Thesis

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10/13/2021

```r
#load packages
library(sf)
```

```
## Linking to GEOS 3.9.1, GDAL 3.2.1, PROJ 7.2.1
```

```r
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.5     v dplyr   1.0.7
## v tidyr   1.1.4     v stringr 1.4.0
## v readr   2.0.2     v forcats 0.5.1
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```r
library(janitor)
```

```
##
## Attaching package: 'janitor'
```

```
## The following objects are masked from 'package:stats':
##
##     chisq.test, fisher.test
```

```r
library(lubridate)
```

```
##
## Attaching package: 'lubridate'
```

```
## The following objects are masked from 'package:base':
##
##     date, intersect, setdiff, union
```

```r
library(ggmap)
```

```
## Google's Terms of Service: https://cloud.google.com/maps-platform/terms/.
```

```
## Please cite ggmap if you use it! See citation("ggmap") for details.
```

```r
#set working directory
setwd(paste(getwd(), "/Thesis Data", sep=""))
```

```
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-1.kml'
##   using driver 'KML'
## Simple feature collection with 5 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37989 ymin: 33.96121 xmax: -83.3754 ymax: 33.9656
## z_range:       zmin: 0.002452731 zmax: 0.002453601
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-10.kml'
##   using driver 'KML'
## Simple feature collection with 53 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.38075 ymin: 33.95763 xmax: -83.37747 ymax: 33.96054
## z_range:       zmin: 0.002452019 zmax: 0.002452598
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-11.kml'
##   using driver 'KML'
## Simple feature collection with 17 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37913 ymin: 33.95517 xmax: -83.37664 ymax: 33.95873
## z_range:       zmin: 0.002451532 zmax: 0.002452238
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-12.kml'
##   using driver 'KML'
## Simple feature collection with 119 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37722 ymin: 33.95752 xmax: -83.37548 ymax: 33.95912
## z_range:       zmin: 0.002451998 zmax: 0.002452315
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-13.kml'
##   using driver 'KML'
## Simple feature collection with 30 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.38323 ymin: 33.95484 xmax: -83.37945 ymax: 33.95905
```

```
## z_range:        zmin: 0.002451467 zmax: 0.002452304
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-2.kml'
##   using driver 'KML'
## Simple feature collection with 45 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.38441 ymin: 33.95856 xmax: -83.38069 ymax: 33.96038
## z_range:        zmin: 0.002452205 zmax: 0.002452566
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-3.kml'
##   using driver 'KML'
## Simple feature collection with 20 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37421 ymin: 33.9607 xmax: -83.37106 ymax: 33.96628
## z_range:        zmin: 0.002452628 zmax: 0.002453736
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-4.kml'
##   using driver 'KML'
## Simple feature collection with 107 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37722 ymin: 33.9579 xmax: -83.37437 ymax: 33.96144
## z_range:        zmin: 0.002452072 zmax: 0.002452775
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-5.kml'
##   using driver 'KML'
## Simple feature collection with 27 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37473 ymin: 33.95745 xmax: -83.37265 ymax: 33.95979
## z_range:        zmin: 0.002451984 zmax: 0.002452448
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-6.kml'
##   using driver 'KML'
## Simple feature collection with 93 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37302 ymin: 33.95713 xmax: -83.37019 ymax: 33.95955
## z_range:        zmin: 0.002451922 zmax: 0.002452401
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-7.kml'
##   using driver 'KML'
## Simple feature collection with 33 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37131 ymin: 33.95316 xmax: -83.36691 ymax: 33.95849
```

```
## z_range:       zmin: 0.002451136 zmax: 0.002452189
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-8.kml'
##   using driver 'KML'
## Simple feature collection with 18 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.36983 ymin: 33.95688 xmax: -83.36649 ymax: 33.96118
## z_range:       zmin: 0.002451872 zmax: 0.002452725
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature-9.kml'
##   using driver 'KML'
## Simple feature collection with 150 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37998 ymin: 33.9568 xmax: -83.3784 ymax: 33.95774
## z_range:       zmin: 0.002451856 zmax: 0.002452042
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\C-D Zoned KMLs\feature.kml'
