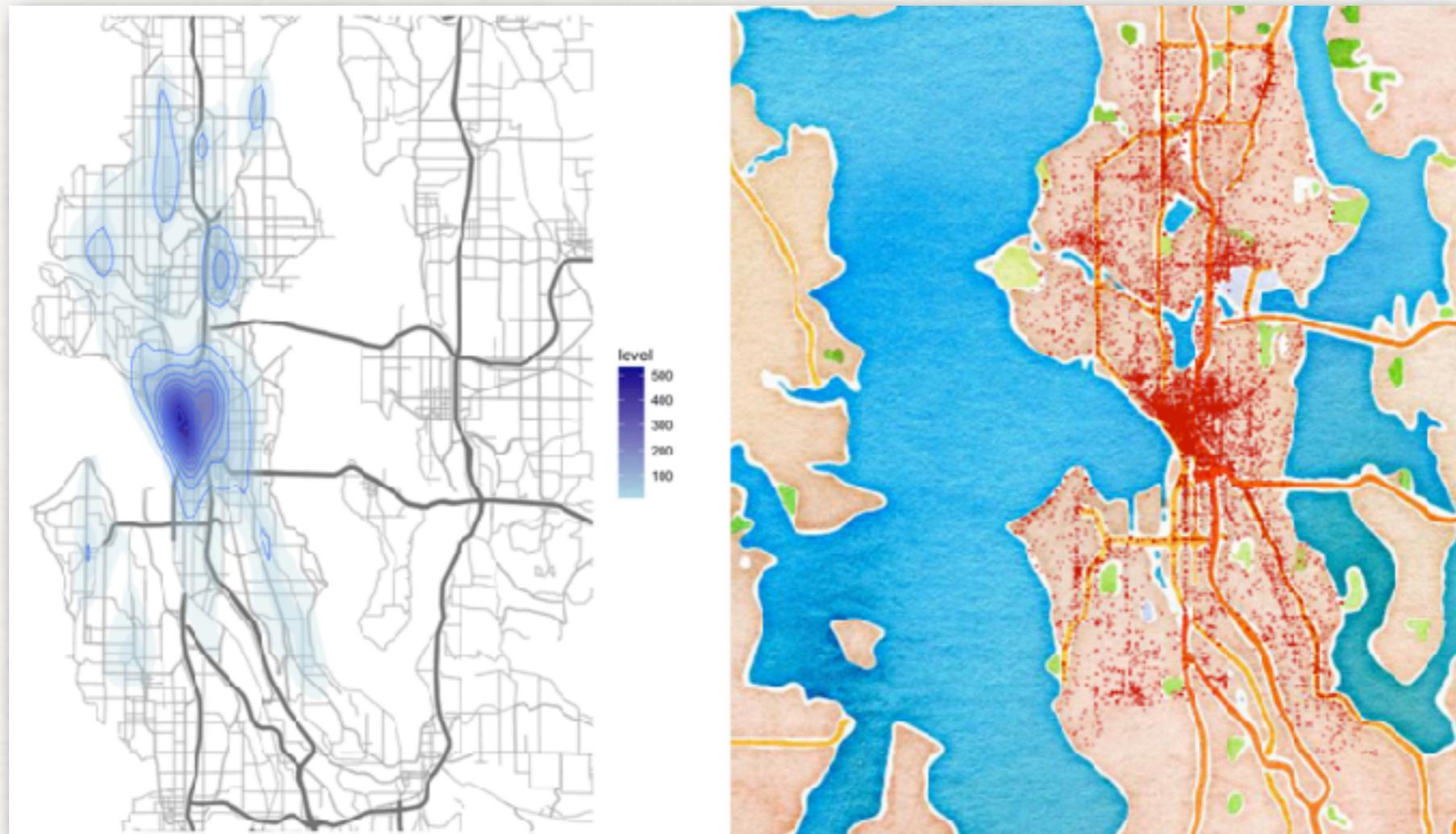


# GGMAP + GG PLOT2 = BEAUTIFUL MAPS



By: Laura Ellis ([littlemissdata.com](http://littlemissdata.com))

# THERE IS NO EXCUSE FOR A SAD GRAPH WITH R

— *All R Data Viz Junkies*

# DISCUSSION POINTS

- Get your map!
- Customize your map
- Take advantage of the ggplot2 bells and whistles
  - Add points with geom\_point
  - Density adjustment with geom\_point
  - Layering
  - Custom labels with geom\_label\_repel
  - Density plots with stat\_density2d and geom\_density2d
  - Highlight groups with facet\_wrap and highlighting
- Map Types
  - Google
  - Stamen

# SEATTLE 911 DATA

FROM [DATA.GOV](#) - US GOVERNMENTS OPEN DATA

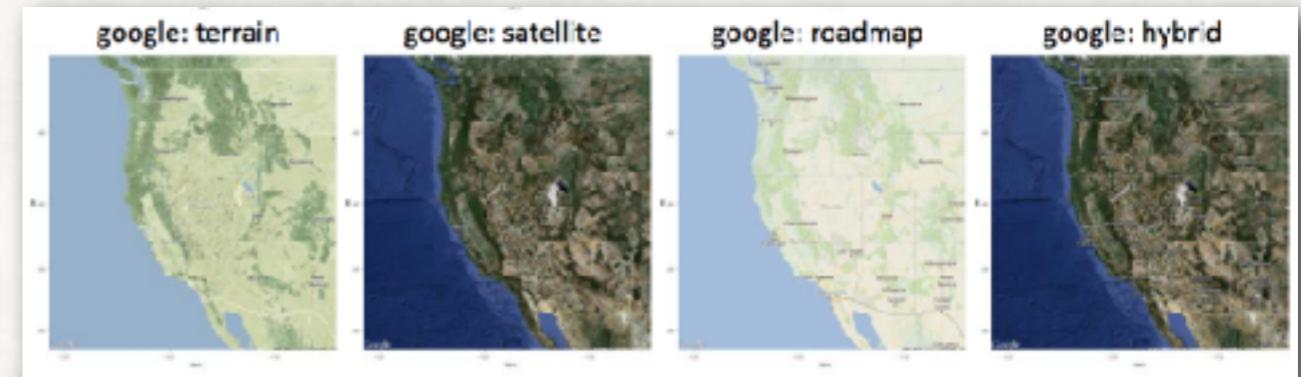
This dataset is all the Police responses to 9-1-1 calls within the city. Police response data shows all officers dispatched. To protect the security of a scene, the safety of officers and the public, and sensitive ongoing investigation, these events are added to the data.seattle.gov only after the incident is considered safe to close out. Data is refreshed on a 4 hour interval.

