Big Data Analytics: London Crime Data Analysis

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Overview

1 Introduction

2 Data Understanding

The analysis' purpose

To discover the patterns among the criminal activities in the London metropolitan area in a distinct window of time.

The Dataset(1)

London Crime Data, 2008-2016: this dataset, hosted by **Kaggle**, is composed by 13 millions rows describing the London metropolitan area's criminal activities by *Borough*, *Category*, *Month* and *Year* in a window of time that ranges from January 2008 to December 2016.

The Dataset(2)

The dataset is composed by 7 variables:

- **lsoa_code**: code for Lower Super Output Area in Greater London;
- **borough**: common name for London borough;
- **major_category**: high level categorization of crime;
- **minor_category**: low level categorization of crime within major category;
- **year**: year of reported counts, 2008 – 2016;
- **month**: month of reported counts, 1 – 12;
- **value**: monthly reported count of categorical crime in given borough;

The Dataset(3)

The variables *lsoa_code*, *borough*, *major_category*, *minor_category*, *year* and *month* are **categorical** variables, while *value* is a **discrete numerical** variable.

Numeric Variables' Analysis(1)

value is the only numeric variables in the dataset, it represents the monthly reported count of categorical crime in given borough and has 247 unique values. Its minimum value is 0 and its maximum value is 309, the mode is 0, which appears in the 74.56% of the dataset's samples.

Numeric Variables' Analysis(2)

Since 10,071,505, that is, the 74.56% of the dataset's samples have the variable value eguals to 0, we can conclude that, on a superficial level, the window of time from 2008 to 2016 wasn't too dense of criminal activities.

Crimes per Year

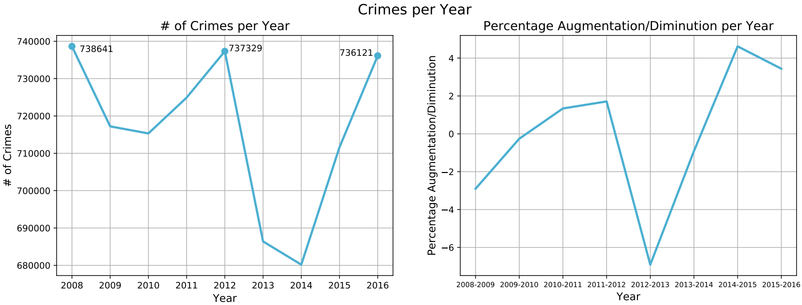


Figure: Crime's progress over the years

Crimes per Month

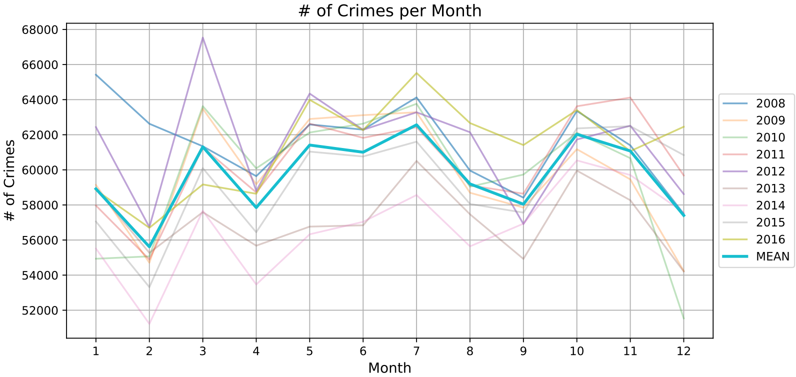
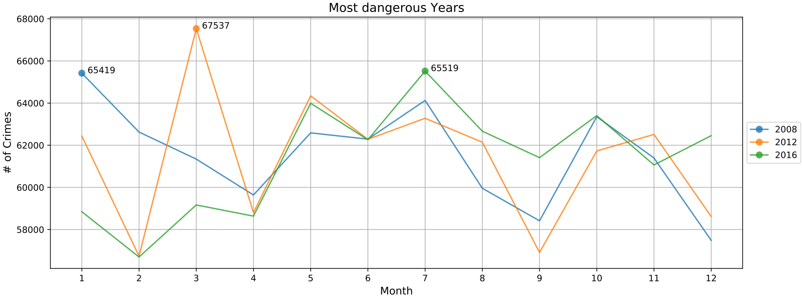


