GGmapPractice

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I have zero experience working with plotting geospatial data using R, all of my experience has been arcGIS. Decided to try and learn something new and get some practice with ggmap. Took me a while to get the API key figured out but it appears I got it all working. I used a tutorial on datacamp to walk me through the basics. The housing sales data used in this tutorial was not offered by datacamp to download, only to be used on their website, luckily I found it elsewhere and was able to work remotely in my Rstudio. While going through the tutorial, I branched off and started trying things on my own. I took what I learned going through the tutorial and applied it to Ridgeway's rail occurrence data I found on GBIF.org. Given the large amount of data, I narrowed the occurrences down to the start of 2019 through the end of 2020 and only looking at those found in Mexico.

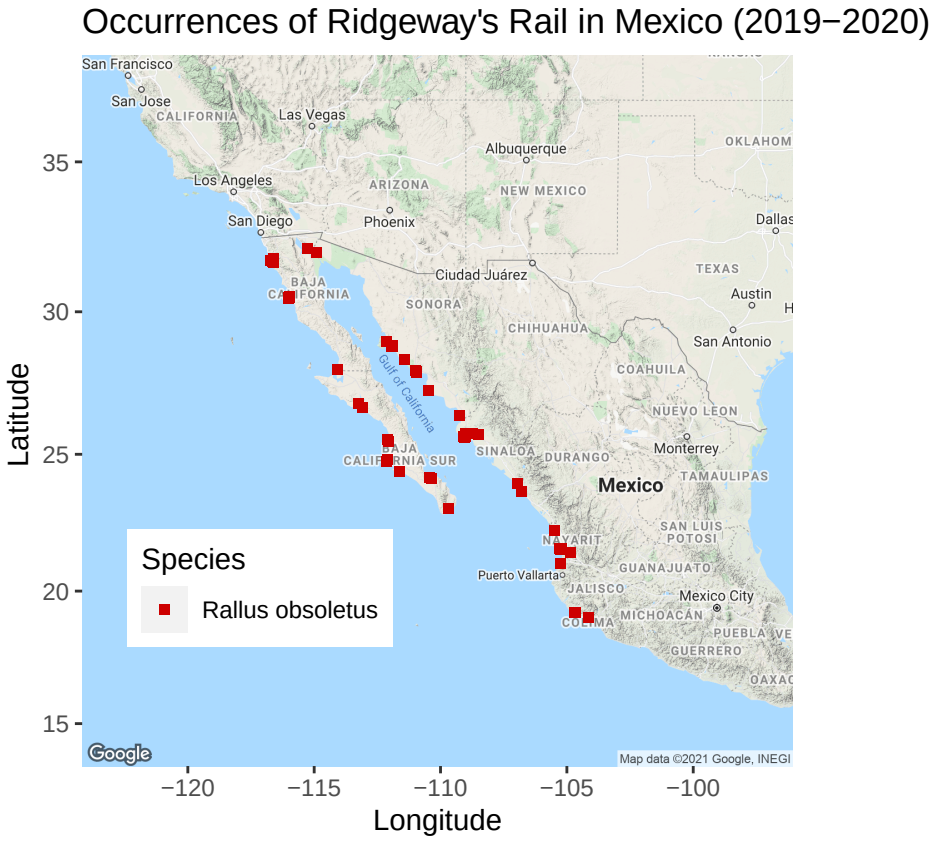
```
#ggmap tutorial
#setwd
setwd("C:/Users/frank/OneDrive/Desktop/R CSVs")

#packages


library(lubridate)
library(ggplot2)
library(dplyr)
library(data.table)
library(ggrepel)
library(tidyverse)
library(ggmap)

#ggmap API
ggmap::register_google(key = "AIzaSyDrZeidnROxWzEmn4rBn87fCXWqWLAt3QI")

#load sales data
sales = readRDS("01_corv_sales.rds")
```

Using Ridgeway's Rail Data and ggmap

```
#Trying with new Ridgeway's Rail data
setwd("C:/Users/frank/OneDrive/Desktop/R CSVs")
rr<-read.csv("Ridgeway'sRail.csv", fileEncoding="UTF-8-BOM")

mexico <- c(lon = -110.1400, lat = 26.57390) #create mexico coordinates
mex.map<-get_map(mexico, zoom = 5, maptype = "terrain")
```

```
## Source : https://maps.googleapis.com/maps/api/staticmap?center=26.5739,-110.14&zoom=5&size=640x640&s
```

```
ggmap(mex.map)+
  geom_point(aes(Log, Lat, color=Species), data = rr, shape=15)+
  xlab(expression(paste("Longitude"))) +
  ylab(expression(paste("Latitude "))+
  ggtitle("Occurrences of Ridgeway's Rail in Mexico (2019-2020)")+
  scale_color_manual(values=c("red3"))+
  theme(strip.text.x = element_blank(),
      strip.background = element_rect(colour="white", fill="white"),
      legend.position=c(.25,.25))
```



