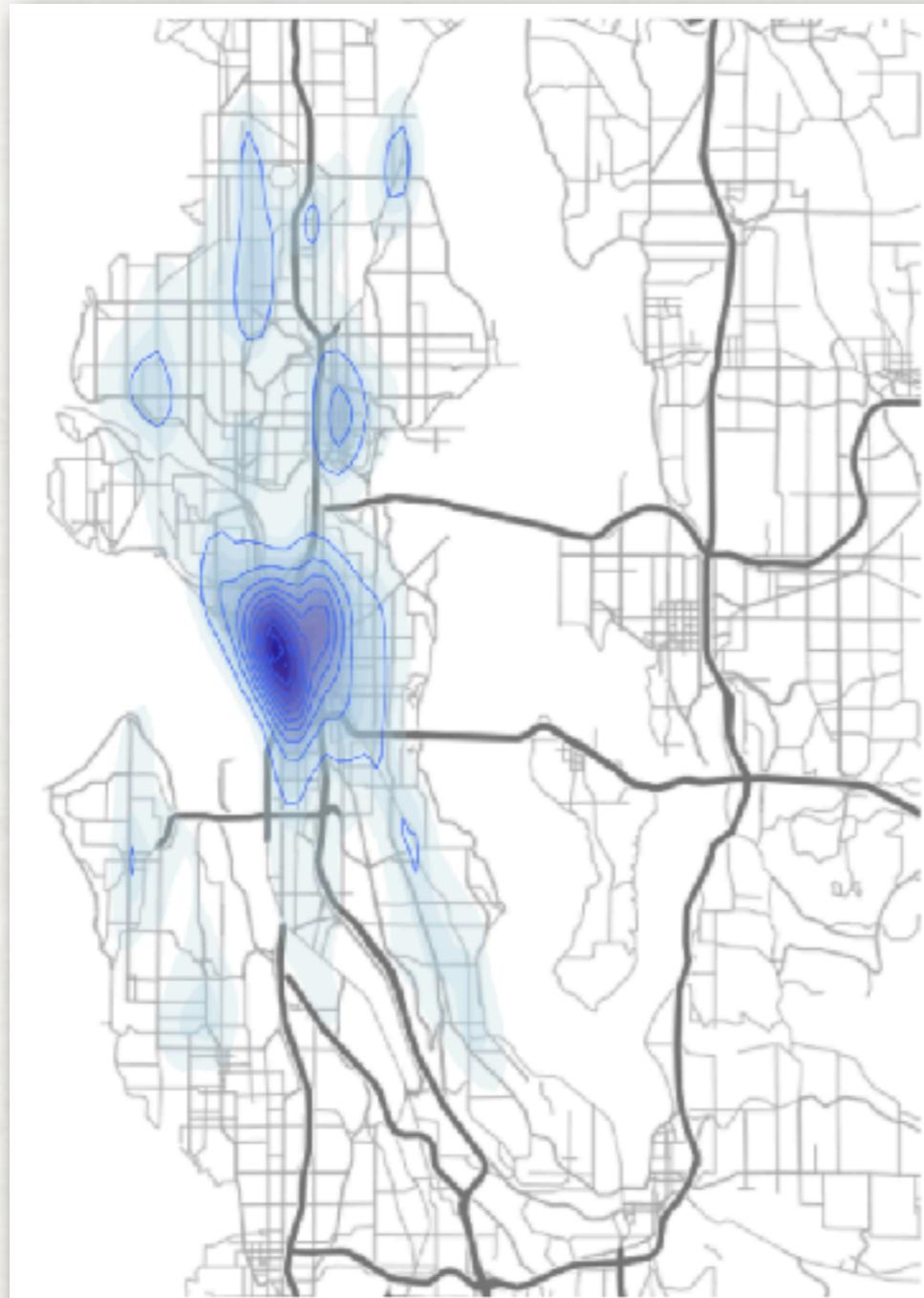


GGMAP + GG PLOT2 = BEAUTIFUL MAPS



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

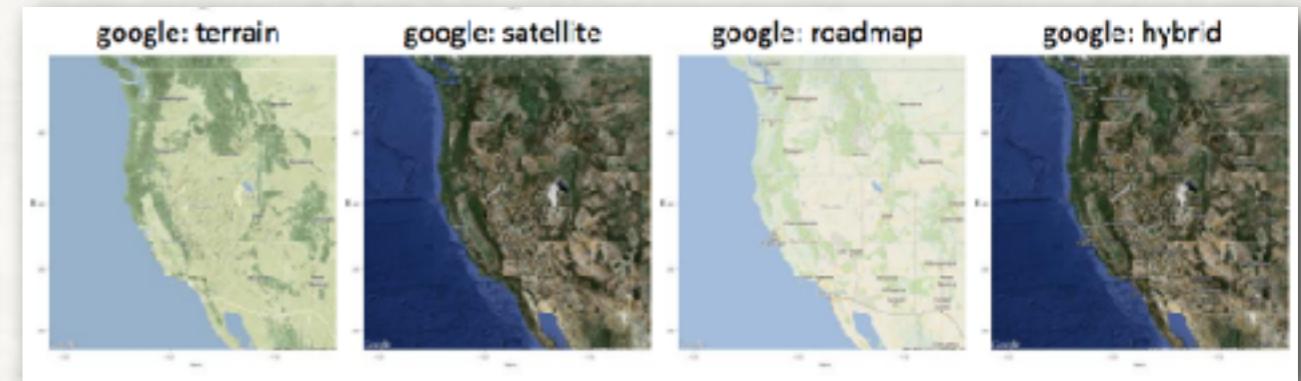
This dataset is all the Police responses to 9-1-1 calls within the city. Police response data shows all officers dispatched. To protect the security of a scene, the safety of officers and the public, and sensitive ongoing investigation, these events are added to the data.seattle.gov only after the incident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

