eds-223-hw1

Description

For this assignment, you will explore an environmental justice topic of your choosing. You should select a region, community, or environmental issue that matters to you.

You must complete the following:

- create two maps that communicate an environmental justice issue
- write a brief paragraph explaining what your maps communicate

read in dataset

```
library(tidyverse)
```

```
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.4     v readr     2.1.5
v forcats   1.0.0     v stringr   1.5.1
v ggplot2   3.5.2     v tibble    3.3.0
v lubridate 1.9.4     v tidyr     1.3.1
v purrr     1.1.0
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to becor
```

```
library(sf)
```

```
Linking to GEOS 3.13.0, GDAL 3.8.5, PROJ 9.5.1; sf_use_s2() is TRUE
```

```
  library(here)
```

```
here() starts at /Users/vedikashirtekar/Documents/MEDS/eds-223/eds-223-hw-1-repo-version-1
```

```
  library(tmap)
  # read in geodatabase of EJScreen data at the Census Block Group level
  ejscreen <- sf::st_read(here::here("data", "ejscreen","EJSCREEN_2023_BG_StatePct_with_AS_C
```

```
Reading layer `EJSCREEN_StatePctiles_with_AS_CNMI_GU_VI' from data source
  `/Users/vedikashirtekar/Documents/MEDS/eds-223/eds-223-hw-1-repo-version-1/data/ejscreen/E
  using driver `OpenFileGDB'
Simple feature collection with 243021 features and 223 fields
Geometry type: MULTIPOLYGON
Dimension:     XY
Bounding box:  xmin: -19951910 ymin: -1617130 xmax: 16259830 ymax: 11554350
Projected CRS: WGS 84 / Pseudo-Mercator
```

```
  # filter to a state you are interested in
  tx <- ejscreen %>%
    dplyr::filter(ST_ABBREV == "TX")
  # filter to a county you are interested in
  travis_county <- ejscreen %>%
    dplyr::filter(CNTY_NAME %in% c("Travis County"))

  central_texas <- ejscreen %>%
    dplyr::filter(CNTY_NAME %in% c("Travis County", "Williamson County"))
```

Let's make some maps

Research question: To what extent are people of color in Travis County within distance of a hazardous waste facility?

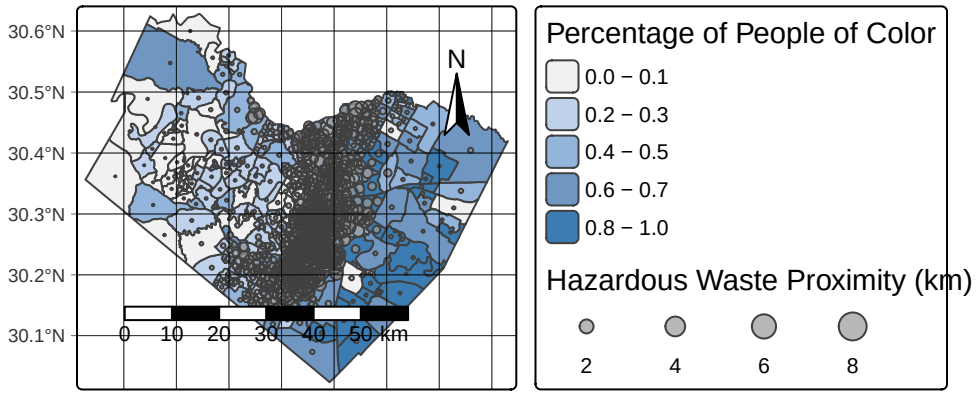
```
  # Let's make a map of the distribution of hazardous waste facilities in the county
  tmap_mode("plot")
```

```
i tmap modes "plot" - "view"
i toggle with `tmap::ttm()`
```

```r
#- PTSDF = hazardous waste proximity
#- D2_PTSDF = Hazardous waste proximity EJ Index
# - PEOPCOLOR: Concentrations of people of color
#- TSDF_CNT: Number of Hazardous waste facilities in the block group
# - RSEI_AIR: Toxic Releases to Air


# map of concentrations of POC related to # of hazardous waste facilities in the block gro
# nueces_id <- nueces_county %>% filter(ID == "483550005001")

#bbox <- st_bbox(travis_county)
#expanded_bbox <- bbox + c(-5000, -5000, 5000, 5000)



tm_shape(travis_county) +
  #tm_polygons() +
tm_polygons("PEOPCOLORPCT", fill.scale = tm_scale(values = "blue"), fill.legend = tm_legen
  tm_symbols(size = "PTSDF",
             title.size = "Hazardous Waste Proximity (km)",
             size.legend = tm_legend(orientation = "portrait"),
             alpha = .7, shape = 21)  +
  tm_grid(
    col = "black", lwd = 0.5
  ) +
  tm_graticules(
    col = "black",
    lwd = 0.3,
    alpha = 0.6
  ) + tm_compass(
    position = c("top", "right"),
    size = 2
  ) +
  tm_scalebar(
    position = c("bottom", "left"), text.size = 0.7) +
  # tm_layout(
  # title.size = 2)
  tm_title("Proximity of Hazardous Waste Facilities to POC Communities in Central Texas Co
```

```
-- tmap v3 code detected -------------------------------------------------------
[v3->v4] `symbols()`: use `fill_alpha` instead of `alpha`.Multiple palettes called "blue" fou
```