# GGMAP

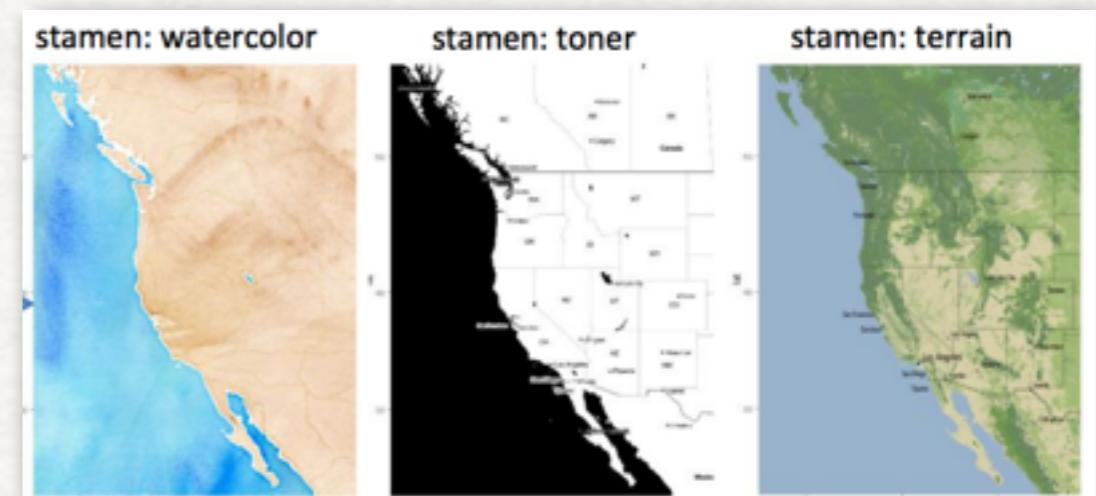
- The `get_map` function provides a general approach for quickly obtaining maps from multiple sources. Can also use `get_googlemap` function for google maps.

- There are 4 main map types:

- Google - Roadmap, terrain, satellite, hybrid



- Stamen - Terrain, Toner, Watercolor

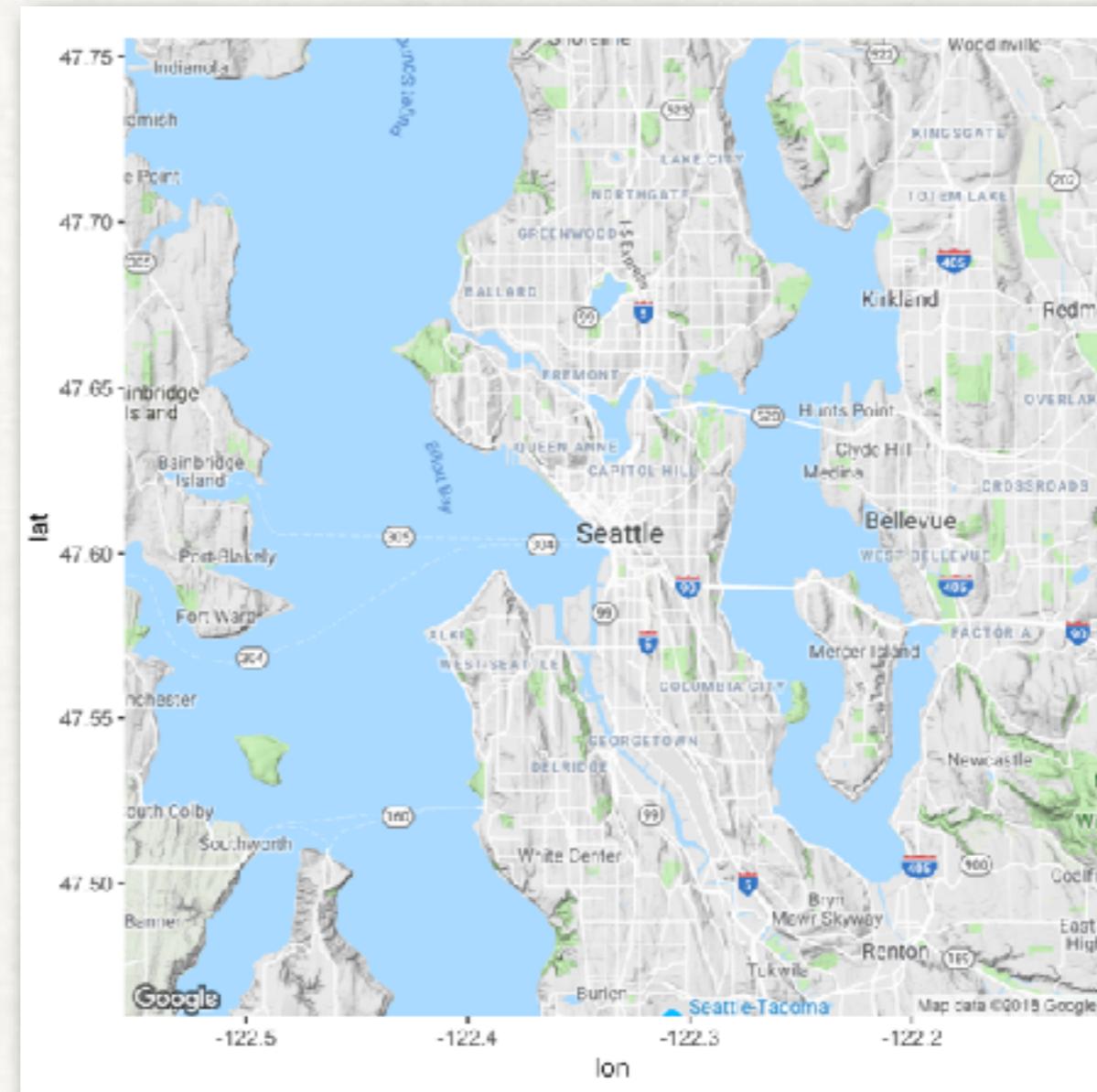


- OSM - Open Street Map \*

- Cloudmade \*

Notes: Material above from NCEAS cheat sheet OSM and Cloudmade not covered in this talk.