GGMAP

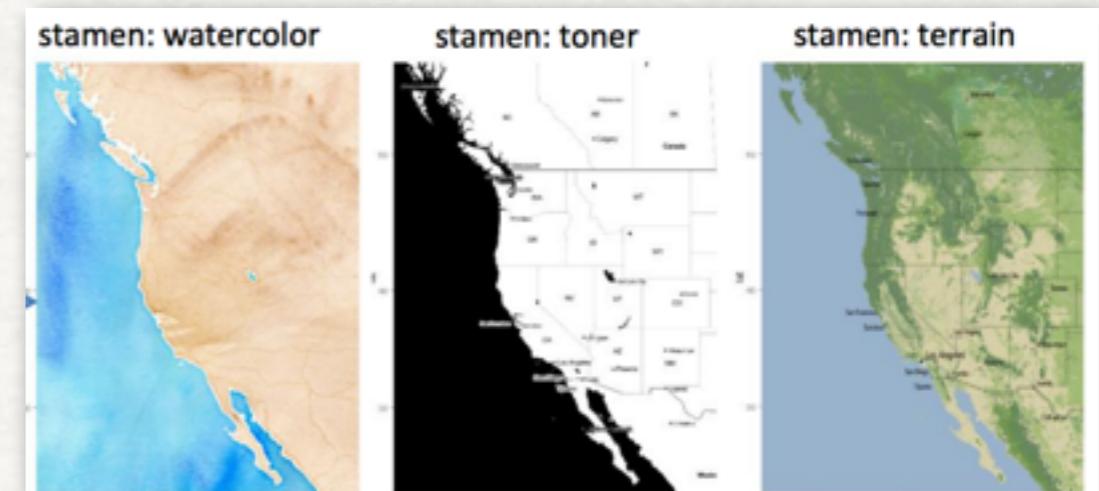
- The `get_map` function provides a general approach for quickly obtaining maps from multiple sources. Can also use `get_googlemap` function for google maps.

- There are 4 main map types:

- Google - Roadmap, terrain, satellite, hybrid



- Stamen - Terrain, Toner, Watercolor

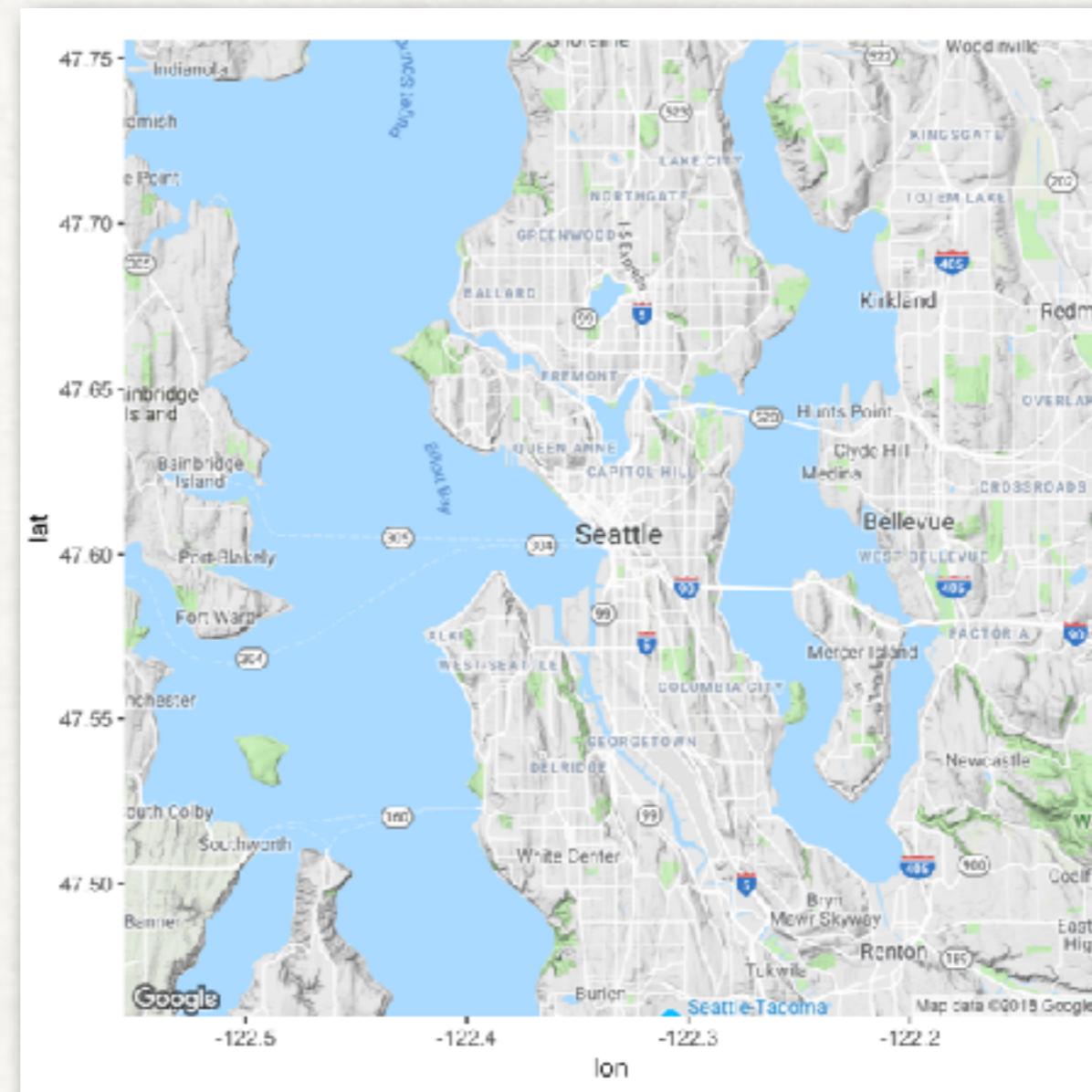


- OSM - Open Street Map *

- Cloudmade *

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

GET YOUR MAP!