Doing the same thing without ggmap

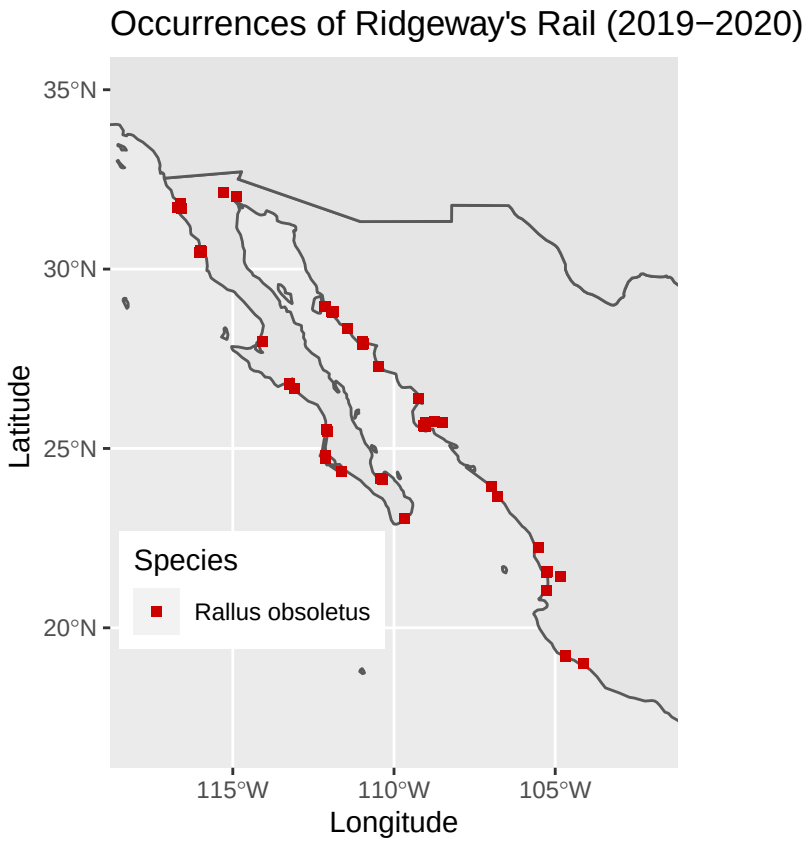
```
library("rnaturalearth")
library("rnaturalearthdata")

world <- ne_countries(scale = "medium", returnclass = "sf")
class(world)
```

```
## [1] "sf"         "data.frame"
```

```
(sites <- data.frame(longitude = c(-80.144005, -80.109), latitude = c(26.479005,
                                                                      26.83)))
```

```
##   longitude latitude
## 1 -80.14401 26.47901
## 2 -80.10900 26.83000
```

```
ggplot(data = world) +
  geom_sf() +
  coord_sf(xlim = c(-118, -102), ylim = c(17, 35), expand = TRUE)+
  geom_point(aes(Log, Lat, color=Species), data = rr, shape=15)+
  xlab(expression(paste("Longitude"))) +
  ylab(expression(paste("Latitude "))+
  ggtitle("Occurrences of Ridgeway's Rail (2019-2020)")+
  scale_color_manual(values=c("red3"))+
  theme(strip.text.x = element_blank(),
        strip.background = element_rect(colour="white", fill="white"),
        legend.position=c(.25,.25))
```

