HW5\_write\_up

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knitr::opts\_chunk$set(echo = TRUE, message = FALSE, warning = FALSE, error = FALSE)

## Load Libraries

library(readr)  
library(dplyr)  
library(tidyr)  
library(ggplot2)  
library(sf)  
library(tigris)  
options(tigris\_class = "sf")  
library(scales)  
library(forcats)

## Load and clean the homicide data. Filter for Chicago and modify victim\_race and disposition vectors.

homicide <- read\_csv("../data/homicide-data.csv")  
chicago <- homicide %>%   
 filter(city == "Chicago") %>%   
 mutate(victim\_race = fct\_lump(victim\_race, n = 3)) %>%   
 mutate(disposition = as\_factor(x = disposition),  
 disposition = fct\_recode(.f = disposition,  
 Solved = "Closed by arrest",  
 Unsolved = "Closed without arrest",  
 Unsolved = "Open/No arrest"))

## Practice with counties using sf and tigris.

il\_counties <- counties(state = "IL", cb = TRUE, class = "sf")

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class(il\_counties)

## [1] "sf" "data.frame"

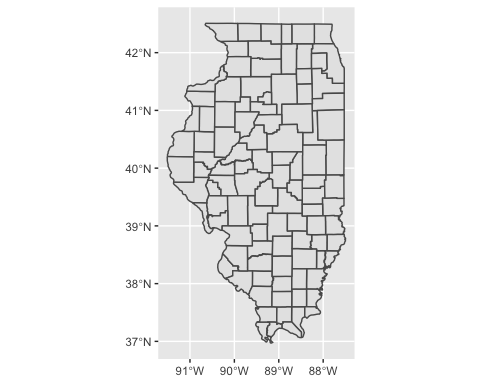
il\_counties %>%   
 slice(1:3)

## Simple feature collection with 3 features and 9 fields  
## geometry type: MULTIPOLYGON  
## dimension: XY  
## bbox: xmin: -89.60386 ymin: 39.91692 xmax: -87.52535 ymax: 42.49622  
## epsg (SRID): 4269  
## proj4string: +proj=longlat +ellps=GRS80 +towgs84=0,0,0,0,0,0,0 +no\_defs  
## STATEFP COUNTYFP COUNTYNS AFFGEOID GEOID NAME LSAD ALAND  
## 1 17 097 01784796 0500000US17097 17097 Lake 06 1149926934  
## 2 17 107 00424255 0500000US17107 17107 Logan 06 1600758859  
## 3 17 197 01785190 0500000US17197 17197 Will 06 2166099738  
## AWATER geometry  
## 1 2394188156 MULTIPOLYGON (((-88.19955 4...  
## 2 2252736 MULTIPOLYGON (((-89.60385 4...  
## 3 33374154 MULTIPOLYGON (((-88.26127 4...

class(il\_counties$geometry)

## [1] "sfc\_MULTIPOLYGON" "sfc"

ggplot() +  
 geom\_sf(data = il\_counties)

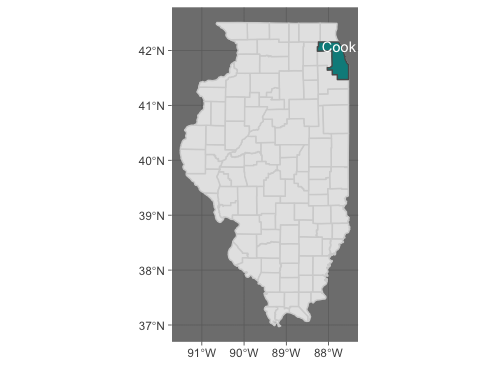


## Narrow in on Chicago (Cook County).

cook <- il\_counties %>%   
 filter(NAME == "Cook")  
cook

## Simple feature collection with 1 feature and 9 fields  
## geometry type: MULTIPOLYGON  
## dimension: XY  
## bbox: xmin: -88.26357 ymin: 41.46971 xmax: -87.52404 ymax: 42.15426  
## epsg (SRID): 4269  
## proj4string: +proj=longlat +ellps=GRS80 +towgs84=0,0,0,0,0,0,0 +no\_defs  
## STATEFP COUNTYFP COUNTYNS AFFGEOID GEOID NAME LSAD ALAND  
## 1 17 031 01784766 0500000US17031 17031 Cook 06 2447469694  
## AWATER geometry  
## 1 1786452809 MULTIPOLYGON (((-88.26329 4...

ggplot() +  
 geom\_sf(data = il\_counties, color = "lightgray") +  
 geom\_sf(data = cook, fill = "darkcyan") +  
 geom\_sf\_text(data = cook, aes(label = NAME),  
 color = "white",  
 nudge\_y = .26) +  
 theme\_dark() +  
 labs(x = "", y = "")

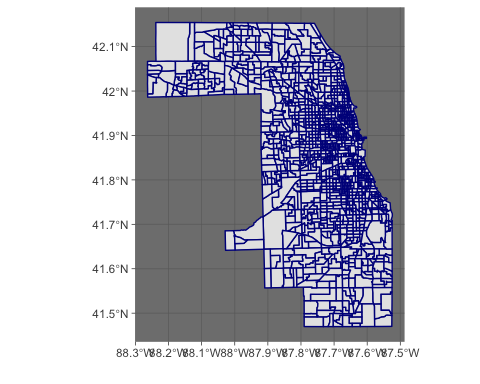


## Consider tracts.

cook\_tracts <- tracts("IL", county = "cook", cb = TRUE)

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ggplot() +  
 geom\_sf(data = cook\_tracts, color = "darkblue") +  
 theme\_dark() +  
 labs(x = "", y = "")



## Making sf object of lat and lon in homicide dataset and create plot.

il\_point <- st\_as\_sf(chicago, coords=c("lon", "lat")) %>%  
 st\_set\_crs(4269)  
  
ggplot() +  
 geom\_sf(data = cook\_tracts, color = "goldenrod2") +  
 geom\_sf(data = il\_point, aes(color = victim\_race, fill = victim\_race)) +  
 theme\_dark() +  
 labs(x = "", y = "") +  
 facet\_wrap(~ disposition) +  
 theme(axis.text.x = element\_text(angle = 45, hjust = 1)) +  
 ggtitle("Homicides in Chicago, IL")