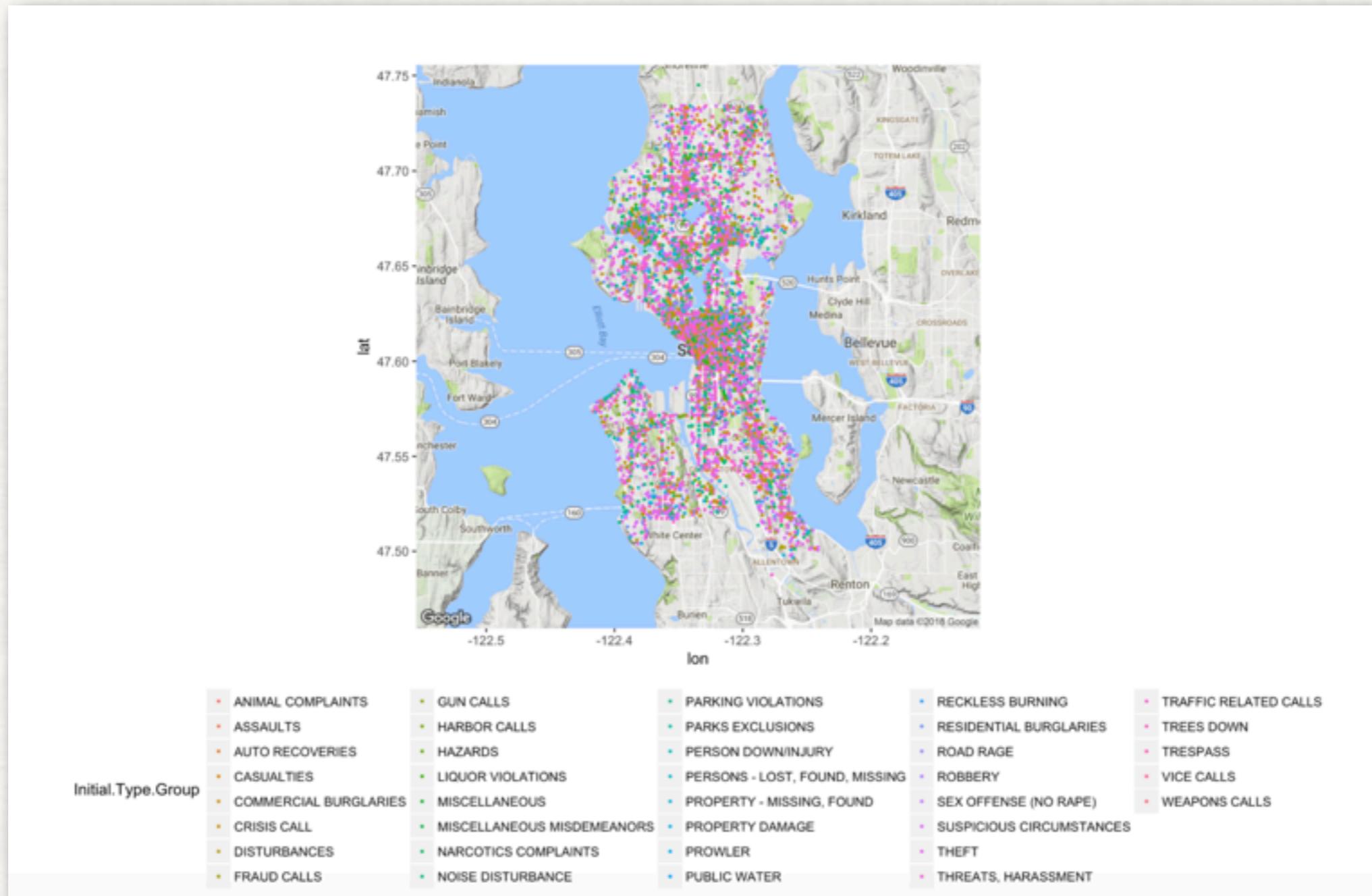


```
p <- ggmap(get_googlemap(center = c(lon = -122.335167, lat = 47.608013),  
zoom = 11, maptype ='terrain',color = 'color'))
```