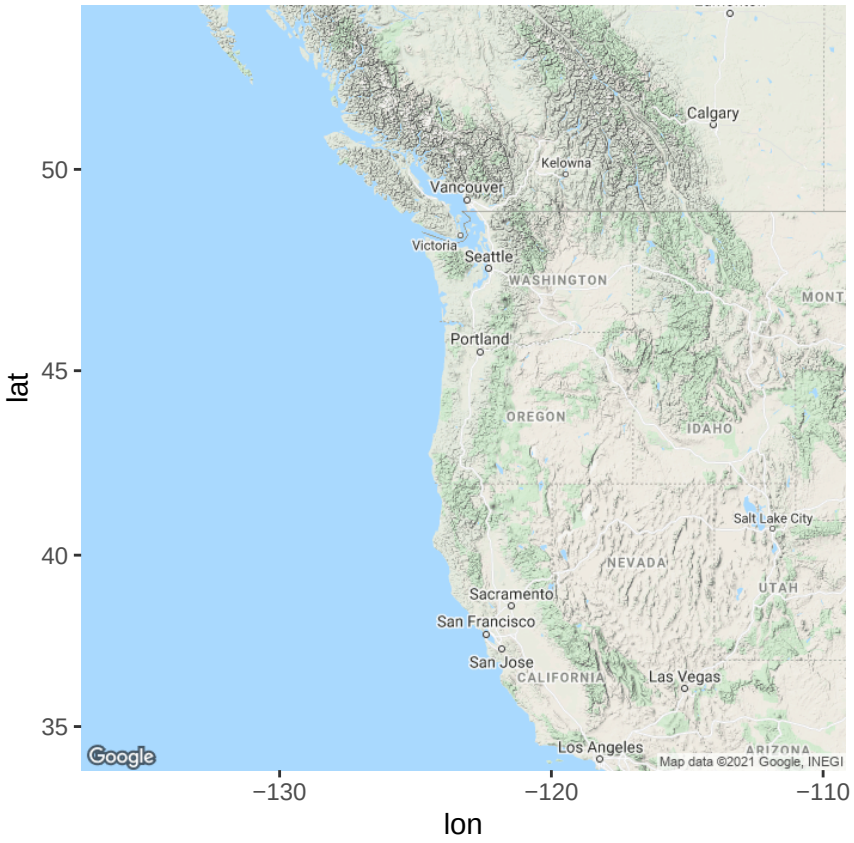


#Practice with Corvallis data

```
#Practice with Corvallis data
corvallis <- c(lon = -123.2620, lat = 44.5646) #create corvallis coordinates
map_5<-get_map(corvallis, zoom = 5, scale = 1) # set up get_map with 5 zoom
```

```
## Source : https://maps.googleapis.com/maps/api/staticmap?center=44.5646,-123.262&zoom=5&size=640x640&
```