# GET YOUR MAP!

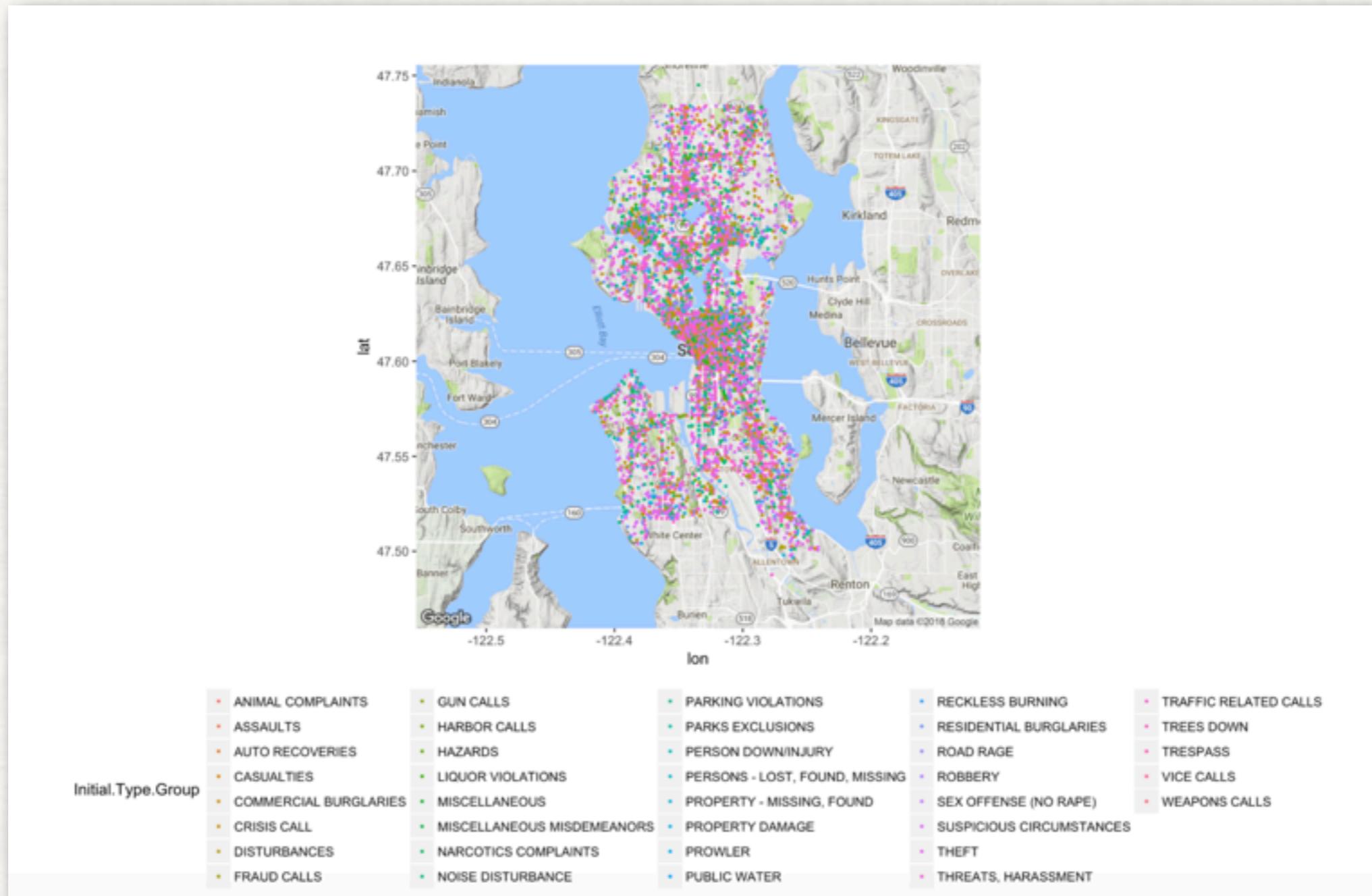


```
p <- ggmap(get_googlemap(center = c(lon = -122.335167, lat = 47.608013),  
zoom = 11, maptype ='terrain',color = 'color'))
```