GGPLOT2 BELLS & WHISTLES

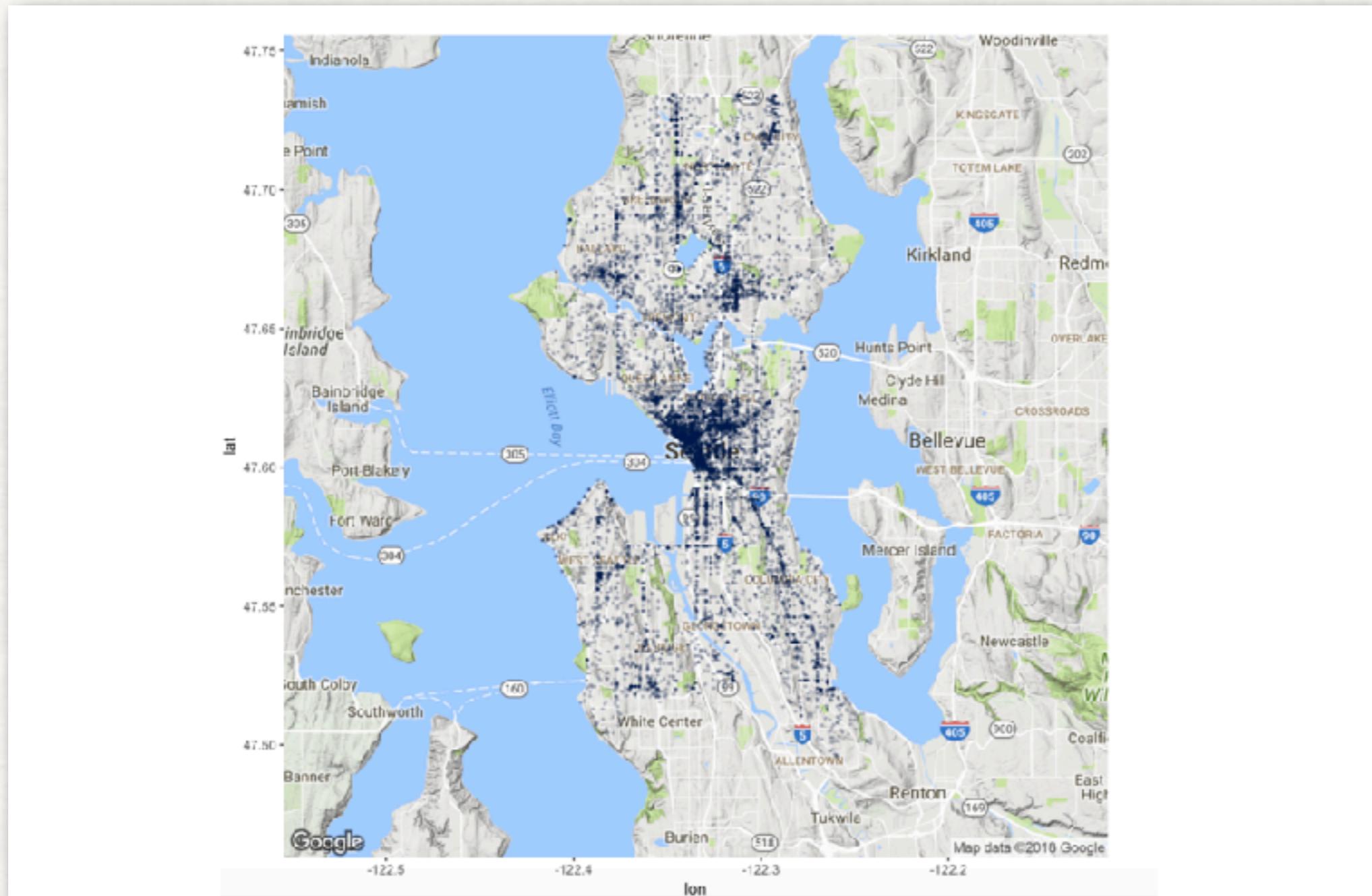


ADD YOUR DATA POINTS



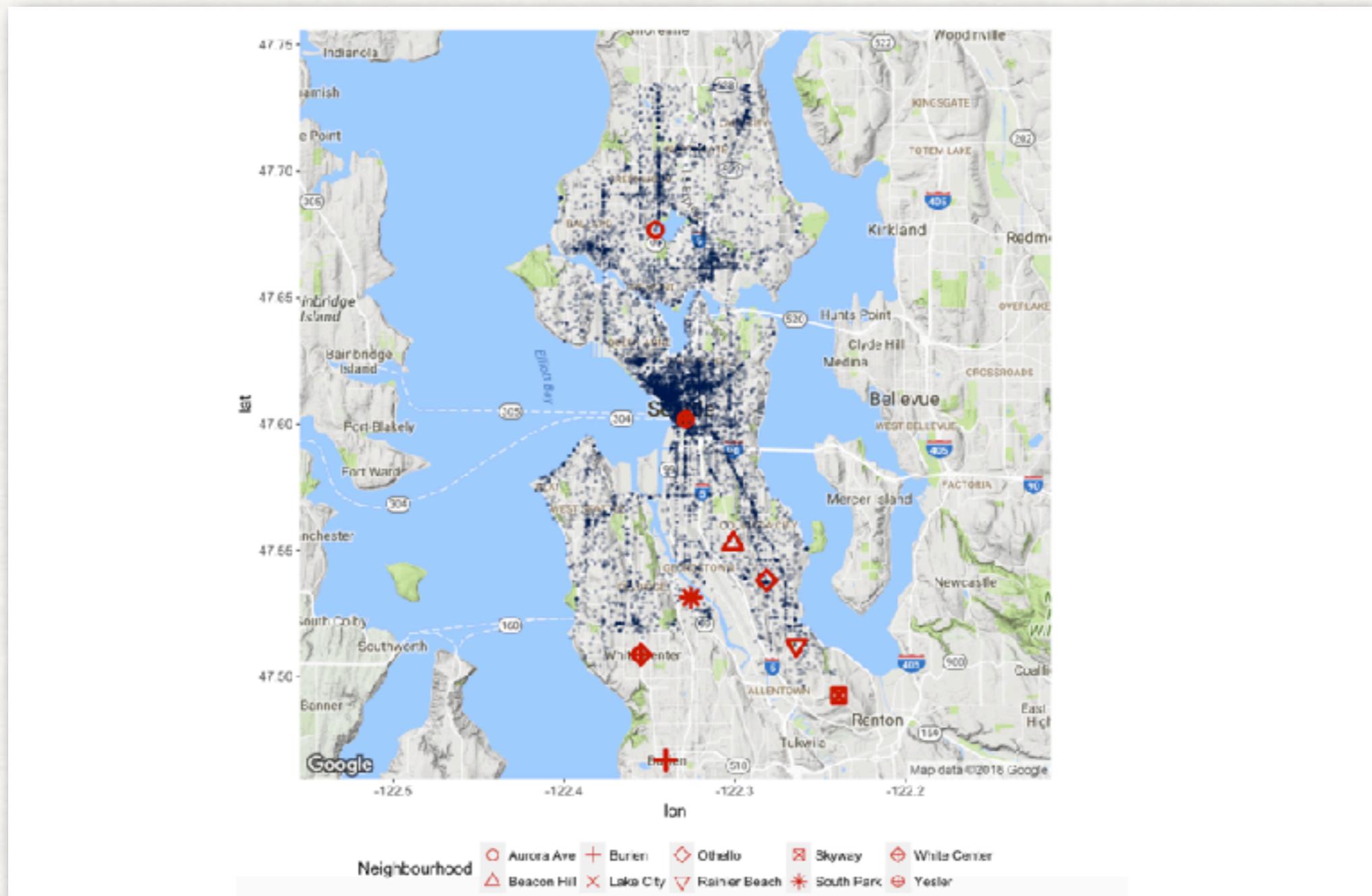
Use geom_point with color set to a group

