In Seattle Burglary is the most common uniformly distributed incident type across the city, and most common incident type is Car Prowl localized at the city center.

1. The Code:

The Summer 2014 data for Seattle Incidents is analyzed using R to compare top 3 incident types. First data is pulled into a data frame and top 3 occurrences were identified by sorting the data.
Input:

```
se_df<-read.csv("seattle_incidents_summer_2014.csv", stringsAsFactors = FALSE)
str(se_df)
sort(summary((as.factor(se_df$Summarized.Offense.Description))), decreasing = TRUE)[1:3]
se_df_t1<-subset(se_df, se_df$Summarized.Offense.Description=="CAR PROWL")
se_df_t2<-subset(se_df, se_df$Summarized.Offense.Description=="OTHER PROPERTY")
se_df_t3<-subset(se_df, se_df$Summarized.Offense.Description=="BURGLARY")
```

Top 3 incidents are identified as:

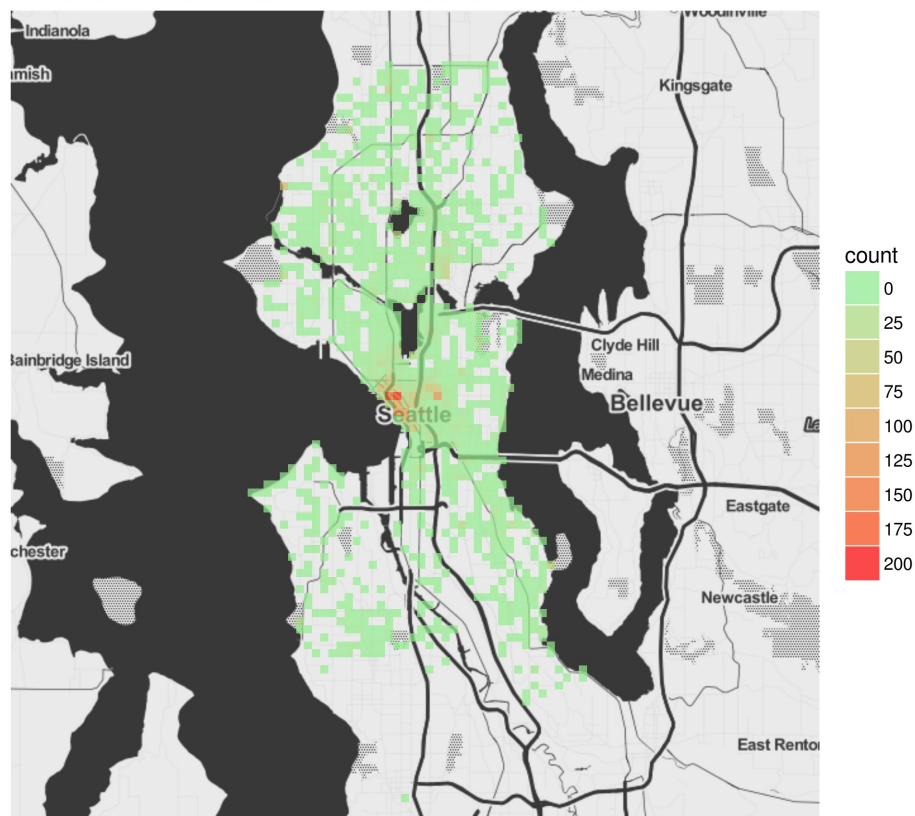|	
CAR PROWL	6230
OTHER PROPERTY	3755
BURGLARY	3212

The map of Seattle is pulled using ggmap package. The map is as shown below:

```
library(ggmap)
mapofseattle <- qmap("seattle", zoom = 11, source="stamen", maptype="toner",darken =
c(.3,"#BBBBBB"))
print(mapofseattle)
```

Then the ggplot2 library is used to plot all occurrences in summer and a 2d binned distribution of top 3 incidents on the map to show how the incidents are distributed over the city. 2d analysis provides the binned count of incidents by location through a color coded legend.

```
library(ggplot2)
gen_inc_se <- mapofseattle+ geom_point(data=se_df, aes(x=Longitude, y=Latitude), color="dark red", alpha=.03,
size=1.1)
gen_inc_se<-gen_inc_se+ggtitle("Summer 2014 Seattle Crime Statistics")
print(gen_inc_se)

t1_inc_se<-mapofseattle+geom_tile()+geom_bin2d(data=se_df_t1, aes(x=Longitude, y=Latitude), alpha=0.7,
bins=100)
t1_inc_se<-t1_inc_se+scale_fill_gradient(low="light green", high="red", limits=c(0, 200), breaks=c(0, 25, 50, 75,
100,125, 150, 175, 200), guide="legend")
t1_inc_se<-t1_inc_se+ggtitle("Summer 2014 Seattle Crime Statistics TOP-3: #1 CAR PROWL")
print(t1_inc_se)
t2_inc_se<-mapofseattle+geom_tile()+geom_bin2d(data=se_df_t2, aes(x=Longitude, y=Latitude), alpha=0.7,
bins=100)
t2_inc_se<-t2_inc_se+scale_fill_gradient(low="light green", high="red", limits=c(0, 125), breaks=c(0, 25, 50, 75,
100, 125), guide="legend")
t2_inc_se<-t2_inc_se+ggtitle("Summer 2014 Seattle Crime Statistics TOP-3: #2 OTHER PROPERTY")
print(t2_inc_se)

t3_inc_se<-mapofseattle+geom_tile()+geom_bin2d(data=se_df_t3, aes(x=Longitude, y=Latitude), alpha=0.7,
bins=100)
t3_inc_se<-t3_inc_se+scale_fill_gradient(low="light green", high="red", limits=c(0, 30), breaks=c(0, 10, 20, 30),
guide="legend")
t3_inc_se<-t3_inc_se+ggtitle("Summer 2014 Seattle Crime Statistics TOP-3: #3 BURGLARY")
print(t3_inc_se)
```

2. Analysis and Data Visualization

Distributions of all types of incidents over the city are shown below. Most of the incidents happen at the city center and along major roads. There are some regions where incidents are localized across the city. Northern side of the city has more incidents occurring than the southern side with much denser hot spots.

Summer 2014 Seattle Crime Statistics

The highest number of occurrence is the Car Prowl incidents across the city. The binned distribution over the citys is as shown below. A majority of these incidents happen in the city

Summer 2014 Seattle Crime Statistics TOP-3: #1 CAR PROWL

center rather than the surrounding areas. The number of incidents do not exceed more than 200 incidents per bin. There are some hot spots on teh northern side with 50-100 incidents per bin. Southern side has less incidents reported, which may be indication of a sparse population density.

Second highest incident was Other Property, which also localizes in the city center. This type of incident was half as common compared to Car Prowl incidents. The northers side shows hot spots and southern side is clean. The hot spots for both car prowl and other property incidents overlap in the city center and northern side, suggesting that car prowl incidents may be associated or followed by Other Property incidents in the city.

Summer 2014 Seattle Crime Statistics TOP-3: #2 OTHER PROPERTY

Third highest occurring incidence was burglary. This type of incident was more distributed across the city with maximum occurrence per bin as low as 30. The northern and southern side have both incidence occurring, and incidents seem to be uniformly distributed across the city. This distribution contradicts with highest occurring top two incident types despite burglary being as common as other property, which are localized in the city center and same hot spot locations on the northern side of the city.

Summer 2014 Seattle Crime Statistics TOP-3: #3 BURGLARY