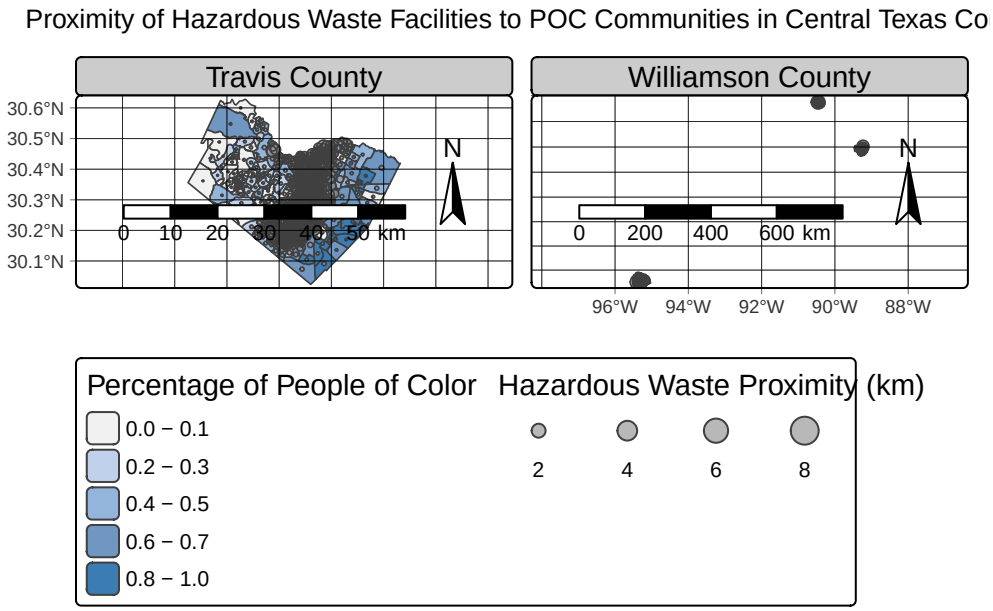
f Hazardous Waste Facilities to POC Communities in Central Texas Counties




```
tm_shape(central_texas) +
  tm_fill() + tm_facets("CNTY_NAME") +
tm_polygons("PEOPCOLORPCT", fill.scale = tm_scale(values = "blue"), fill.legend = tm_legen
  tm_symbols(size = "PTSDF",
             title.size = "Hazardous Waste Proximity (km)",
             size.legend = tm_legend(orientation = "portrait"),
             alpha = .7, shape = 21)  +
  tm_grid(
    col = "black", lwd = 0.5
  ) +
  tm_graticules(
    col = "black",
    lwd = 0.3,
    alpha = 0.6
  ) + tm_compass(
    position = c("top", "right"),
    size = 2
  ) +
  tm_scalebar(
    position = c("bottom", "left"), text.size = 0.7) +
  # tm_layout(
  # title.size = 2)
```

```
  tm_title("Proximity of Hazardous Waste Facilities to POC Communities in Central Texas Co
```

```
-- tmap v3 code detected -------------------------------------------------------
[v3->v4] `symbols()`: use `fill_alpha` instead of `alpha`.Multiple palettes called "blue" fou
```



