1 Summary

Are housing prices affected by neighborhood crimes in London? I use housing data[1] and crime data[2] from Kaggle to answer this question. The housing data contains average housing prices and number of houses sold in each borough per month. The crime data contains the number of crimes committed for several categories, though, in the analysis I aggregate all crimes over all categories. To get an idea of the data, figures 1 and 2 show a heat map at December 2016 of the housing prices and the crimes committed in London respectively.

Figure 1: Housing Prices in London

This figure plots a map of London along with the housing prices in each borough at December 2016.

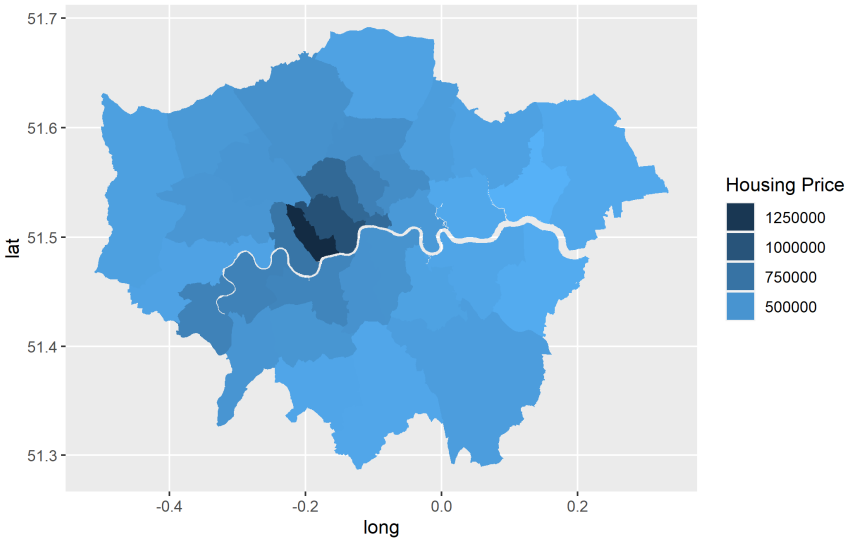
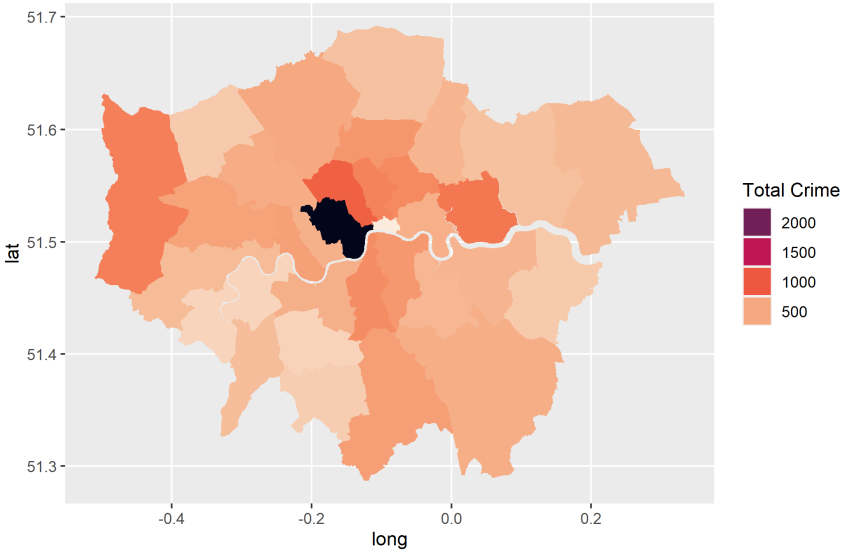


Figure 2: Crimes in London

This figure plots a map of London along with the total crimes in each borough at December 2016.



[1] https://www.kaggle.com/justinas/housing-in-london
[2] https://www.kaggle.com/LondonDataStore/london-crime

I employ the following regression model to examine the effect of crimes on housing prices:

$$HousePrice_{i,t} = \beta_0 + \beta_1 TotalCrime_{i,t-1} + \varepsilon_{i,t}, \tag{1}$$

$$HousesSold_{i,t} = \beta_0 + \beta_1 TotalCrime_{i,t-1} + \varepsilon_{i,t}, \tag{2}$$

The independent variables $HousePrice_{i,t}$ and $HousesSold_{i,t}$ are, respectively, the average house price and the number of houses sold in borough i at month t. The dependent variable $TotalCrime_{i,t-1}$ is the lagged total crime committed in borough i. The regression models include both borough fixed effects and time fixed effects. This controls for unobserved borough specific variables such as differences in population and trends over time.

The results in Table 1 show a significant negative relation between crimes and house price. An increase of 1 committed crime is associated with roughly 70 pounds decrease in average house price in the borough. This is quite an economically significant effect size considering that the normal variation in total crime as indicated by the standard deviation is 427 which is associated with roughly $30,000$ pounds lower average house price. Furthermore, there is a positive relation between crime and number of houses sold. This is likely due to houses being cheaper when there is more crime in the borough. These analyses still suffer from endogeneity concerns, for instance, it might be that lower housing prices attract more crime committing individuals to live in the borough. So these results do not necessarily show causality.

Table 1: The Effect of Crime on Housing Prices

This table presents OLS regression results of the following models using a sample of housing prices in London over the period from January 2008 until December 2016:

$$HousePrice_{i,t} = \beta_0 + \beta_1 TotalCrime_{i,t-1} + \varepsilon_{i,t},$$

$$HousesSold_{i,t} = \beta_0 + \beta_1 TotalCrime_{i,t-1} + \varepsilon_{i,t},$$

where $HousePrice_{i,t}$ and $HousesSold_{i,t}$ are, respectively, the average housing price and the number of houses sold in borough i at month t. The $TotalCrime_{i,t-1}$ is the lagged total crime committed in borough i. The standard errors are shown in parentheses.

	(1)	(2)
	Housing Price	Houses Sold
Total Crime	-69.623***	0.052***
	(7.926)	(0.007)
Observations	3,531	3531
R^2	0.990	0.977
Borough Fixed Effects	Y	Y
Time Fixed Effects	Y	Y

***, ** and * show significance at the 1%, 5% and 10% level respectively.