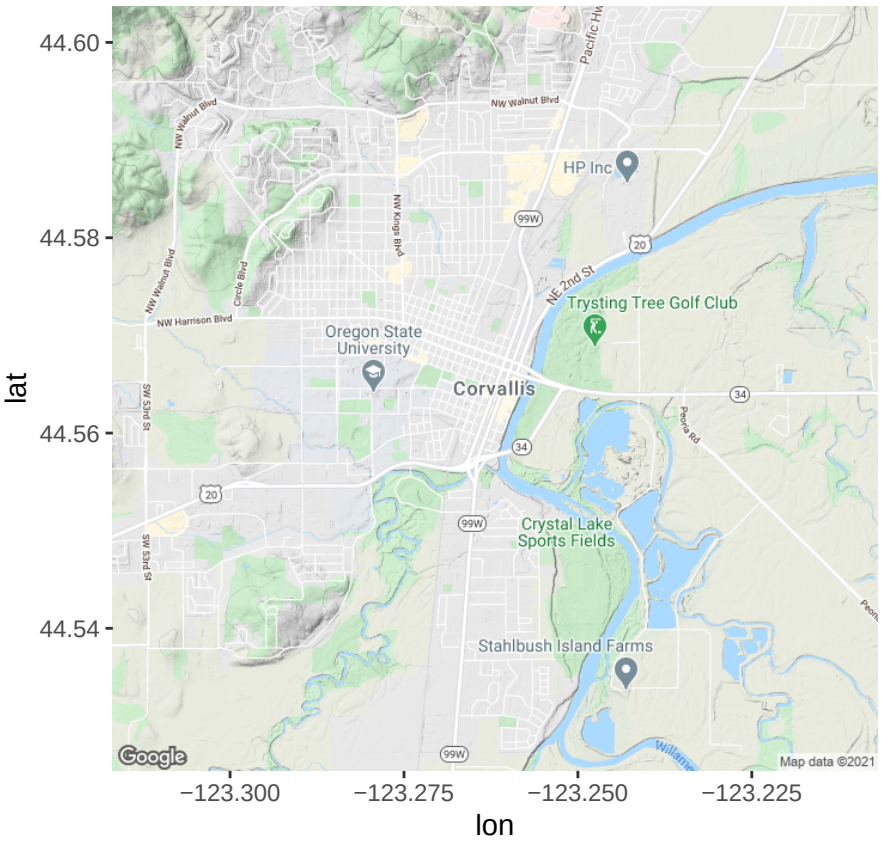
```
ggmap(map_5) #print
```



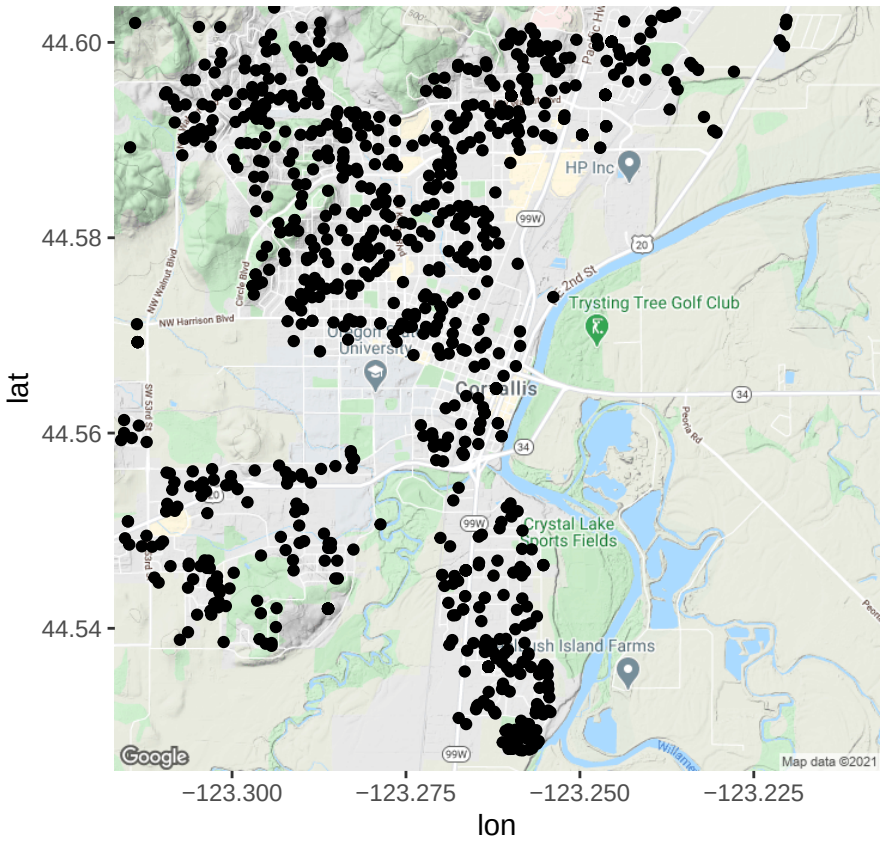

```
corvallis_map<-get_map(corvallis, zoom = 13, scale = 1) #change zoom to 13
```

```
## Source : https://maps.googleapis.com/maps/api/staticmap?center=44.5646,-123.262&zoom=13&size=640x640
```

