ggplot map test

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```
# Demo of making maps with R

# Call the libraries

library(ggplot2) # beautiful graphs

library(dplyr) # data wrangling
```

```
##
## Attaching package: 'dplyr'
## The following objects are masked from 'package:stats':
##
##     filter, lag
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(sf) # simple (spatial) features
```

```
## Warning: package 'sf' was built under R version 4.1.1
## Linking to GEOS 3.9.1, GDAL 3.2.1, PROJ 7.2.1
```

```
library(readr) # import csv

library(here) # where am I?
```

```
## Warning: package 'here' was built under R version 4.1.1
## here() starts at C:/Users/agrogan/Desktop/GitHub/dataviz
```

```
# Set working directory

setwd(here()) # set working directory so pathnames below work correctly

# here() only works with R projects
# if you are not using an R project you can just use setwd("...")

# use read_sf to open shapefiles
# getting the directory and filename right is important

buildings <- read_sf("./mapping/shapefiles/AA_Building_Footprints/AA_Building_Footprints.shp")

trees <- read_sf("./mapping/shapefiles/a2trees/AA_Trees.shp")
```

```r
parks <- read_sf("./mapping/shapefiles/AA_Parks/AA_Parks.shp")

# watersheds <- read_sf("./mapping/shapefiles/watersheds/Watersheds.shp")

# use read_csv to read text file with client data

clients <- read_csv("./mapping/location-data/clients.csv")
```

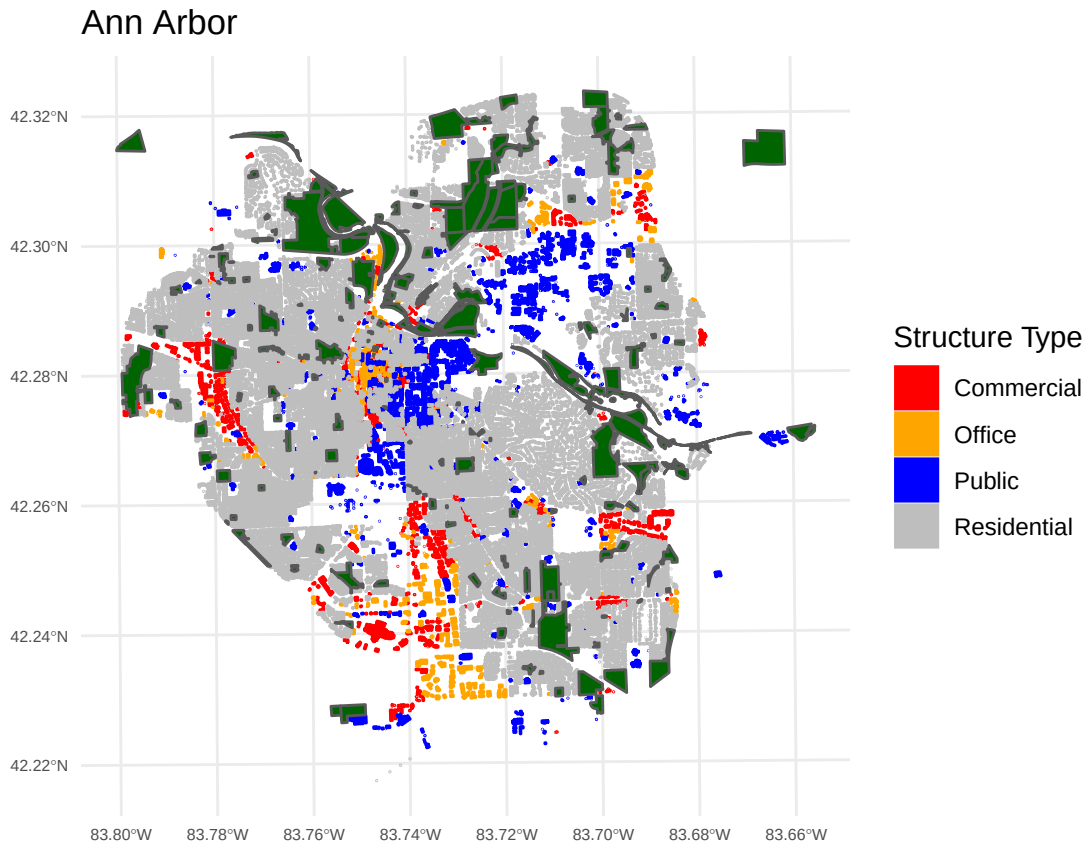
```
## Rows: 453 Columns: 10
```

```
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (3): gender, race_ethnicity, program
## dbl (7): ID, age, family_income, mental_health_T1, mental_health_T2, latitud...
```

```
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```r
# seems to work; what am I doing?
# converting clients to sf object?
# 4326 -> WGS1984

# point <- st_as_sf(clients,
#                   coords = c("longitude", "latitude"),
#                   crs = 4326)

# 4269 -> NAD1983

point <- st_as_sf(clients,
                  coords = c("longitude", "latitude"),
                  crs = 4269)

# set default CRS

# default_crs = sf::st_crs(4326)

# use ggplot to make the map

# NB RE Macs: the plotting device on Macs is actually pretty slow
# we notice this with all the detail that is involved in maps
# maps can be REALLY slow on Macs
# so--inconveniently--we write directly to PDF on a Mac
# and don't see the graph in our RStudio window
# we have to manually open the PDF to see the created map

# Note, haven't figured out how to add clients w/o goofing up the map

# Apparently, the first layer is important for setting the CRS of the map

# pdf("./mapping/mymap.pdf") # open PDF device (uncomment on Mac)

ggplot(buildings) +
  geom_sf(aes(color = Struc_Type, # color helps to see shapes on map
              fill = Struc_Type)) + # fill helps to see legend
```

```
  # geom_sf(data = point, color = "red") +
  # geom_point(data = clients,
  #            aes(x = longitude,
  #                y = latitude),
  #            color = "red") +
  # geom_sf(data = trees,
  #         size = .1,
  #         color = "darkgreen") +
  geom_sf(data = parks, fill = "darkgreen") +
  scale_color_manual(name = "Structure Type",
                     values = c("red",
                                "orange",
                                "blue",
                                "grey")) +
  scale_fill_manual(name = "Structure Type",
                    values = c("red",
                               "orange",
                               "blue",
                               "grey")) +
  labs(title = "Ann Arbor") +
  theme_minimal() +
  theme(axis.text = element_text(size = rel(.5)))
```




```
# dev.off() # turn off PDF device (uncomment on Mac)
```