# GGPLOT2 BELLS & WHISTLES

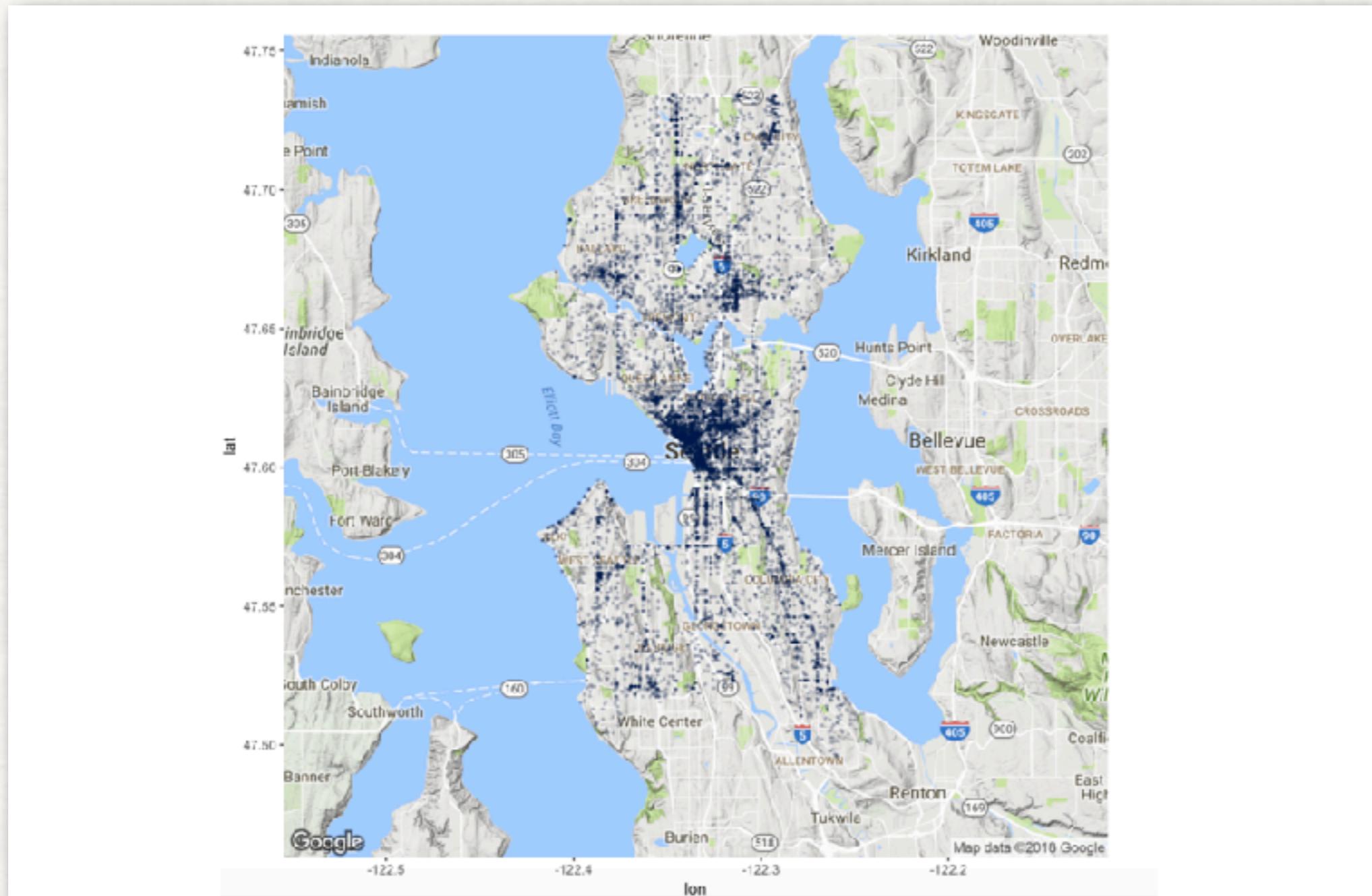


# ADD YOUR DATA POINTS



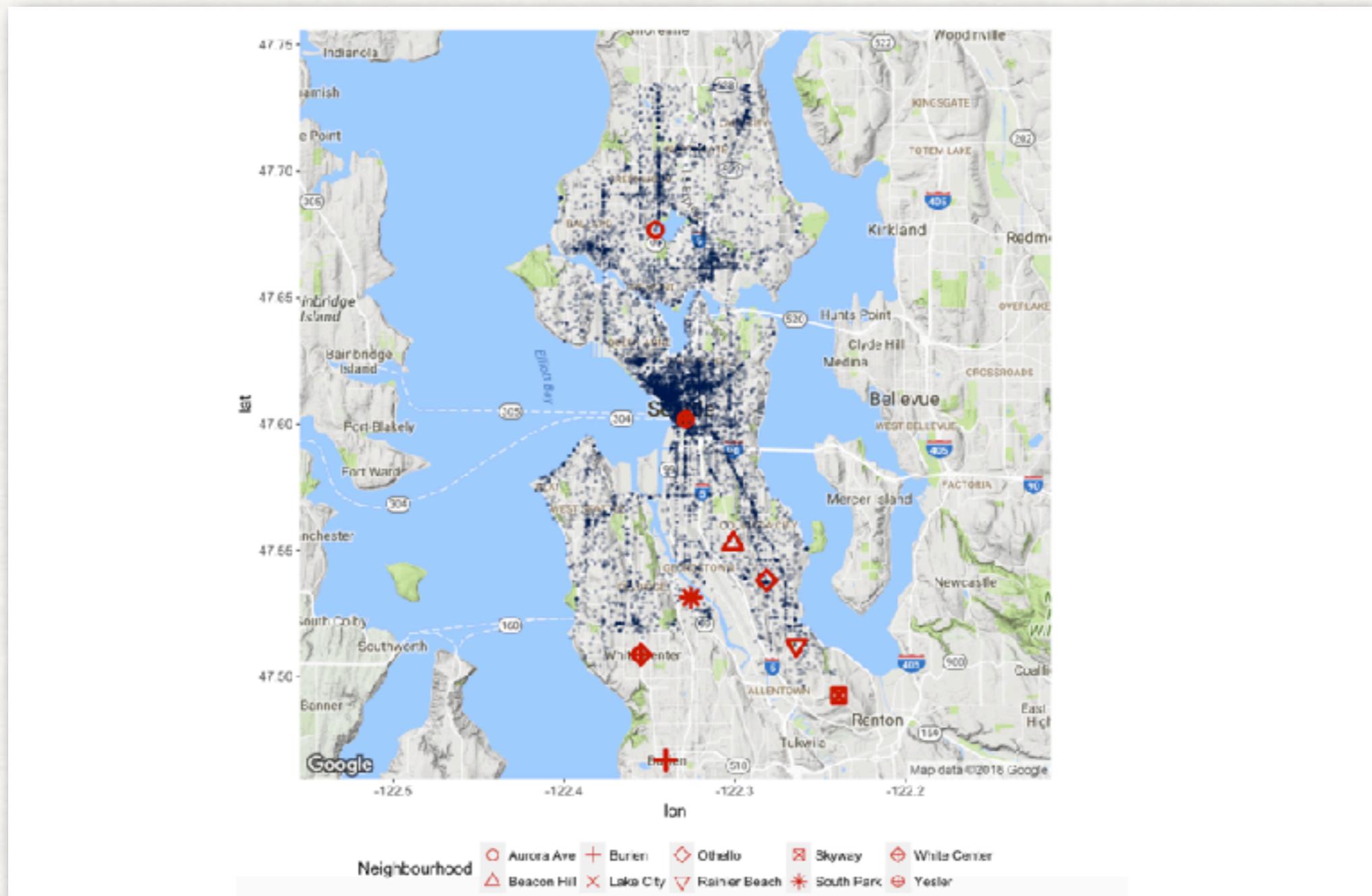
Use geom\_point with color set to a group