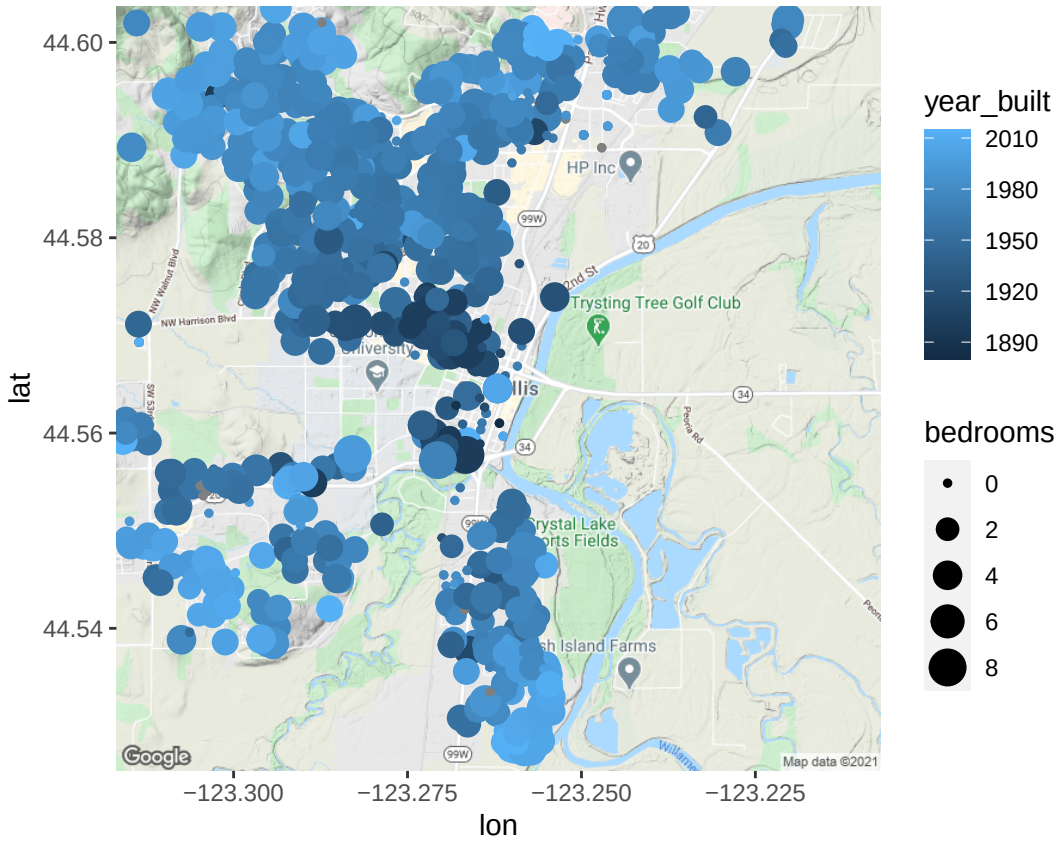
```
ggmap(corvallis_map)#print
```



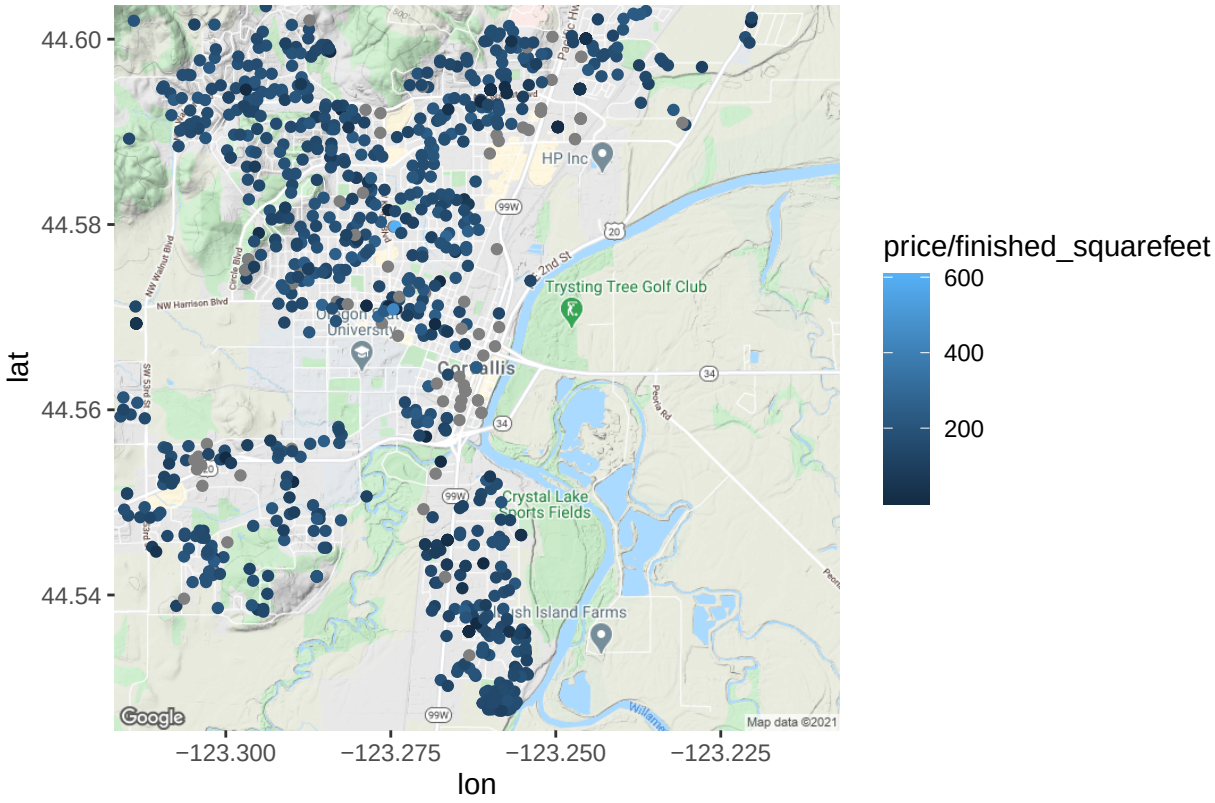

```
#print sales onto corvallis map
ggmap(corvallis_map) +
  geom_point(aes(lon, lat), data = sales)
```




```
#add color based on year built
ggmap(corvallis_map) +
  geom_point(aes(lon, lat, color=year_built, size = bedrooms), data = sales)
```



