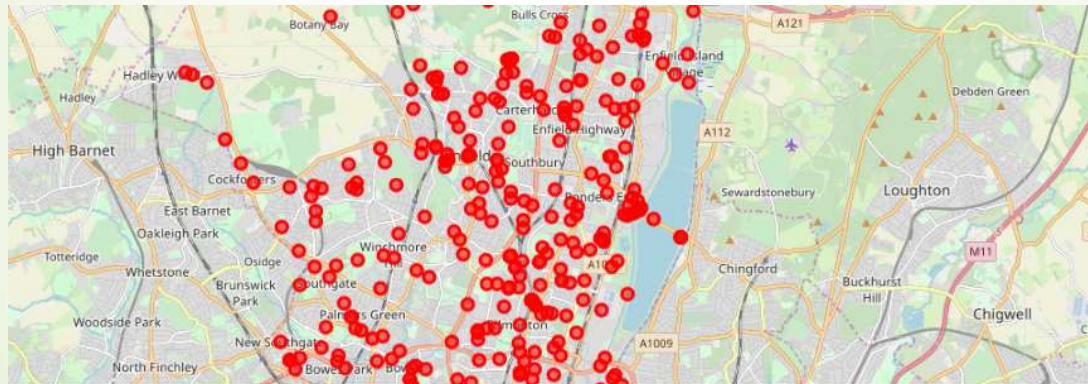
- Majority of animals rescued are Categories 0=Cat, 1=Birds, 2=Dogs and 18 = horses
- The number of incidents per year was the most in 2009
- The most spend on rescuing animals was in 2009 and 2018



CalYear	HourlyNotionalCost(£)
2009	9,315
2010	6,760
2011	5,980
2012	7,280
2013	6,870
2014	5,300
2015	6,836
2016	8,364
2017	6,216
2018	9,319
2019	4,371

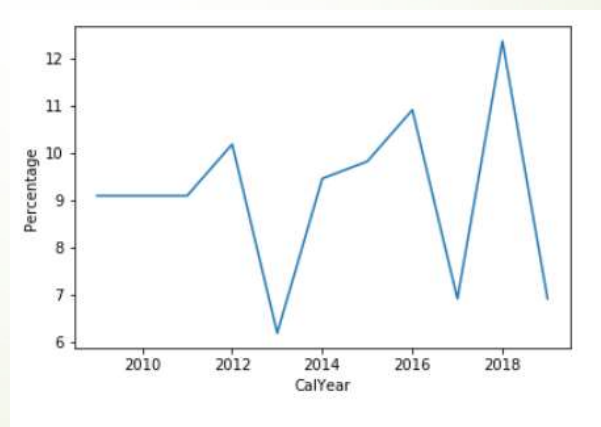
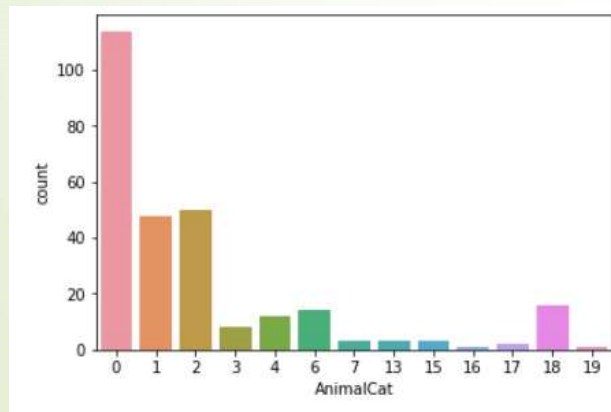
Enfield

- There seems to be a similar trend as in Croydon where the incidents are more in the built up areas.



Enfield

- Similarly to Croydon, Cats (category=0) seem be related to being the most recorded in the rescue incidents followed by 2=Dogs, 1=birds and horses=0
- The most recorded incidents appear to have occurred during 2018
- This corresponds to the most money spent on rescuing in 2018