# DENSITY OF DATA POINTS



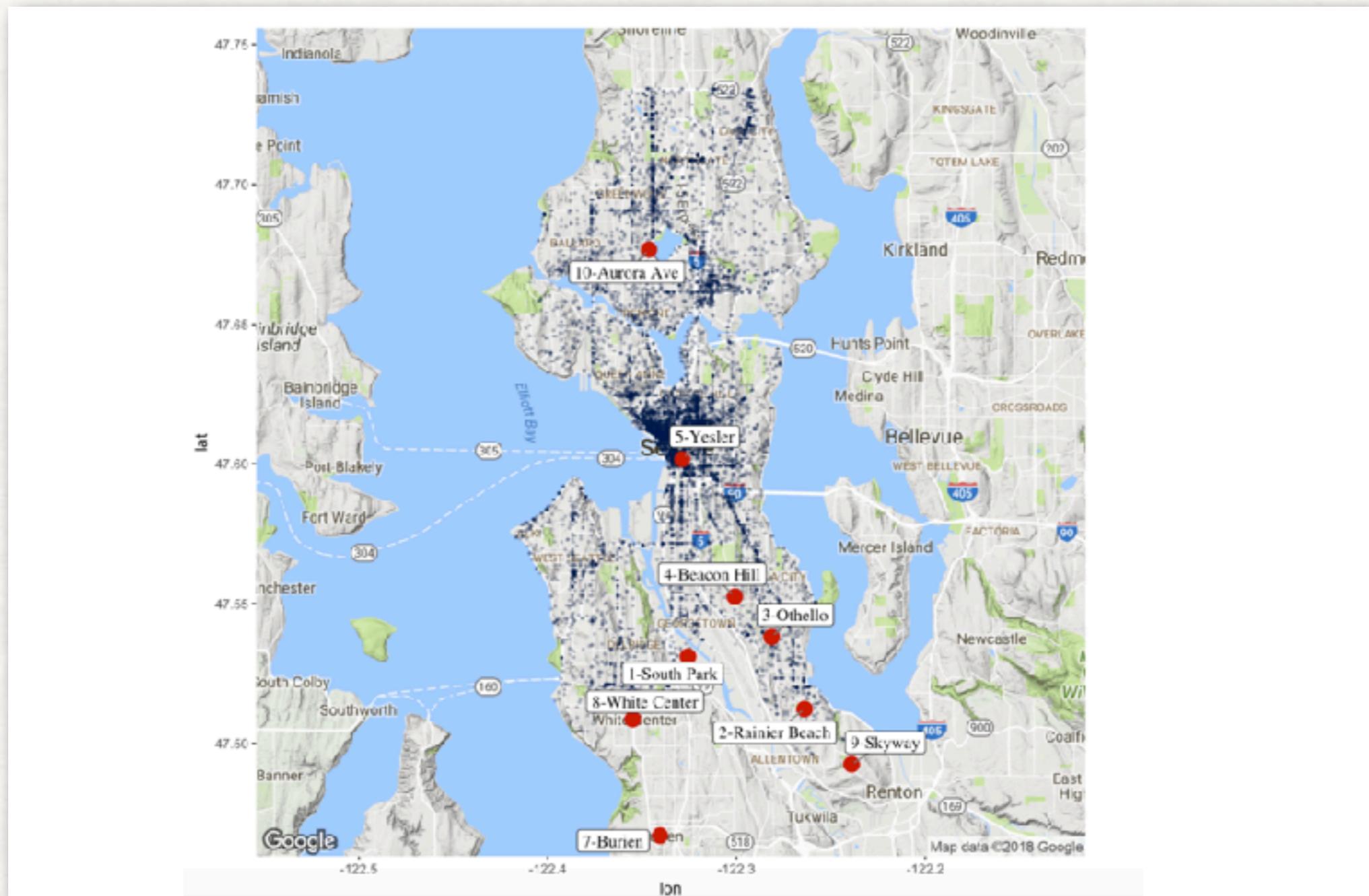
Set the geom\_point alpha parameter

# LAYERING OF DATA SETS



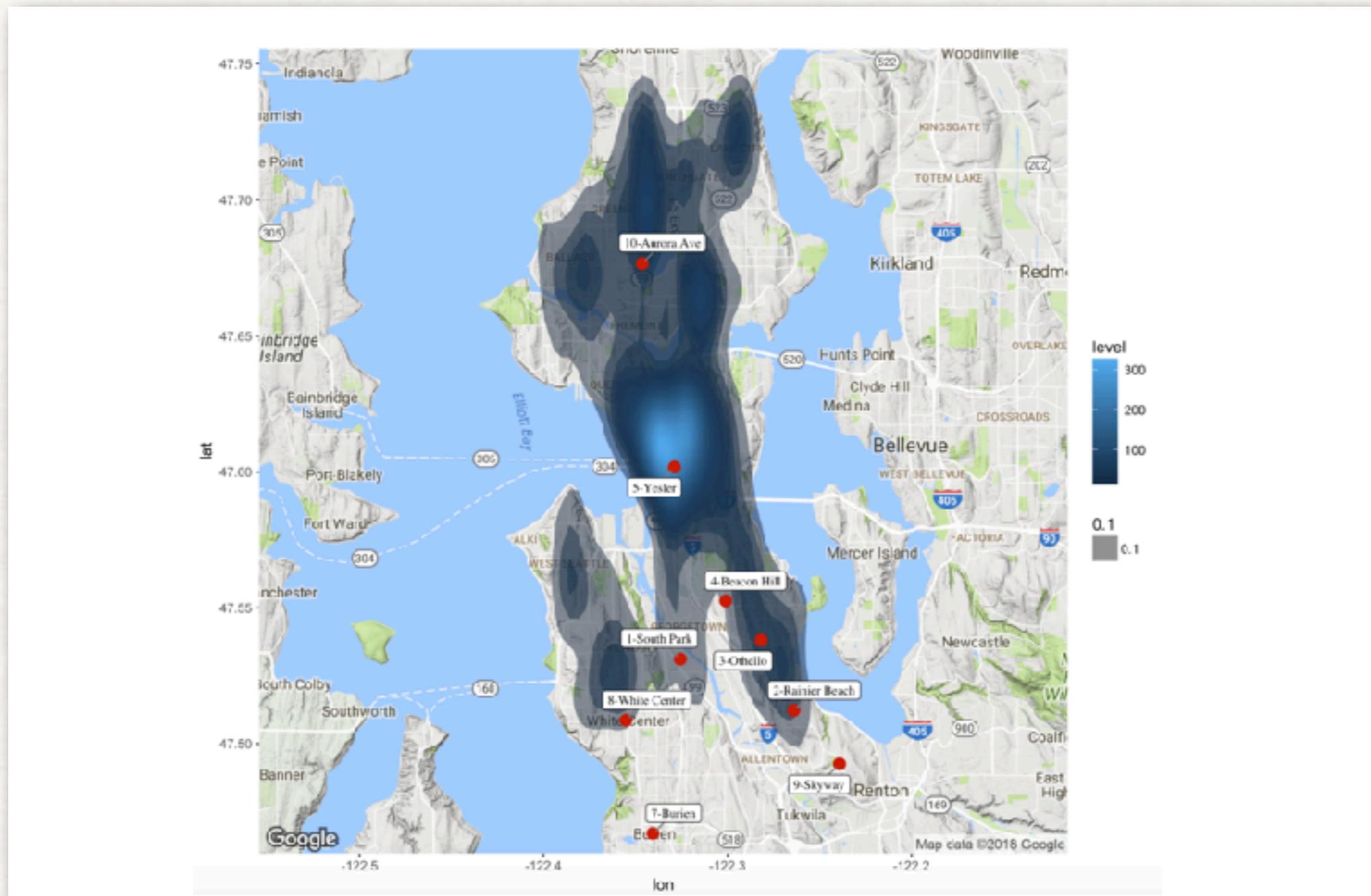
Two geom\_point function calls!