DENSITY OF DATA POINTS



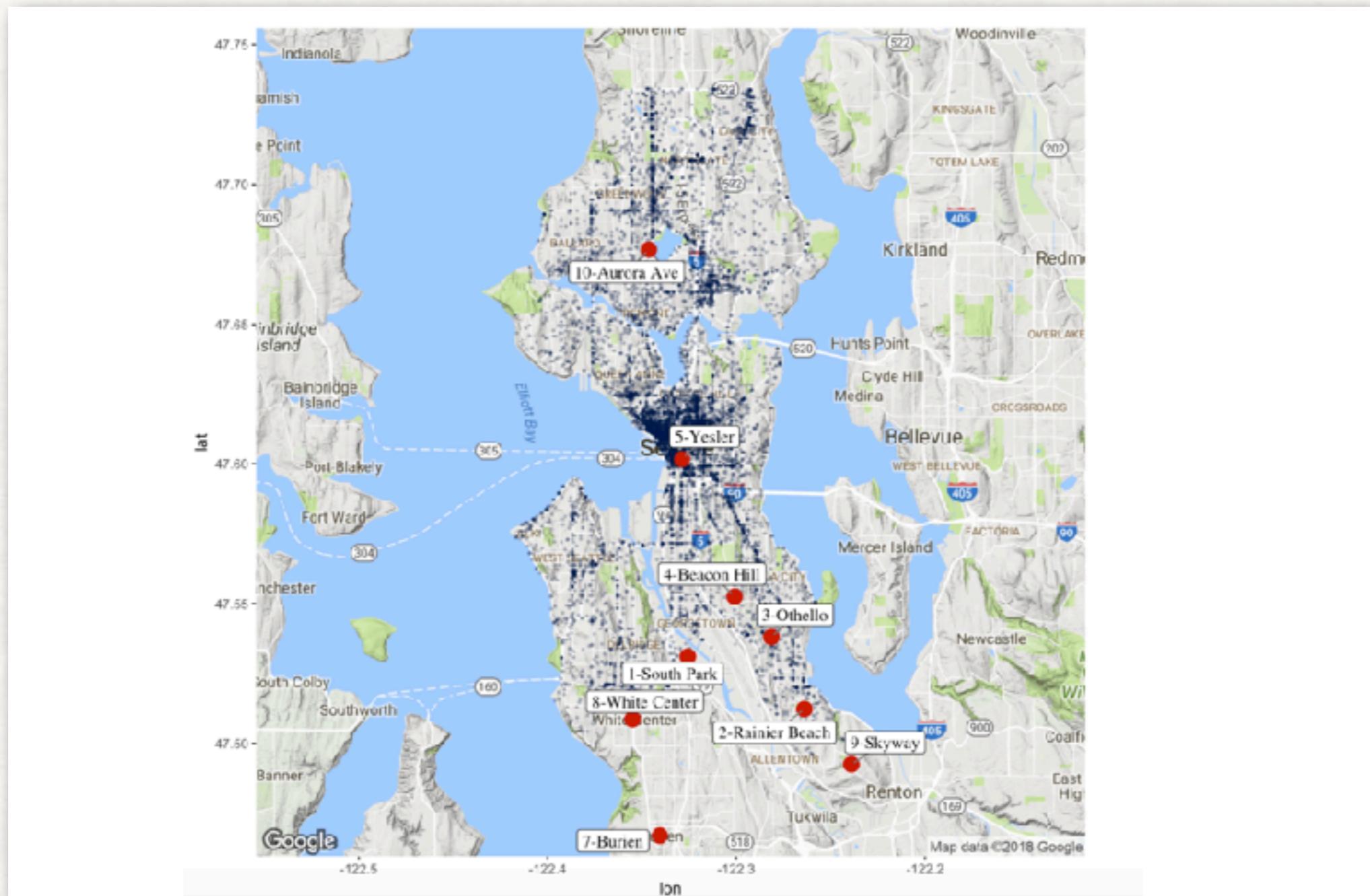
Set the geom_point alpha parameter

LAYERING OF DATA SETS



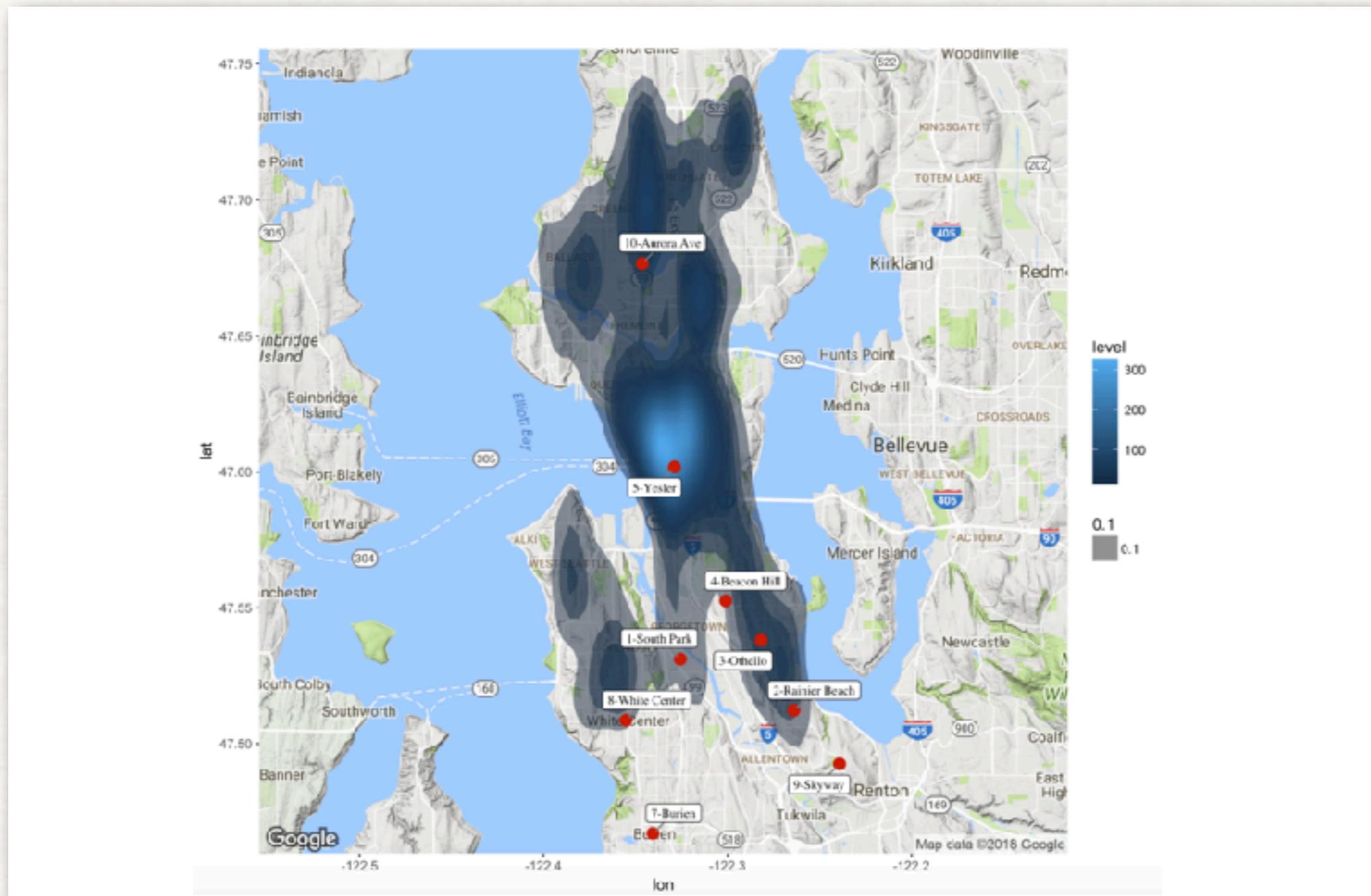
Two geom_point function calls!