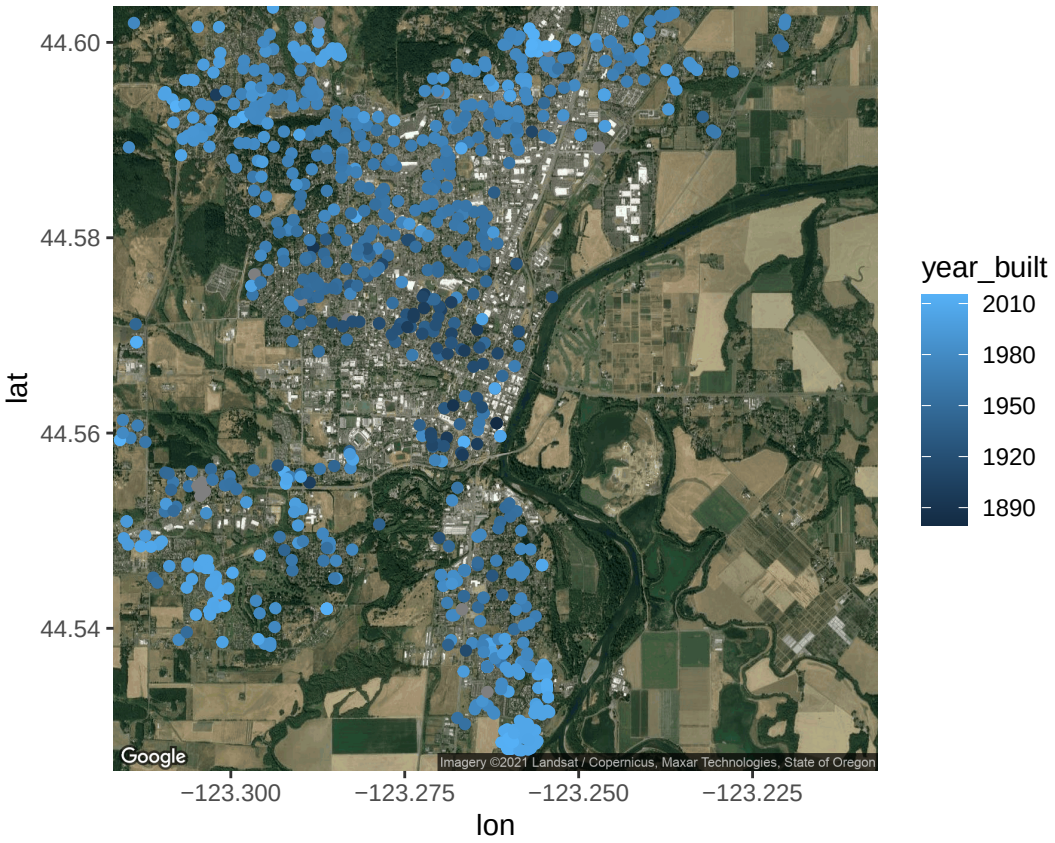

```
# map based on squarefootage
ggmap(corvallis_map) +
  geom_point(aes(lon, lat, color=price / finished_squarefeet), data = sales)
```




```
#display on satellite map
corvallis_map_sat <- get_map(corvallis, zoom = 13, maptype="satellite")
```

```
## Source : https://maps.googleapis.com/maps/api/staticmap?center=44.5646,-123.262&zoom=13&size=640x640
```

```
ggmap(corvallis_map_sat) +
    geom_point(aes(lon, lat, color = year_built), data = sales)
```