Figure: Crime's progress over the months

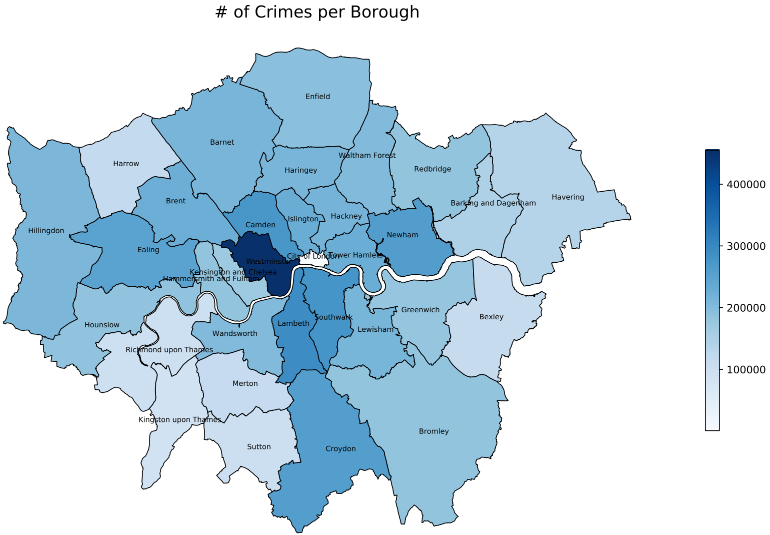
Most Dangerous Years



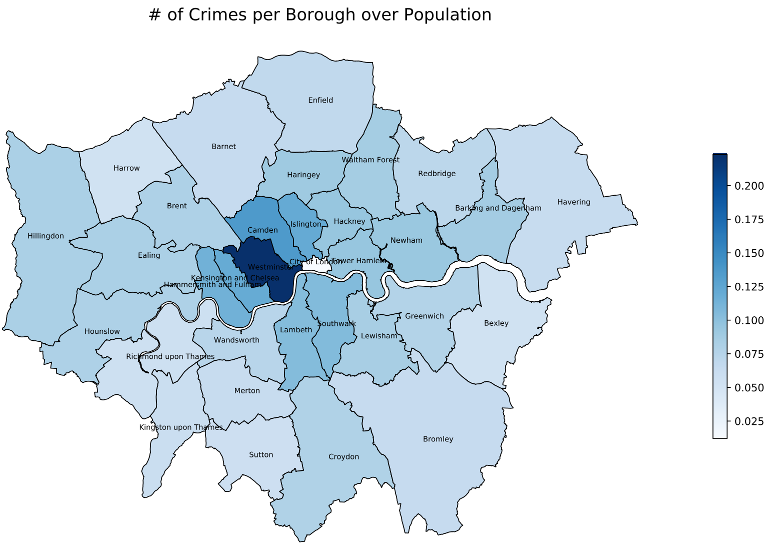
Categorical Variables' Analysis

- **borough** has 33 unique values, of which Lambeth is the most frequent, appearing in the 4.47% of the cropped dataset's records;
- **major_category** has 9 unique values, of which Theft and Handling is the most frequent, appearing in the 33.25% of the cropped dataset's records;
- **year** has 9 unique values, of which 2016 is the most frequent, appearing in the 11.45% of the cropped dataset's records;
- **month** has 12 unique values, of which 7 is the most frequent, appearing in the 8.66% of the cropped dataset's records;

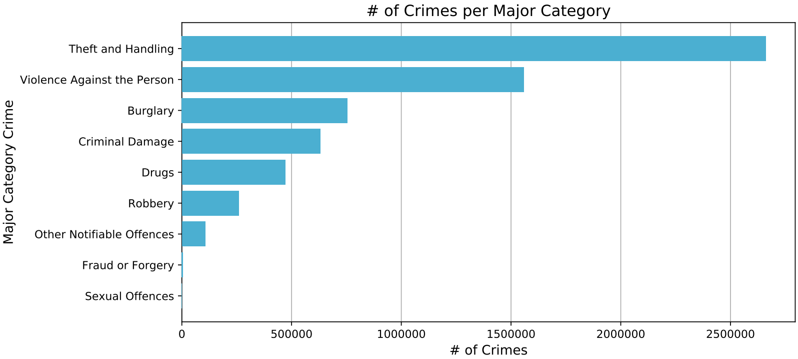
Crimes per Borough



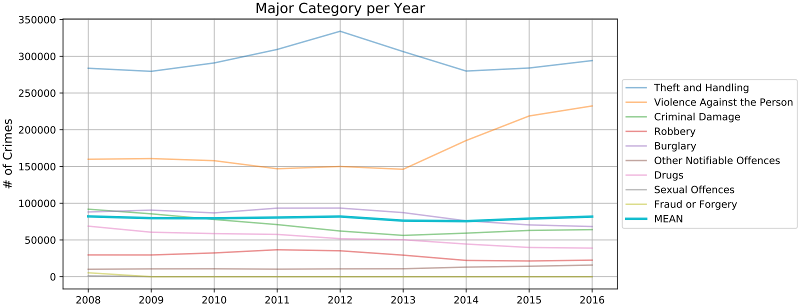
Crimes per Borough over Population Density



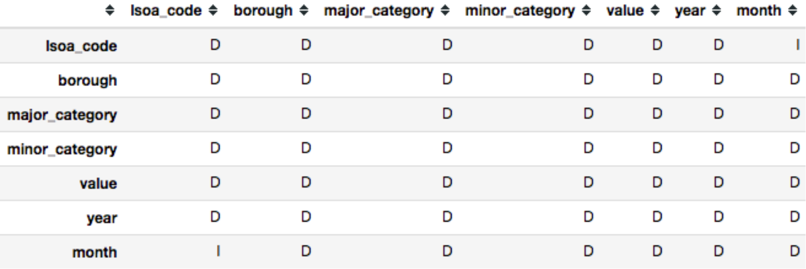
Crimes per Major Category



Major Category Crimes per Year



Correlation Analysis



	lsoa_code	borough	major_category	minor_category	value	year	month
lsoa_code	D	D	D	D	D	D	I
borough	D	D	D	D	D	D	D
major_category	D	D	D	D	D	D	D
minor_category	D	D	D	D	D	D	D
value	D	D	D	D	D	D	D
year	D	D	D	D	D	D	D
month	I	D	D	D	D	D	D