CUSTOM LABELS



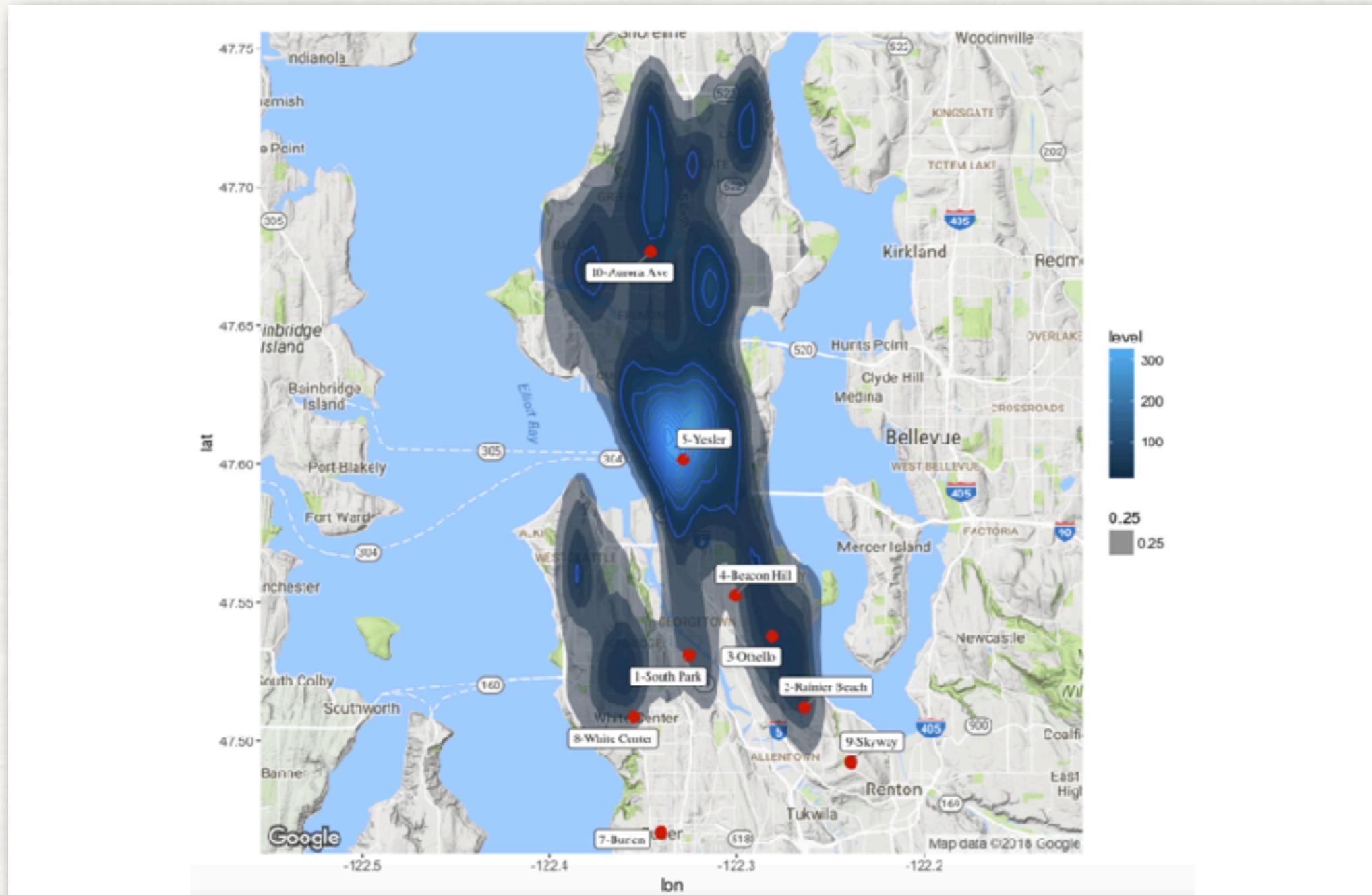
Use the `geom_label_repel` function

DENSITY AREA



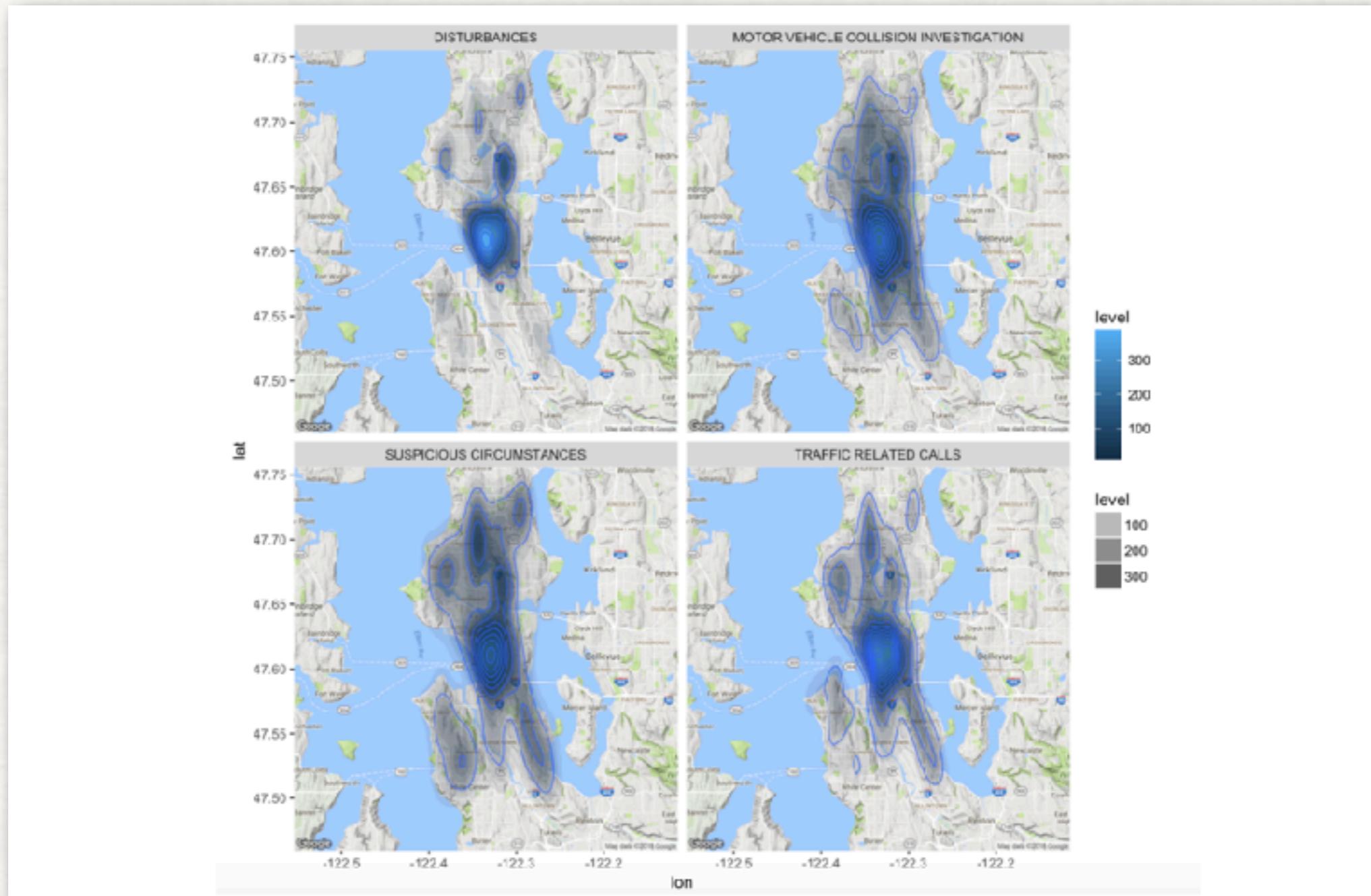
Use the `stat_density2d` function