# CUSTOM LABELS



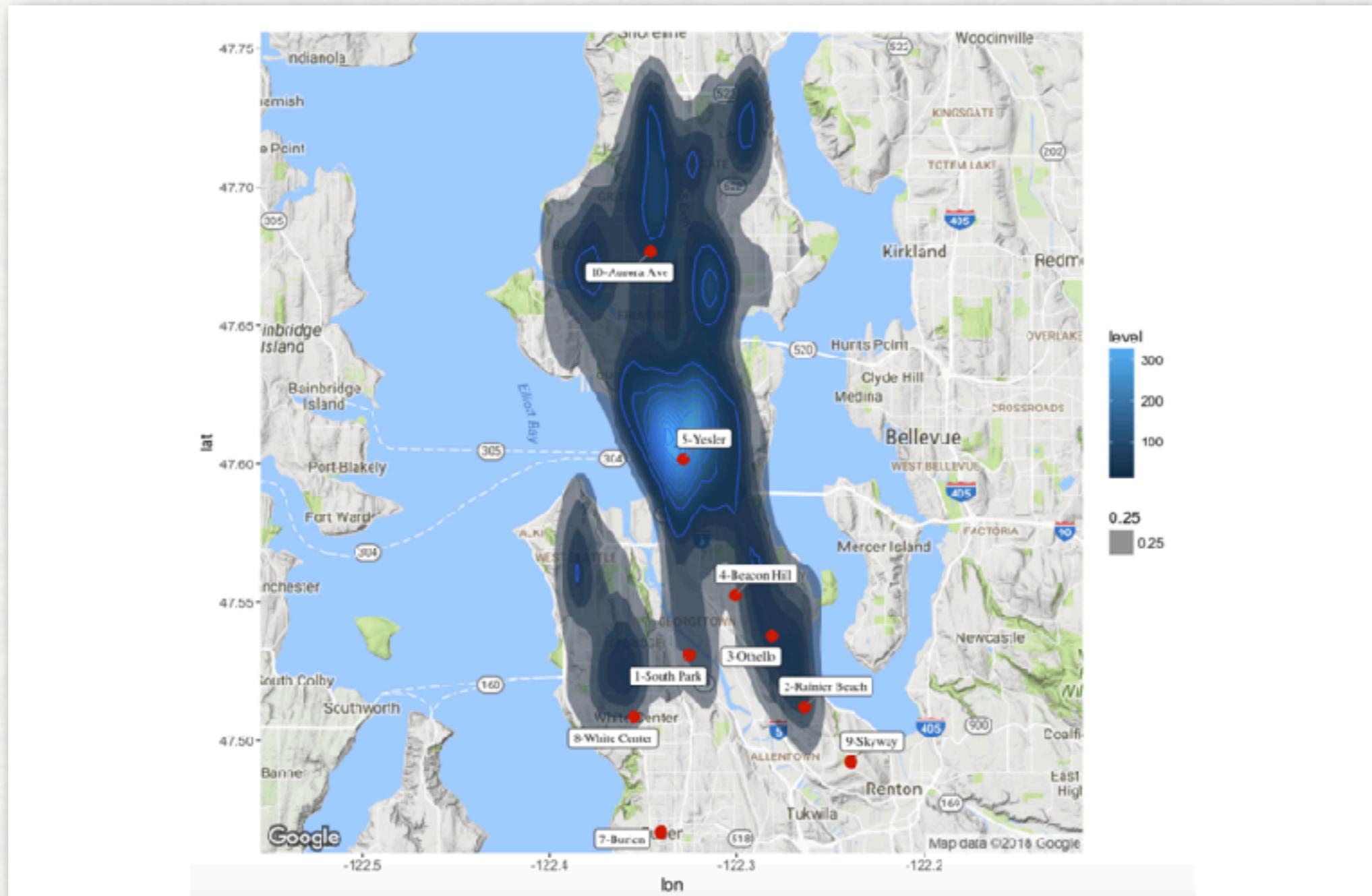
Use the `geom_label_repel` function

# DENSITY AREA



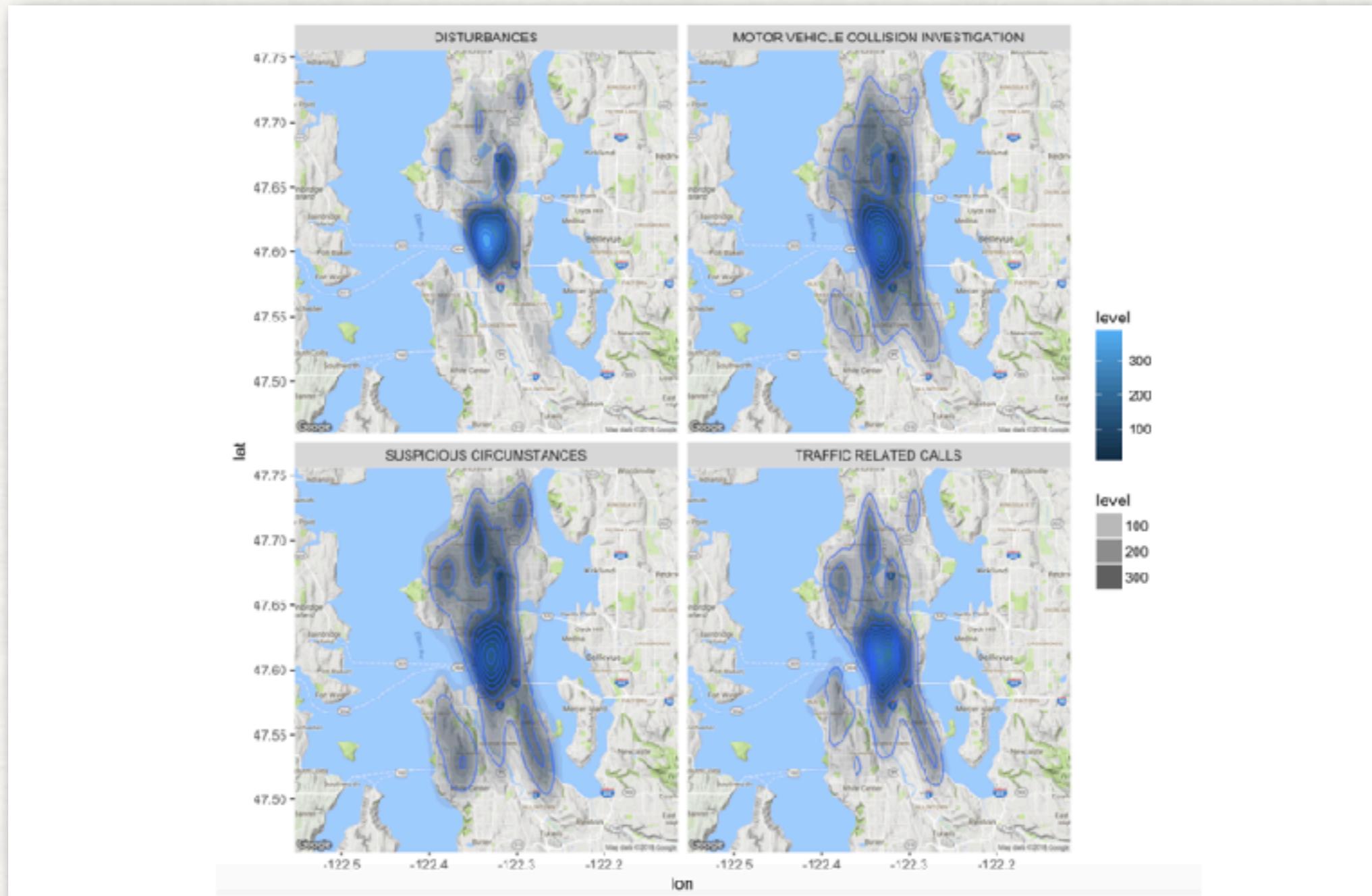
Use the `stat_density2d` function

# DENSITY LINES



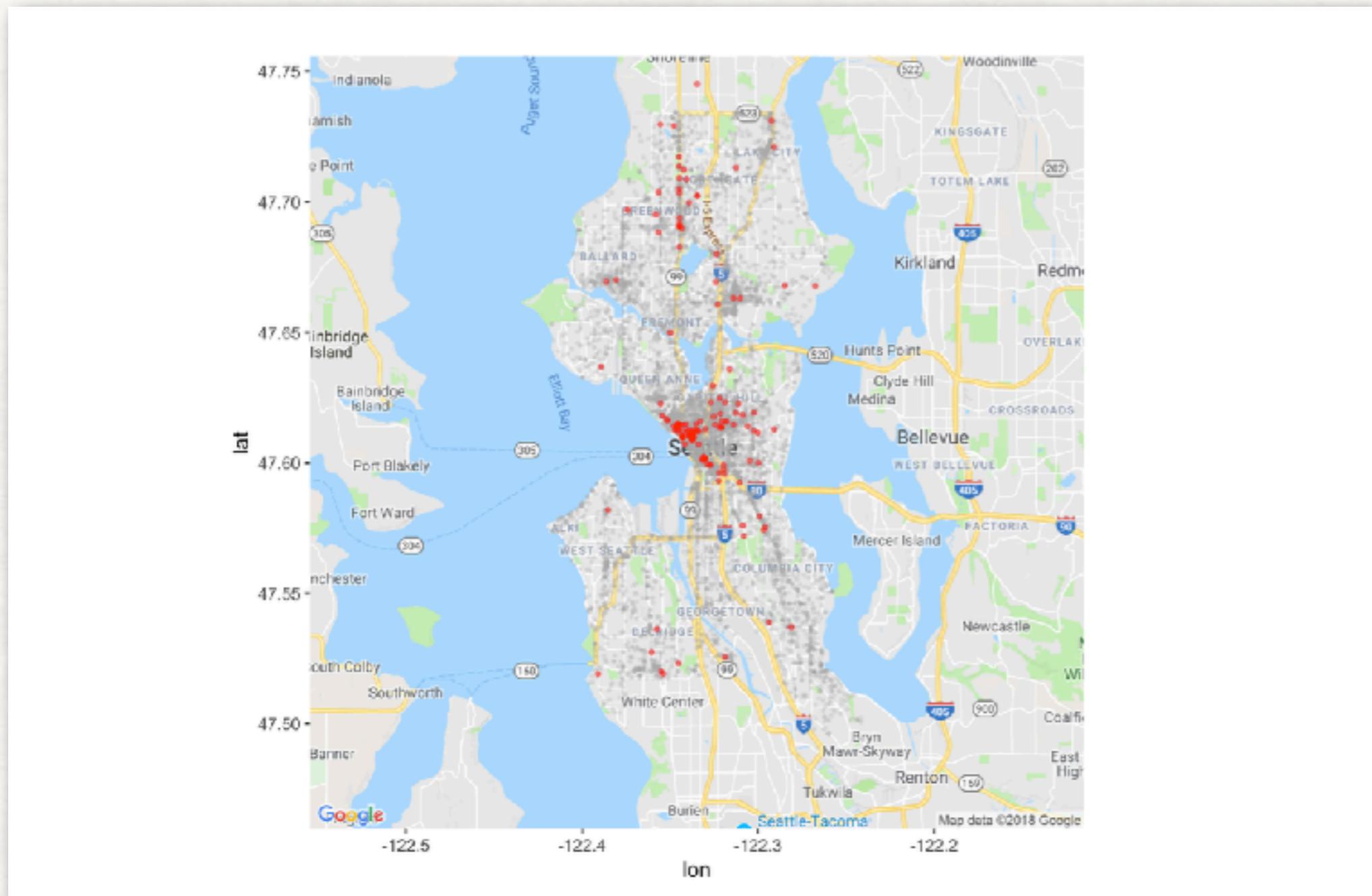
Use the `geom_density2d` function

# SUB GROUPS



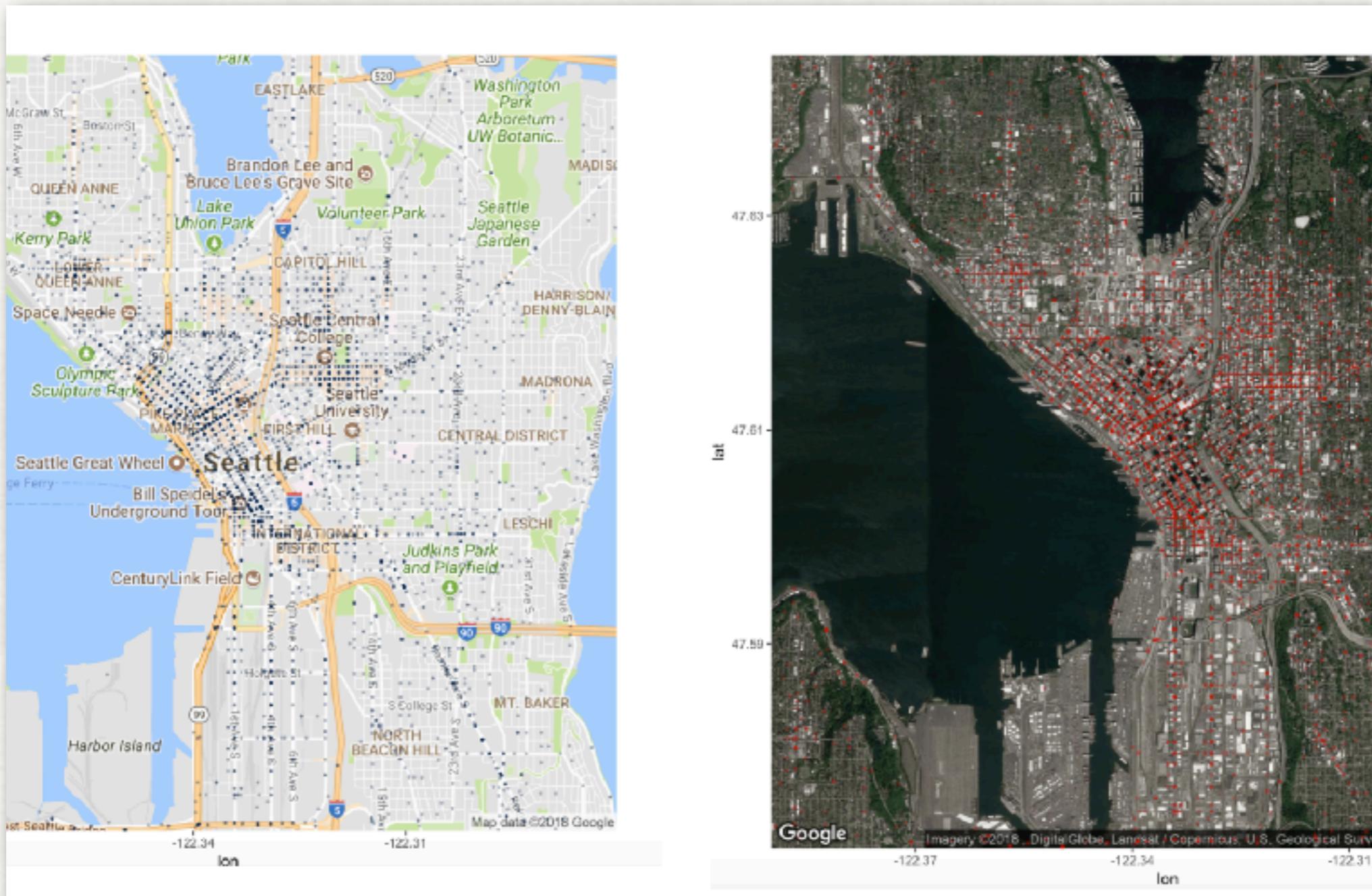
Subset and use facet\_wrap