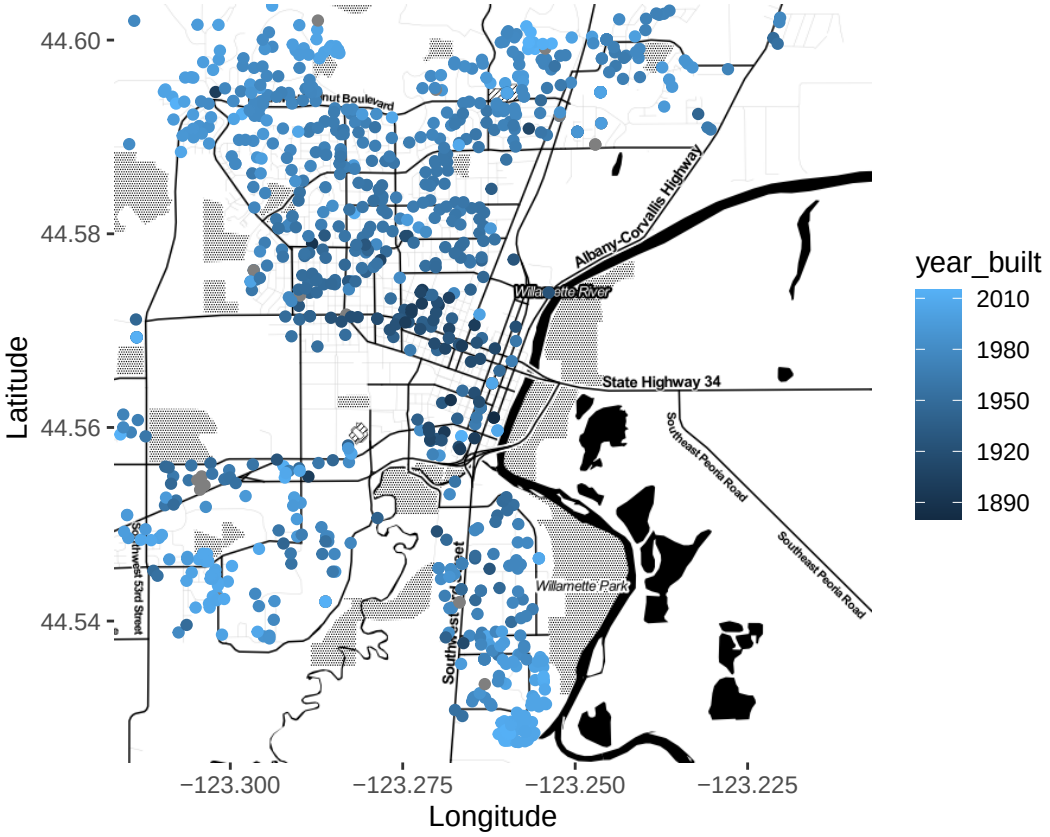



```
#display on terrain
corvallis_map_ton <- get_map(corvallis, zoom = 13, maptype="toner")
```

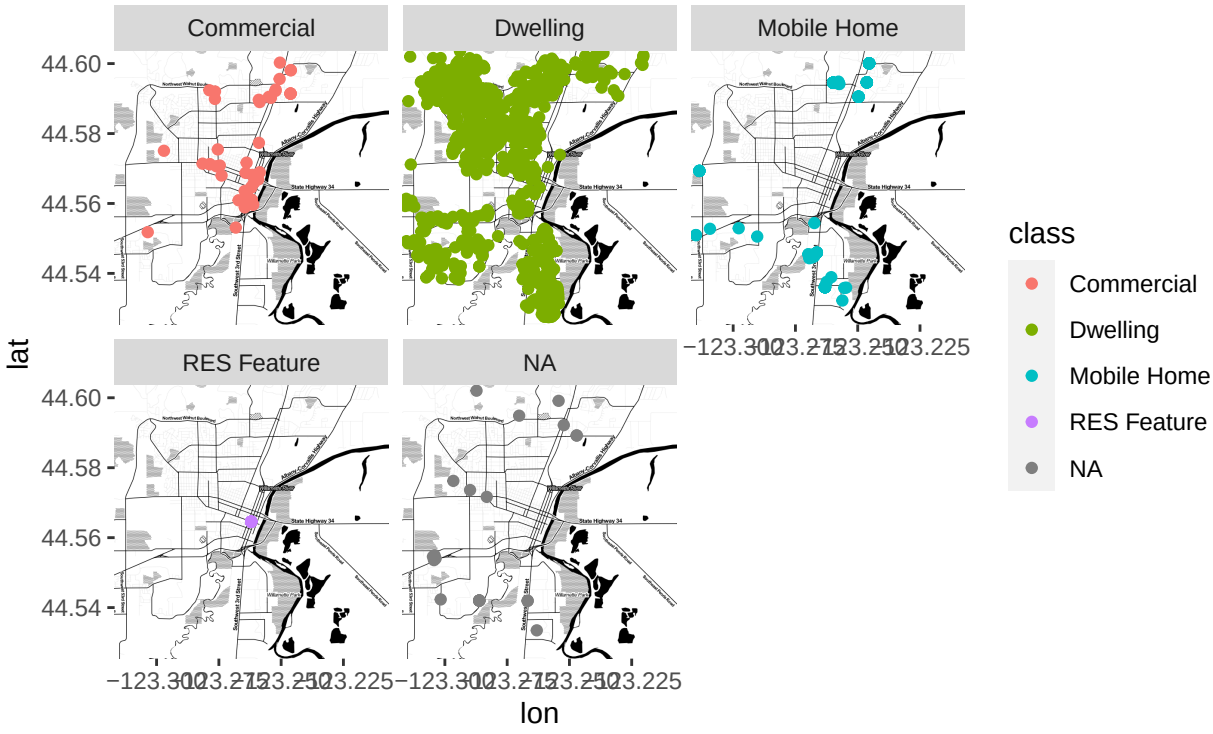
```
## maptype = "toner" is only available with source = "stamen".

## resetting to source = "stamen"...

## Source : https://maps.googleapis.com/maps/api/staticmap?center=44.5646,-123.262&zoom=13&size=640x640
```

```
## Map tiles by Stamen Design, under CC BY 3.0. Data by OpenStreetMap, under ODbL.
```

```
ggmap(corvallis_map_ton) +
  geom_point(aes(lon, lat, color = year_built), data = sales)+
  xlab(expression(paste("Longitude"))) +
  ylab(expression(paste("Latitude ")))
```

