Crime Analytics: Visualization of Incident Reports

September 19, 2016

1 Introduction

In this assignment we study the crime incident data set for the city of Seattle in the summer of 2014. Two types of questions are studied and answered. First, we study the temporal patterns of the incidents, i.e. we answered "How do incidents vary by time of day and month to month?" Second, we study the geographical pattern of the crime incidents. Specifically, we answered "How do incidents vary by neighborhood?"

2 Temporal pattern of Seattle crime incidents

2.1 Daily crime incidents pattern

It is observed that midnight and noon are two peaks of crime incidents (see Fig. 1). It is also found that 4am - 6am has the fewest incidents. This is probably because criminals need to rest too. By analyzing the data of robbery incidents, we find that robberies are most common around midnight and during 9pm - 11pm. Robberies are least common in the morning around 7am. (see Fig. 2)

2.2 Monthly crime incidents

In Seattle, the crime incidents did not change much during Summer 2014. As you can see from Fig. 3, June and July had similar number of crime incidents around 11000, while August had a little smaller number of incidents, about 9000.

3 Geographical pattern of Seattle crime incidents

How crime incidents and theft incidents vary by neighborhood is summarized in thermal maps (see Fig. 4 and Fig. 5). For general crimes, the top 5 neighborhoods with most incidents are **Central Business District, Broadway, Belltown, University District** and **Pioneer Square**. The top 5 neighborhoods with most theft incidents are **Broadway, University District, Greenwood,**
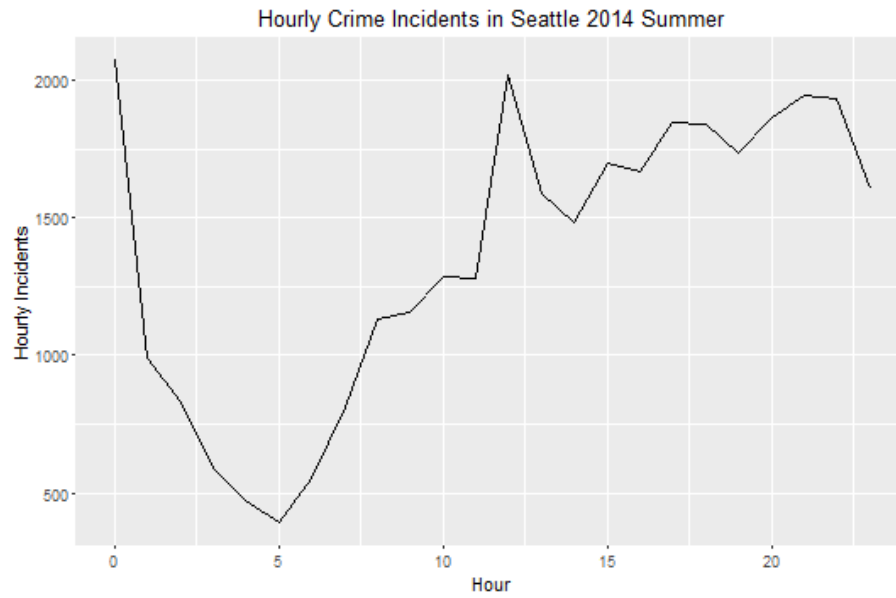
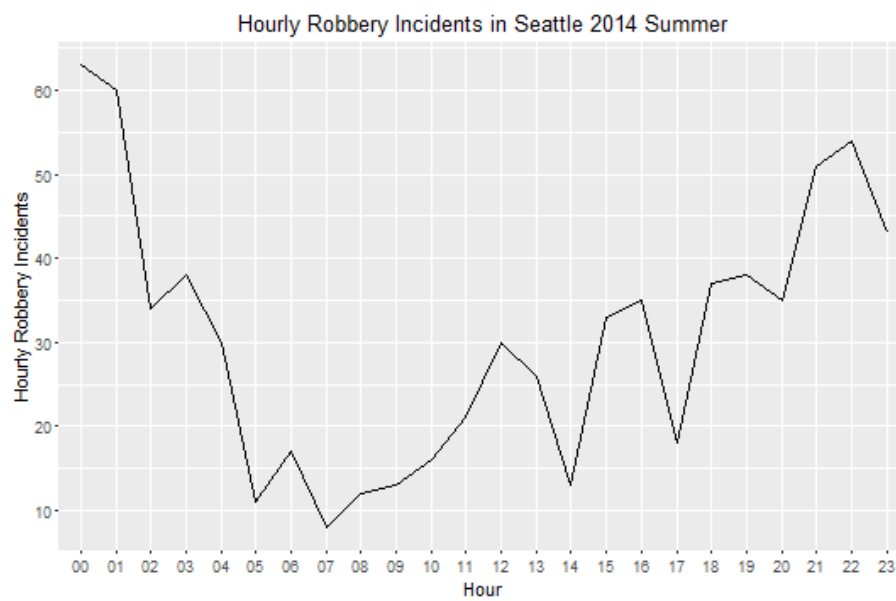Figure 1: Hourly Crime Incidents in the Summer of 2014, Seattle.

