Crime rates changes as a function of time

Introduction

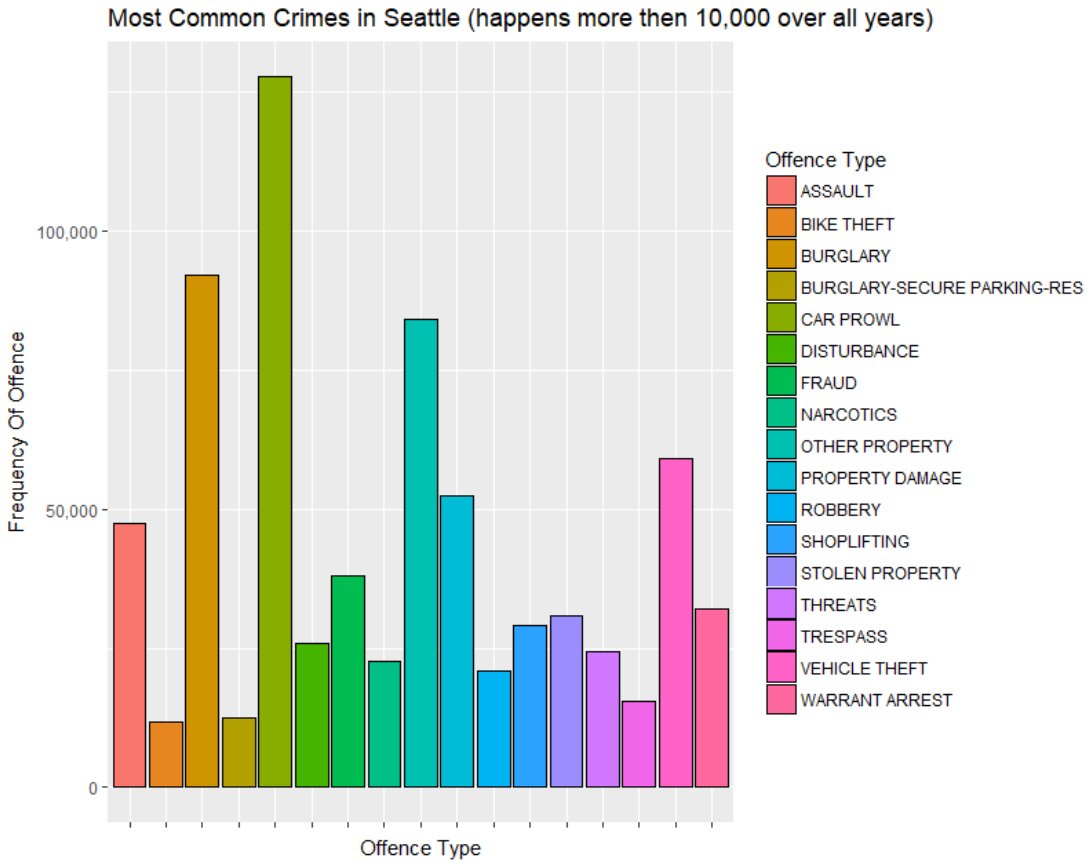
In this report I have analyzed the crime records of the city of Seattle (downloaded from: https://data.seattle.gov/Public-Safety/Seattle-Police-Department-Police-Report-Incident/7ais-f98f) , using the R software. The report is concerned with the visualization of data, with an emphasis on questions that might interest a man who wishes to gain some basic (and shallow) understanding of the crime scene of the city. I included all the code that is required to re-make the visualizations presented here in additional R file.

The questions which I shell strive to answer are the following:

1) What are the most popular crimes in Seattle?
2) How does the number of offences change over the daily hours?
3) How does the number of offences change by the years?