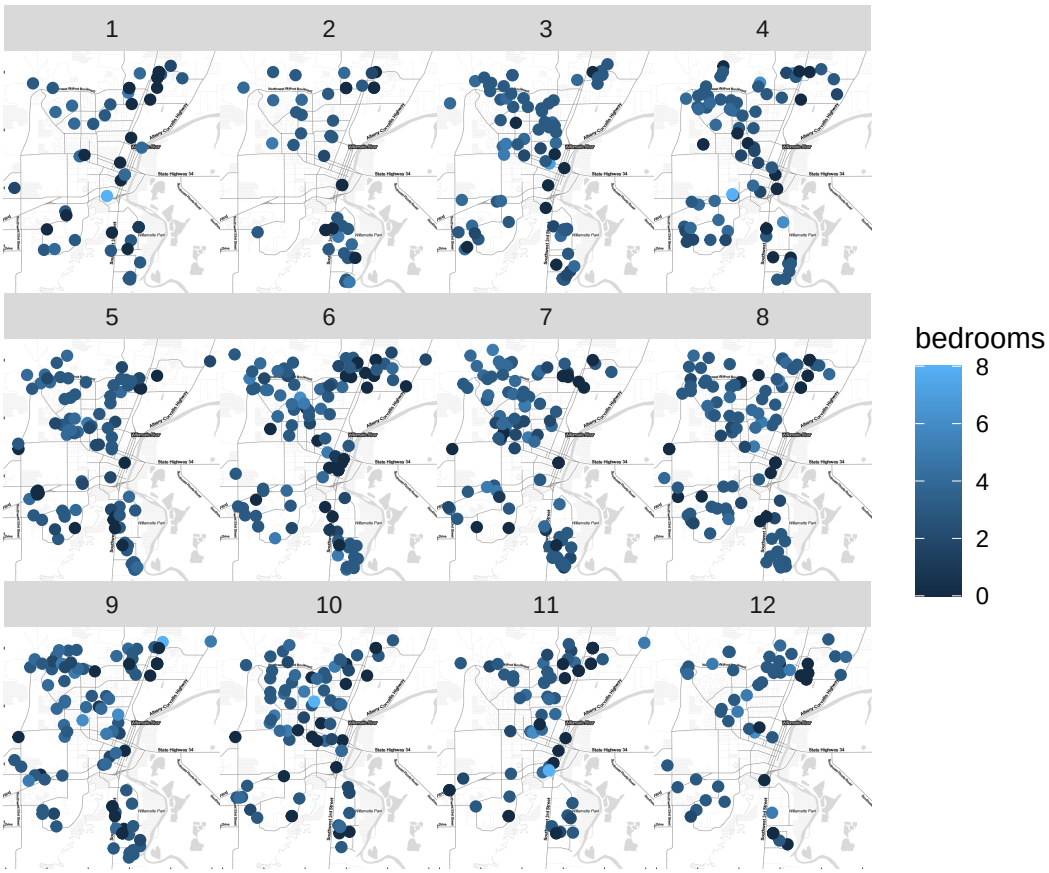



```
#add base_layer and facet_wrap
ggmap(corvallis_map_ton, base_layer = ggplot(sales, aes(lon, lat))) +
  geom_point(aes(color = class)) +
  facet_wrap(~ class)
```




```
#plot housing using qmplot() based on bedrooms and month
qmplot(lon, lat, data = sales,
       geom = "point", color = bedrooms) +
  facet_wrap(~ month)
```

```
## Using zoom = 13...
## Map tiles by Stamen Design, under CC BY 3.0. Data by OpenStreetMap, under ODbL.
```


1
2
3
4
5
6
7
8
9
10
11
12
bedrooms
8
6
4
2
0