Second map

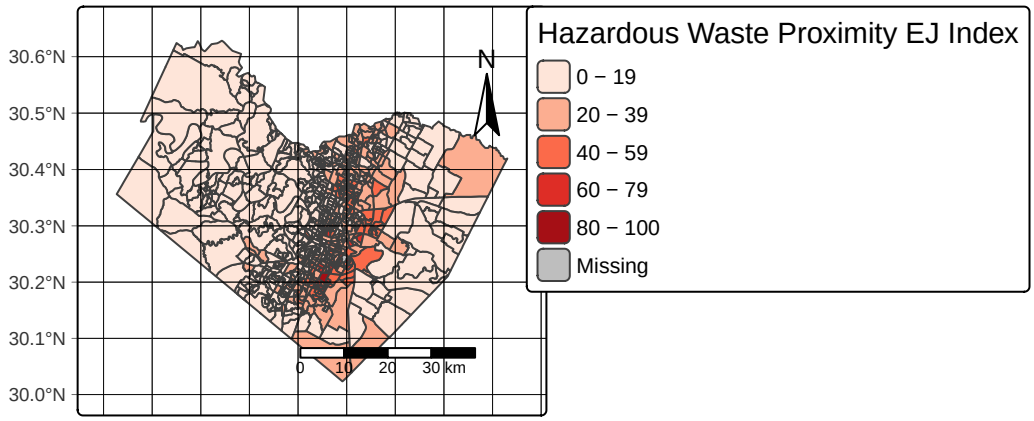
```
  ## hazardous waste proximity vs % low income based on index (polygon)
  tmap_mode("plot")
```

```
i tmap modes "plot" - "view"
```

```
  tm_shape(travis_county) +
    tm_polygons(
      fill = "D2_PTSDF",
      fill.scale = tm_scale(values = "brewer.reds"),
      fill.legend = tm_legend(title = "Hazardous Waste Proximity EJ Index")
```

```
  ) +
  # tm_symbols(
  #   size = "LOWINCPCT",
  #   shape = 22,
  #   alpha = 0.6,
  #   title.size = "Low-Income Percentage"
  # ) +
   tm_graticules(
    col = "black",
    lwd = 0.3,
    alpha = 0.6
  ) + tm_compass(
    position = c("top", "right"),
    size = 2
  ) + tm_grid(
    col = "black", lwd = 0.5,
    alpha = 0.4
  ) +
  tm_scalebar(
    position = c("bottom", "right")) + tm_graticules(
    col = "black",
    lwd = 0.3,
    alpha = 0.6) +
#   tm_layout(
#     title = "Hazardous Waste Proximity EJ Index For Communities in Travis County",
#     title.size = .9,
# #    title.position = tm_pos("center"),
#     legend.outside.position = "bottom",
#     component.autoscale = FALSE
#   )
  tm_title("Hazardous Waste Proximity EJ Index For Communities in Travis County", size = .
  tm_layout(inner.margins = c(.1, .1, .1, .1),  component.autoscale = FALSE)
```

ɹs Waste Proximity EJ Index For Communities in Travis County




```
# install.packages("tinytex")
# tinytex::install_tinytex()
```