# HIGHLIGHT A GROUP



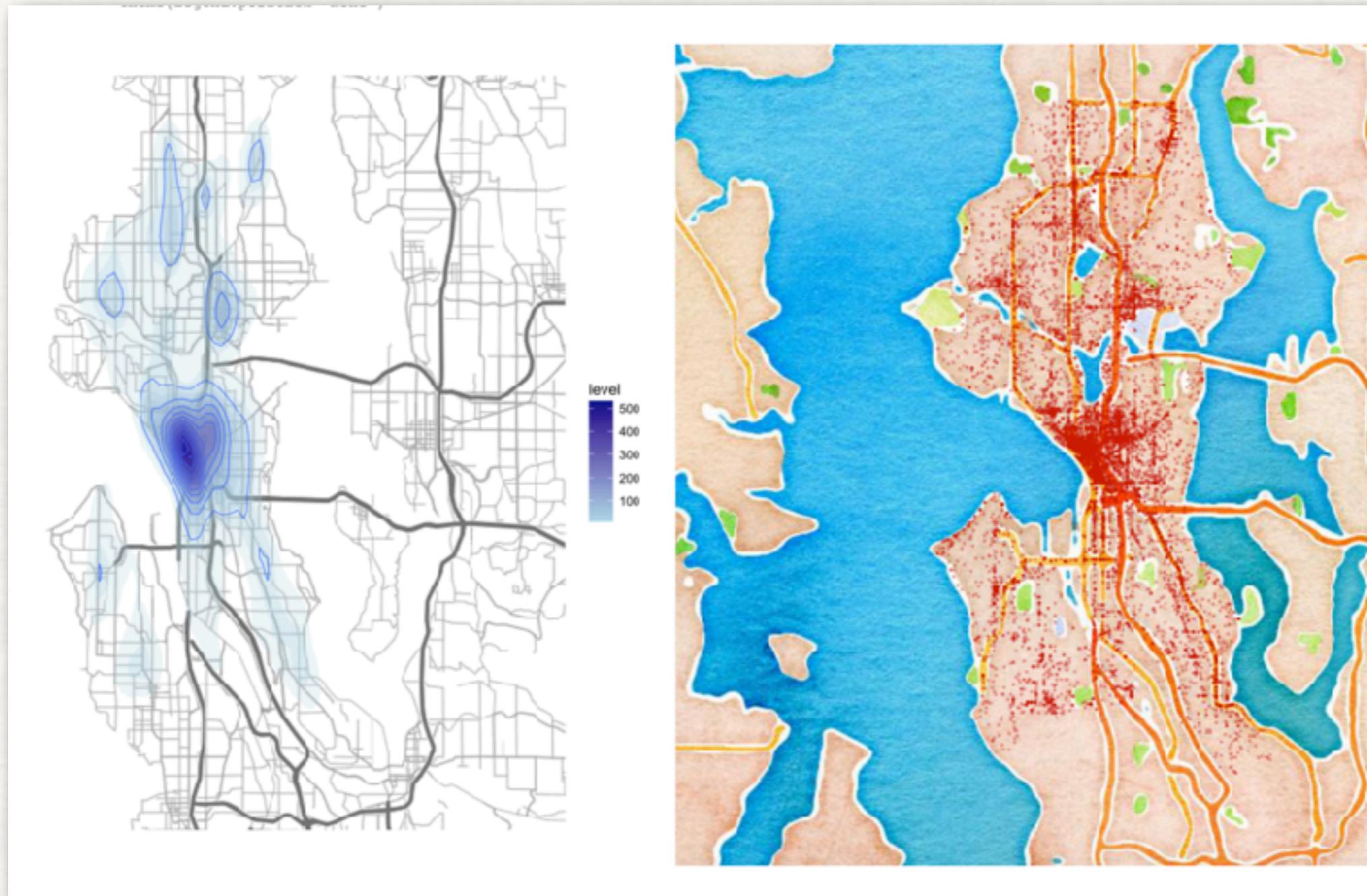
Filter and layer with multiple geom\_point functions

# OTHER GOOGLE MAP TYPES



Filter and layer with multiple geom\_point functions

# STAMEN MAP TYPES



Filter and layer with multiple geom\_point functions

# TUTORIAL AVAILABLE

- Full tutorial and code available on my website and GitHub
  - <https://www.littlemissdata.com/blog/maps>
  - <https://github.com/lgellis/MiscTutorial/tree/master/ggmap>

# AMAZING RESOURCES

- ggmap: Spatial Visualization with ggplot2 - by David Kahle and Hadley Wickham
  - <https://journal.r-project.org/archive/2013-1/kahle-wickham.pdf>
- ggmap cheat sheet by National Center for Ecological Analysis and Synthesis (NCEAS)
  - <https://www.nceas.ucsb.edu/~frazier/RSpatialGuides/ggmap/ggmapCheatsheet.pdf>