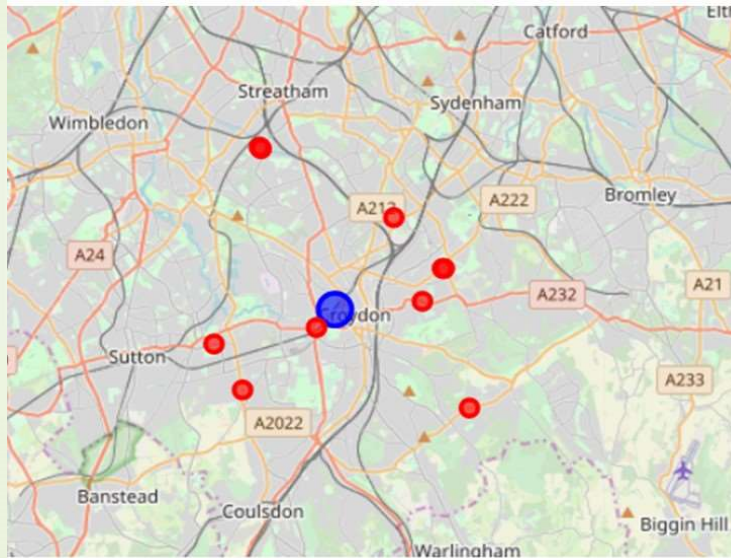
CalYear	HourlyNotionalCost(£)
2009	6,495
2010	6,500
2011	6,500
2012	7,280
2013	4,840
2014	7,645
2015	8,031
2016	9,640
2017	6,228
2018	11,267
2019	6,405



Foursquare API

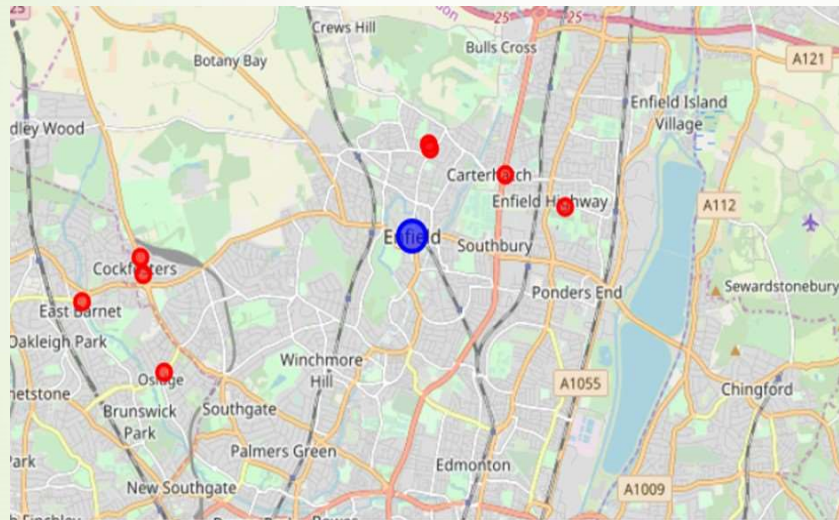
- This was used to determine the Veterinary services available in Croydon and Enfield respectively
- Services to include Veterinary surgeons and Animal rescue centres
- Animal rescue centres cannot be found in using Foursquare API as it appears that they are not listed

Croydon – Foursquare API results



Companion Care Veterinary Practice Croydon
Addiscombe Road Veterinary Centre
Parkside Veterinary Centre
Paxton Veterinary Clinic
Goddard Veterinary Group Croydon
Ashton Veterinary Surgery
Avenue Road Veterinary Surgery
Vale Veterinary Clinic
Selsdon Veterinary Clinic

Enfield – Foursquare API results



Rosemary Avenue Veterinary Clinic
Roseberry Veterinary Clinic
Goddard Veterinary Group
Medivet Enfield Great Cambridge Rd
Cockfosters Veterinary Surgery
Happy Pets Veterinary Surgery
The Park Veterinary Practice
East Barnet Veterinary Surgery



Machine Learning

- An attempt was made to model the type of animal rescue for the to Boroughs using K-nearest neighbour
- It was not successful as the dataset was very small
- All is detailed in the report and the Jupyter notebook
- Could not derive a Jaccard index nor an F1 score



Discussion and Conclusions

- The information used in the project did not yield the desired results
- The number of incidents was way too few and more data will be required to supplement the dataset
- The RSPCA would have a more detailed dataset as the London Fire Brigade is only used for special services as a last resort – they are also not equipped to deal with special cases where an animal is seriously injured
- The majority of animals being rescued are from the more build up areas and the tend to be domestic animals such as cats, birds and dogs
- No animal rescue centres are listed in Foursquare API – although one can find some in a search engine such as Google
- Machine learning was not successful in this project