Main results

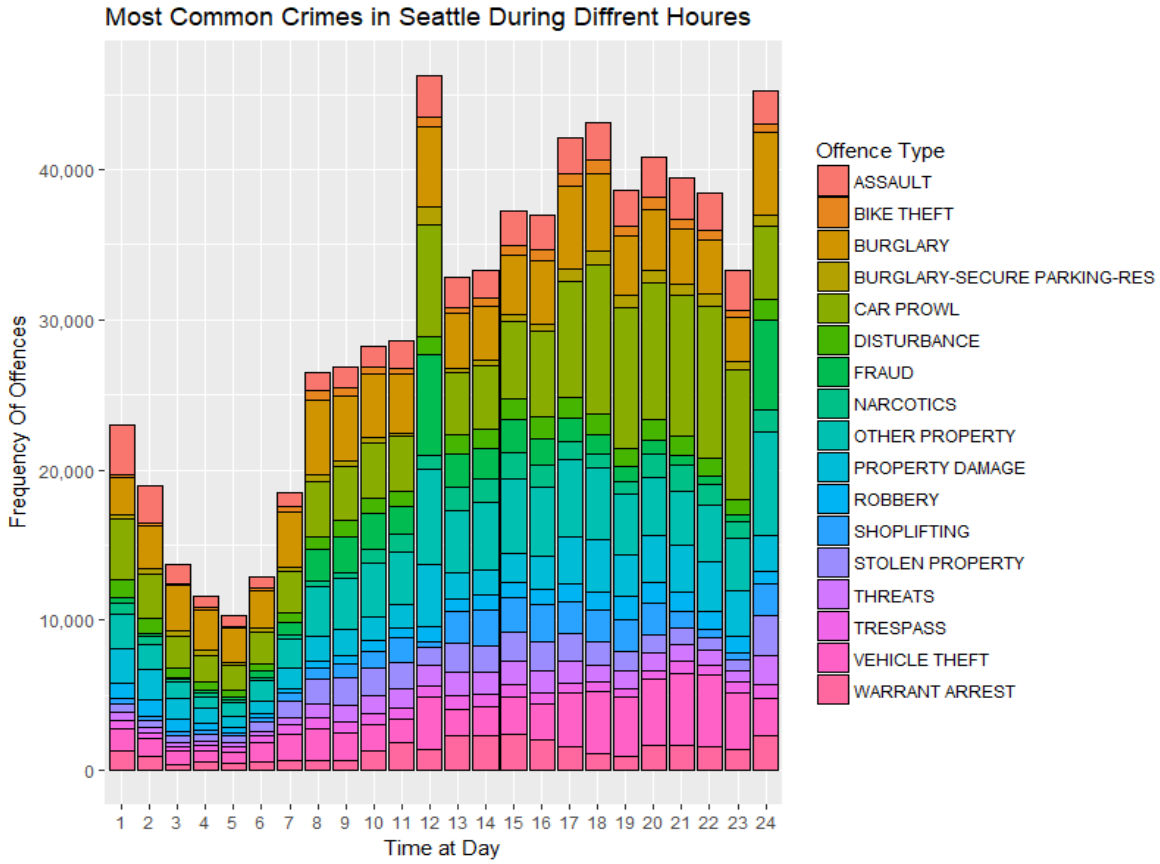
What are the most popular crimes in Seattle?



Interpretation: the five most dominant offences committed in Seattle are car prowl**,** Burglary, other property offenses, vehicle theft and property damage. It seems the most

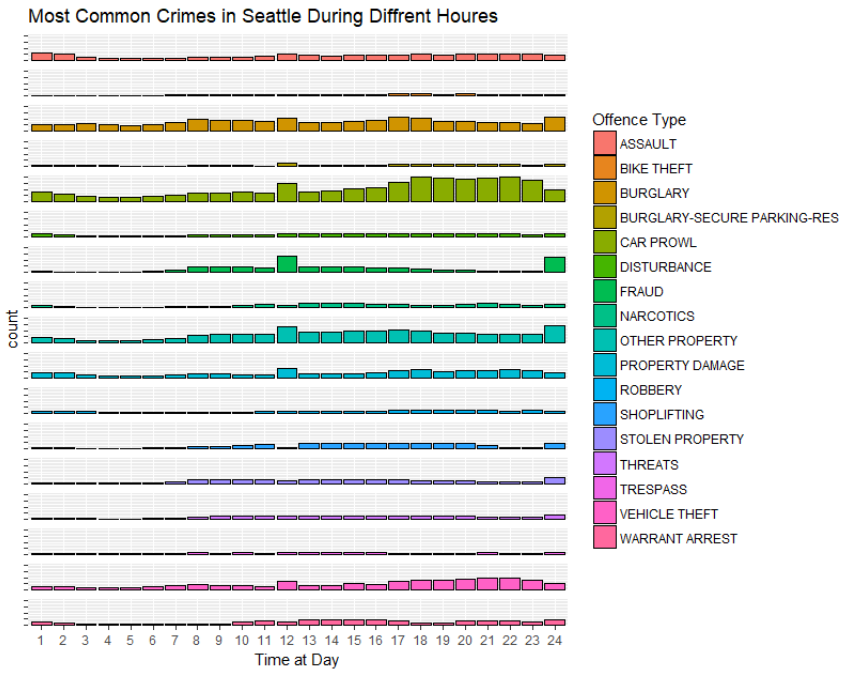
common offenses involve static property which is left unattended. Those types of offenses involve **less** physical contact and therefore, reduce the chance of being caught.