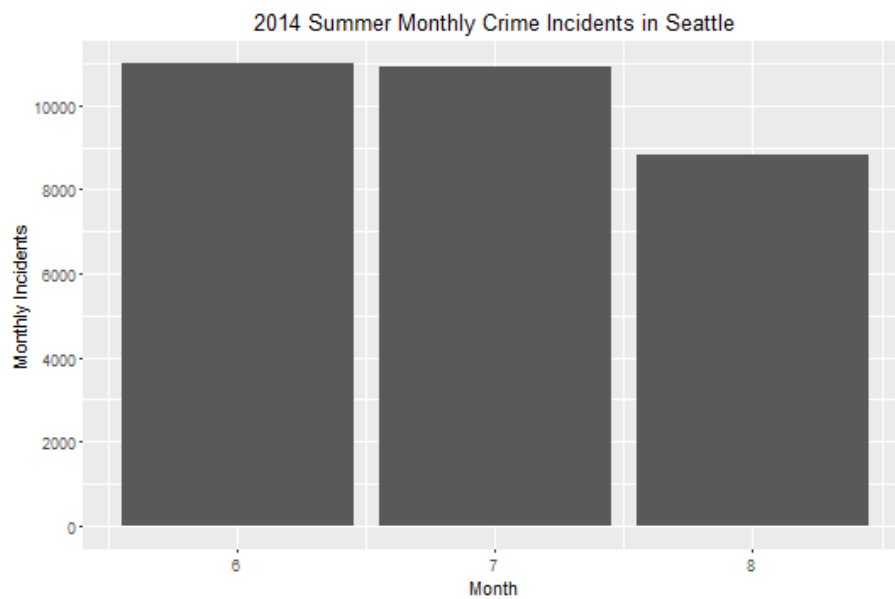Figure 2: Hourly Robbery Incidents in the Summer of 2014, Seattle.

Figure 3: Monthly Crime Incidents in the Summer of 2014, Seattle.

Wallingford and **Fremont**. Note that Central Business District, Belltown and Pioneer Square belong to the Downtown area and Broadway belongs to the Capitol Hill area. Thus we can conclude that Downtown, Capitol Hill and University District are the top 3 areas with most crime incidents in Seattle. And Capitol Hill and University District are cradle of thefts.
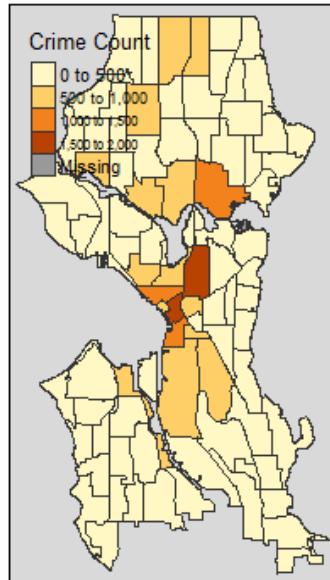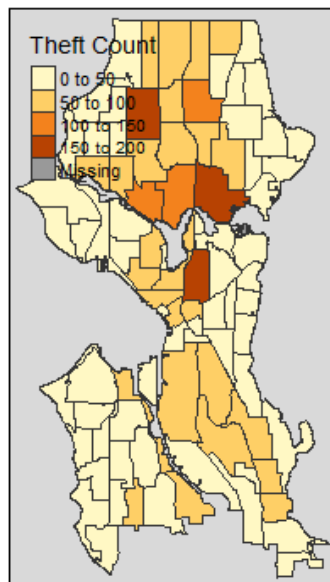
Figure 4: Crime Incidents Thermal Map.

Figure 5: Theft Incidents Thermal Map.