##   using driver 'KML'
## Simple feature collection with 35 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.38318 ymin: 33.96013 xmax: -83.37388 ymax: 33.96601
## z_range:       zmin: 0.002452514 zmax: 0.002453681
## Geodetic CRS:  WGS 84


## st_as_s2(): dropping Z and/or M coordinate
## st_as_s2(): dropping Z and/or M coordinate


## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\Buffered KMLs\feature(1).kml'
##   using driver 'KML'
## Simple feature collection with 499 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.38763 ymin: 33.95087 xmax: -83.37689 ymax: 33.96141
## z_range:       zmin: 0.00245068 zmax: 0.002452769
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\Buffered KMLs\feature(2).kml'
##   using driver 'KML'
## Simple feature collection with 431 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.38879 ymin: 33.95404 xmax: -83.37684 ymax: 33.96601
## z_range:       zmin: 0.00245131 zmax: 0.002453681
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\Buffered KMLs\feature(3).kml'
##   using driver 'KML'
```

```
## Simple feature collection with 395 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.38577 ymin: 33.95663 xmax: -83.37535 ymax: 33.96601
## z_range:       zmin: 0.002451822 zmax: 0.002453681
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\Buffered KMLs\feature(4).kml'
##   using driver 'KML'
## Simple feature collection with 389 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.38485 ymin: 33.95777 xmax: -83.37274 ymax: 33.97115
## z_range:       zmin: 0.002452048 zmax: 0.002454702
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\Buffered KMLs\feature(5).kml'
##   using driver 'KML'
## Simple feature collection with 291 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37989 ymin: 33.95862 xmax: -83.36708 ymax: 33.97085
## z_range:       zmin: 0.002452216 zmax: 0.002454641
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\Buffered KMLs\feature(6).kml'
##   using driver 'KML'
## Simple feature collection with 272 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37822 ymin: 33.95403 xmax: -83.36272 ymax: 33.96689
## z_range:       zmin: 0.002451305 zmax: 0.002453855
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\Buffered KMLs\feature(7).kml'
##   using driver 'KML'
## Simple feature collection with 265 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.3738 ymin: 33.94929 xmax: -83.36272 ymax: 33.96636
## z_range:       zmin: 0.002450367 zmax: 0.002453752
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\Buffered KMLs\feature(8).kml'
##   using driver 'KML'
## Simple feature collection with 486 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XYZ
## Bounding box:  xmin: -83.37836 ymin: 33.94279 xmax: -83.36171 ymax: 33.96614
## z_range:       zmin: 0.002449078 zmax: 0.002453708
## Geodetic CRS:  WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\Buffered KMLs\feature(9).kml'
##   using driver 'KML'
```

```
## Simple feature collection with 492 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:      XYZ
## Bounding box:   xmin: -83.38364 ymin: 33.94756 xmax: -83.3715 ymax: 33.96026
## z_range:        zmin: 0.002450023 zmax: 0.002452542
## Geodetic CRS:   WGS 84
## Reading layer 'Athens-Clarke County, GA' from data source
##   'C:\Users\gibra\Documents\Thesis Data\Buffered KMLs\feature.kml'
##   using driver 'KML'
## Simple feature collection with 469 features and 2 fields
## Geometry type: MULTIPOLYGON
## Dimension:      XYZ
## Bounding box:   xmin: -83.3865 ymin: 33.95087 xmax: -83.37664 ymax: 33.95987
## z_range:        zmin: 0.00245068 zmax: 0.002452464
## Geodetic CRS:   WGS 84


## st_as_s2(): dropping Z and/or M coordinate
## st_as_s2(): dropping Z and/or M coordinate
```

```r
setwd(paste(getwd(), "/Thesis Data", sep=""))
sales <- map(paste("Sales/", list.files("Sales"), sep = ""), read_csv, col_types = "cccccccdficc") %>% b
```

```
## 72 tiles needed, this may take a while (try a smaller zoom).


## Source : http://tile.stamen.com/toner-lines/17/35175/52372.png


## Source : http://tile.stamen.com/toner-lines/17/35176/52372.png


## Source : http://tile.stamen.com/toner-lines/17/35177/52372.png


## Source : http://tile.stamen.com/toner-lines/17/35178/52372.png


## Source : http://tile.stamen.com/toner-lines/17/35179/52372.png


## Source : http://tile.stamen.com/toner-lines/17/35180/52372.png


## Source : http://tile.stamen.com/toner-lines/17/35181/52372.png


## Source : http://tile.stamen.com/toner-lines/17/35182/52372.png


## Source : http://tile.stamen.com/toner-lines/17/35183/52372.png


## Source : http://tile.stamen.com/toner-lines/17/35175/52373.png


## Source : http://tile.stamen.com/toner-lines/17/35176/52373.png


## Source : http://tile.stamen.com/toner-lines/17/35177/52373.png


## Source : http://tile.stamen.com/toner-lines/17/35178/52373.png
```