DENSITY LINES



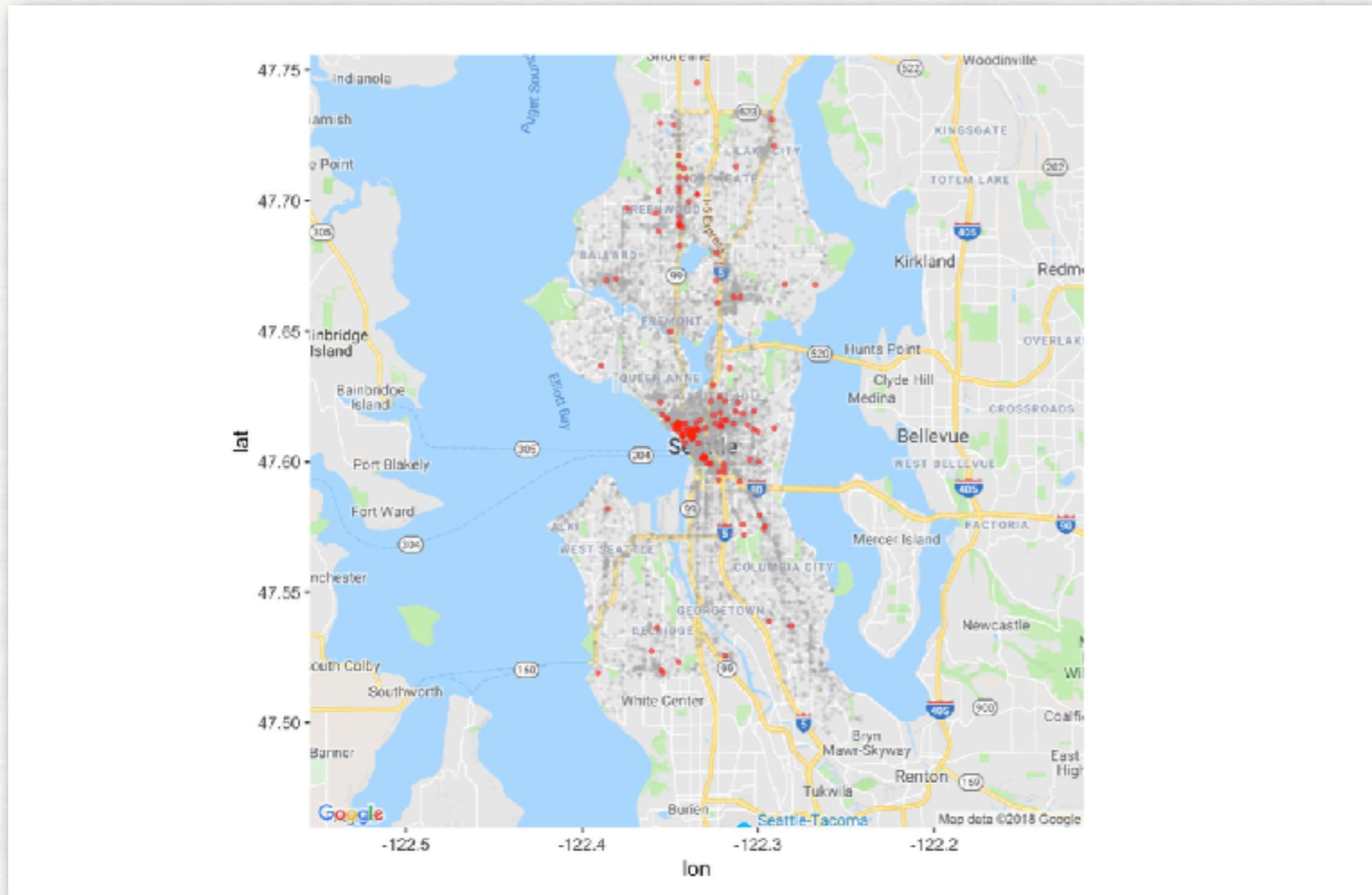
Use the `geom_density2d` function

SUB GROUPS



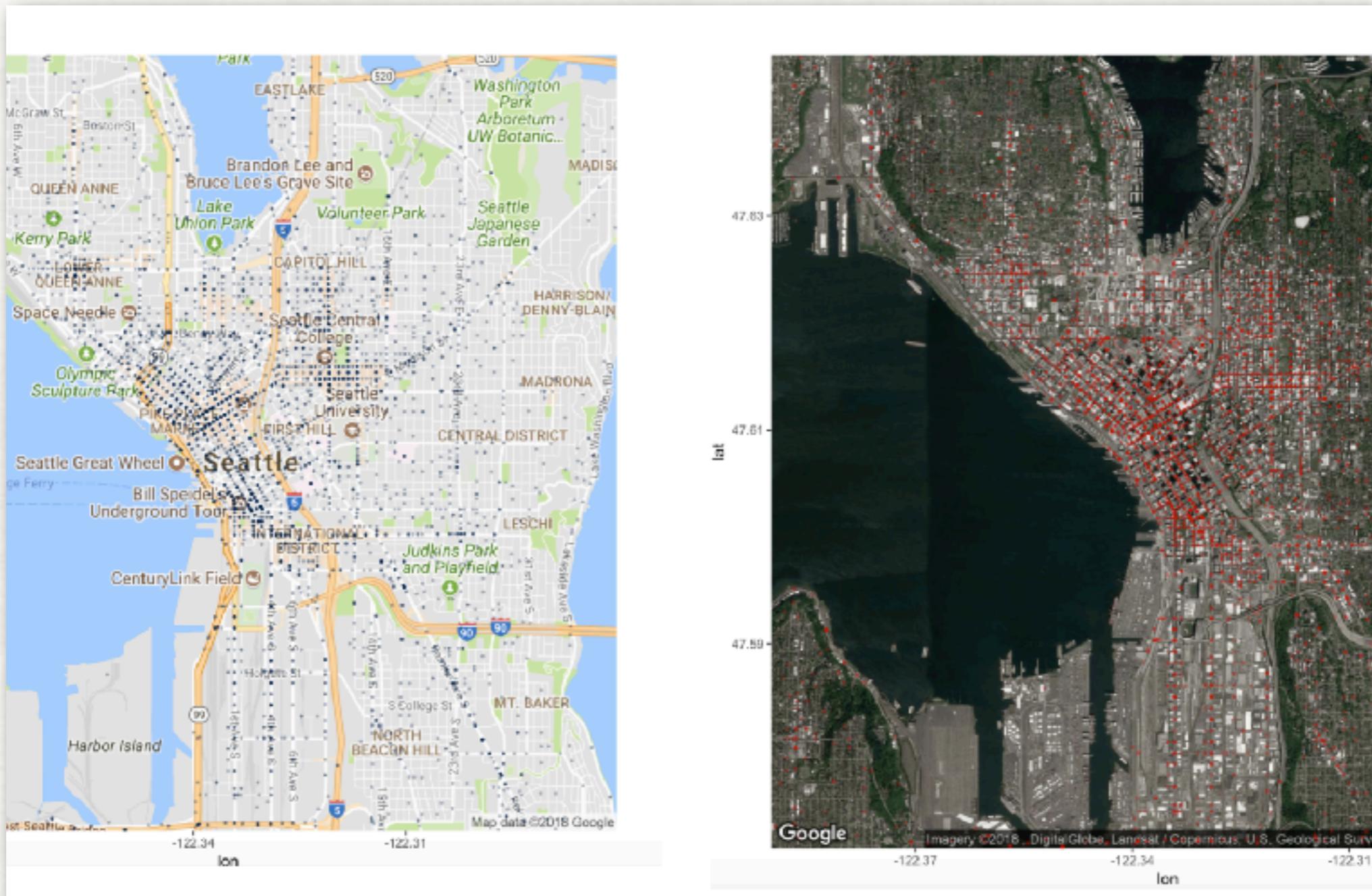
Subset and use facet_wrap