How does the number of offences change over the daily hours?



Interpretation: Crime frequency changes over daily hours in harmonic way, probably in correlation with normal daily activity. Crime rates are lowest at 5 A.M and peak at 6 P.M. In addition, there are two peculiar "jumps" at crime rate both at 12 A.M and 12 P.M. From this graph it is difficult to notice however what crimes are contributing to those peaks. To better interpret the results I layered the offences in the following graph.

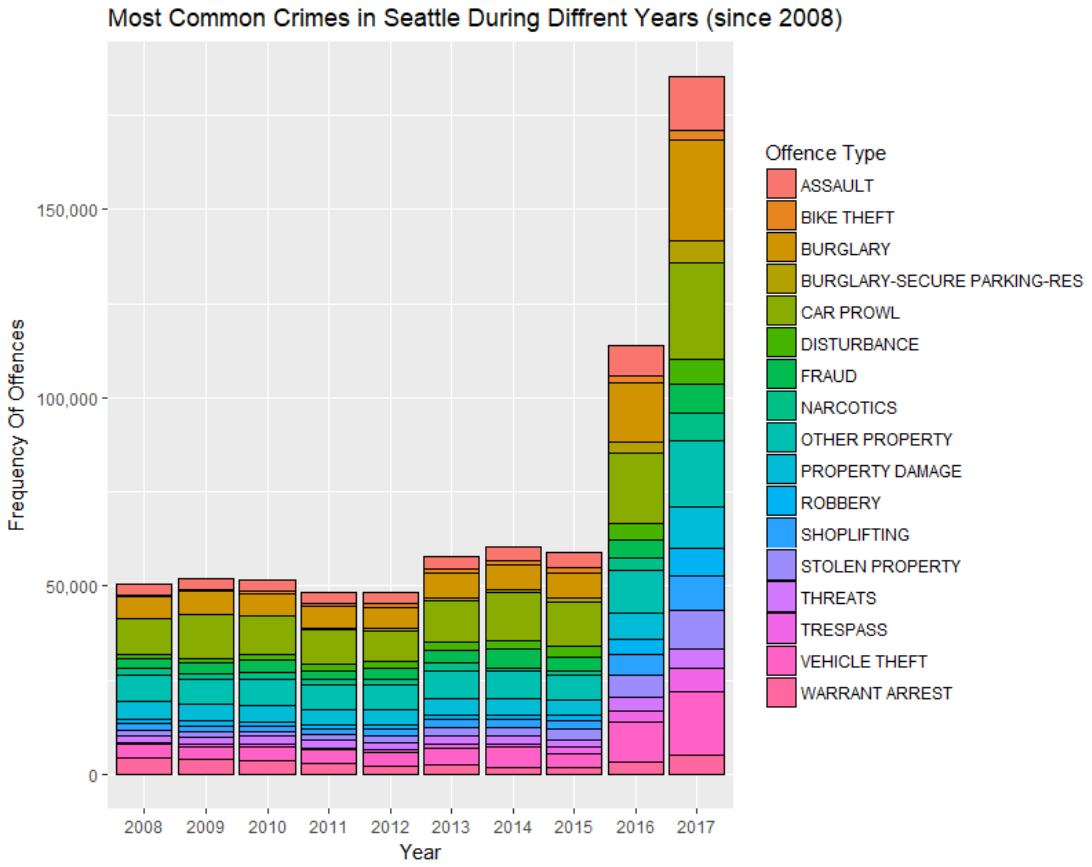
Communicating analysis results



Interpretation: The crimes which contribute most to the odd peaks at 12 a.m.\ p.m. are "disturbance", "burglary", "car prowl", "other property", "property damage" and "vehicle theft". This pattern surprises me and I have no solid theory why 12 is the hour of crime. I believe the answer might emerge from cognitive "representation bias", in which 12 might be more memorable hour that tends to pop up in people minds more, and in criminal minds as well. In any case, this graph and the previous one may help the local police arrange the shifts in accordance to crime rate.

How does the number of offences change by the years?

Communicating analysis results



Interpretation: on first impression it seems the crime rates are growing rapidly since 2016. However, another interpretation is that public confidence in the workers of law increased, resulting in more complaints to the police, complaints that in previous years were never reported.