Source : http://tile.stamen.com/toner-lines/17/35179/52373.png

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Source : http://tile.stamen.com/toner-lines/17/35175/52377.png

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Source : http://tile.stamen.com/toner-lines/17/35181/52378.png

```
## Source : http://tile.stamen.com/toner-lines/17/35182/52378.png

## Source : http://tile.stamen.com/toner-lines/17/35183/52378.png

## Source : http://tile.stamen.com/toner-lines/17/35175/52379.png

## Source : http://tile.stamen.com/toner-lines/17/35176/52379.png

## Source : http://tile.stamen.com/toner-lines/17/35177/52379.png

## Source : http://tile.stamen.com/toner-lines/17/35178/52379.png

## Source : http://tile.stamen.com/toner-lines/17/35179/52379.png

## Source : http://tile.stamen.com/toner-lines/17/35180/52379.png

## Source : http://tile.stamen.com/toner-lines/17/35181/52379.png

## Source : http://tile.stamen.com/toner-lines/17/35182/52379.png

## Source : http://tile.stamen.com/toner-lines/17/35183/52379.png
```
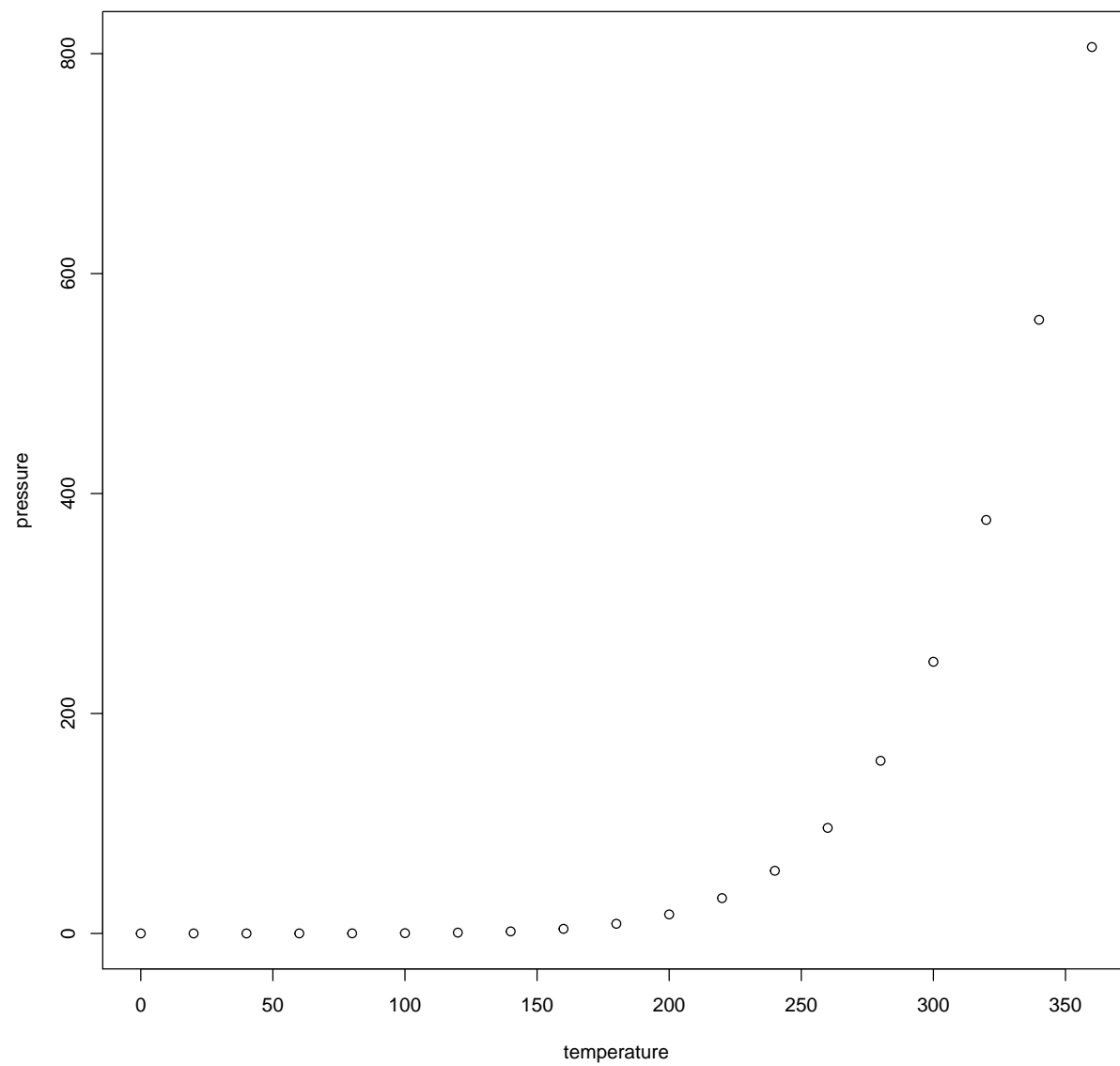
Including Plots

You can also embed plots, for example:

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.