HIGHLIGHT A GROUP



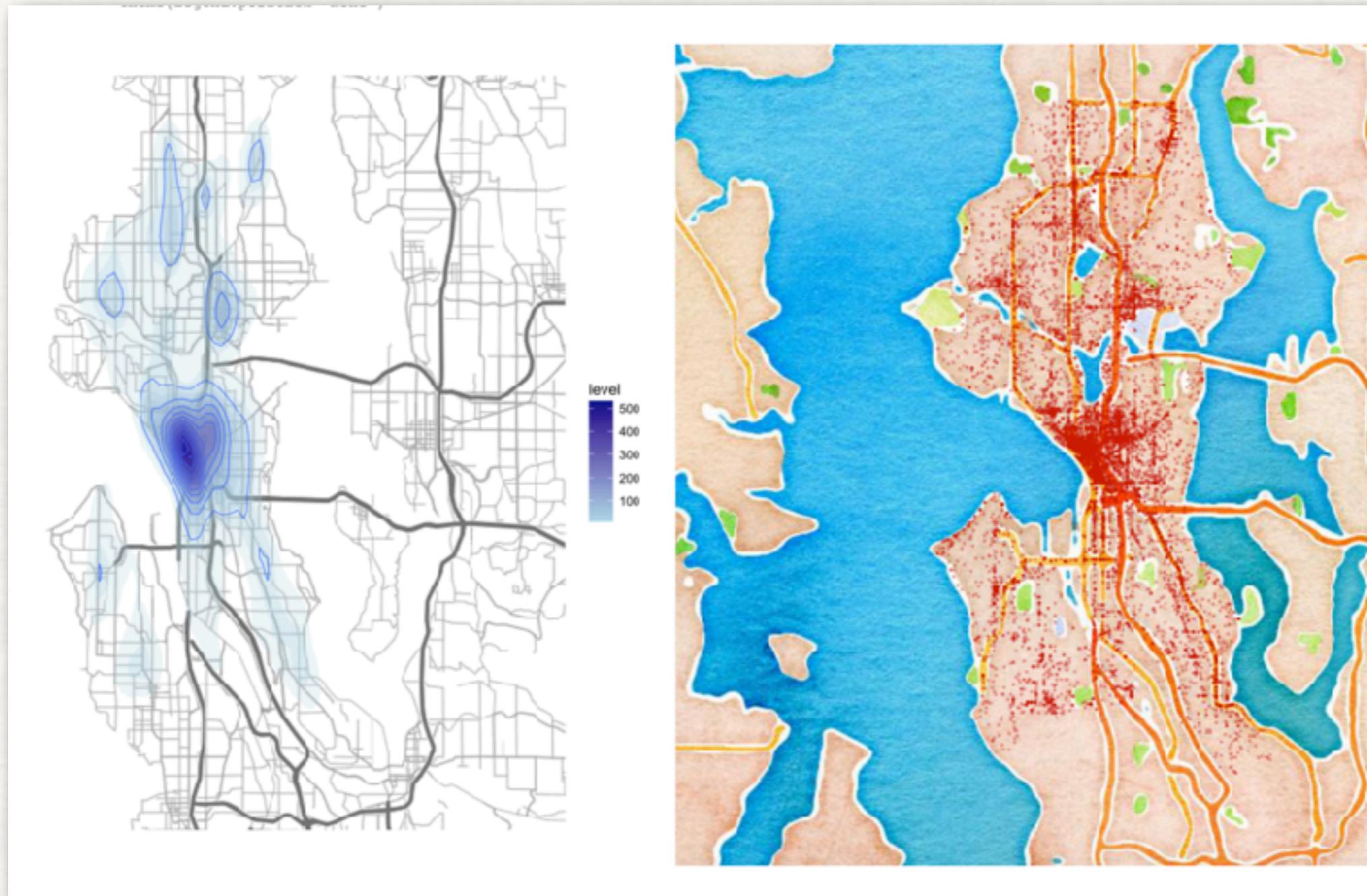
Filter and layer with multiple geom_point functions

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>