

Week 15 Programming Assignment

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5/30/2019

Due: 6/05/2019

Preparation

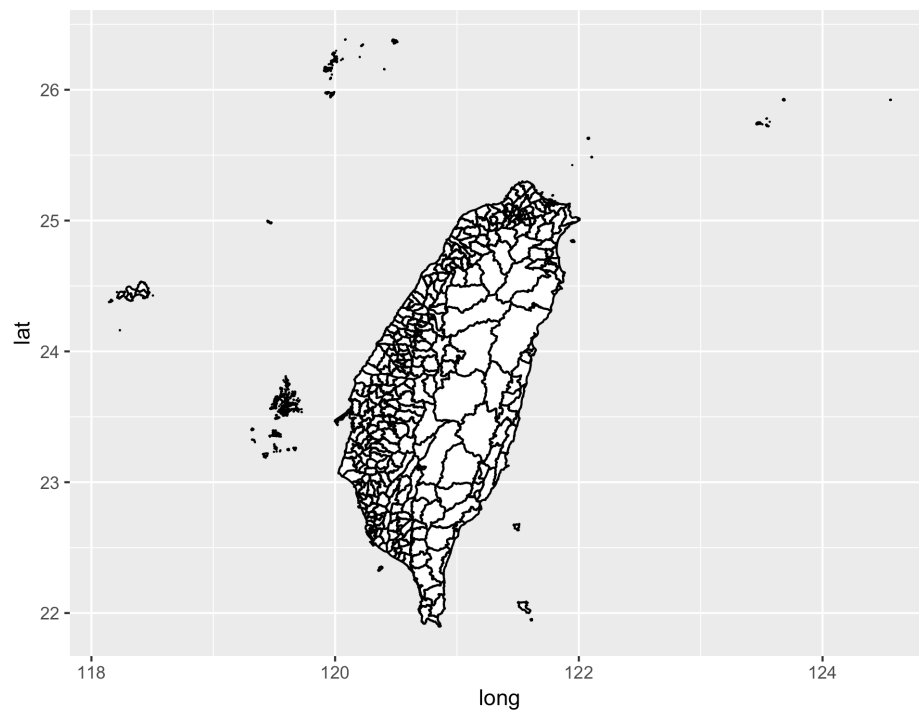
1. Download the map data
 - Download town-level shape files from: 各鄉 (鎮、市、區) 行政區域界線圖資 <http://data.gov.tw/node/7441>
 - Extract the zip files to a folder
2. Download Taoyuan city traffic accident data
 - 桃園市 106 年交通事故點位 <https://data.gov.tw/dataset/46354>
3. Load the following packages
 - `tidyverse`
 - `ggmap`
 - `maps`
 - `broom`
 - `rgdal`

Part I: Draw a town-level Taiwan map

Tips for drawing a town-level Taiwan map

- Use the function `readOGR()` to read the shape file that you have downloaded earlier and save it to an object (ex: `tw_map`)
- Use the function `broom()` to the map object and save it as a dataframe
- Plot the map using ggplot's `geom_polygon`. Set the colors and fills appropriately.
- Warning: this is a huge data set (> 1 million data points), it may take a while to render the map

Your map should look like this:



Part II: Draw a scatter plot and a heatmap on ggmaps

- (a) Question: What is the longitude and latitude of 臺北火車站?
- Set up Map API on Google Cloud Platform
 - Register API key with `register_google(key= "Your API Key")`
 - Use `geocode` to find the information
- (b) Utilizing Google Maps Follow the steps to create a scatter plot and a heatmap on ggmaps:
- Use the `read_excel` function to load the traffic accident data into a dataframe: `acc`
 - Use the `qmap` function to draw the map for Taoyuan.
 - Pick appropriate zoom level and color.
 - Use `geom_point` to plot the locations of all traffic accidents. Set alpha level = 0.5 so the map will be visible.
 - Save the map as “map1.png”
 - Similar to `map1.png`, but this time use `stat_density2d` to draw a contour map
 - Map x and y to longitude and latitude. Map fill and alpha to `..level..` (which means R will count the number of observations within each 2D bin)
 - Set the number of bins to 6 (i.e. `bins = 6`) and the type of contour map to polygon, (`geom = "polygon"`)
 - Pick appropriate color palettes
 - Turn off unnecessary guides
 - Save the map as “map2.png”
 - Fill your answers, plots, and source codes in “W15 Student Submission.docx”

Your map may look like this:

