EJ_Screen_Maeve

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Preamble

```
#reading in libraries
library(tidyverse)
```

```
── Attaching core tidyverse packages ──────────────────────── tidyverse 2.0.0 ──
✔ dplyr     1.1.4     ✔ readr     2.1.5
✔ forcats   1.0.0     ✔ stringr   1.5.2
✔ ggplot2   3.5.1     ✔ tibble    3.2.1
✔ lubridate 1.9.3     ✔ tidyr     1.3.1
✔ purrr     1.1.0
── Conflicts ────────────────────────────────────────── tidyverse_conflicts() ──
✖ dplyr::filter() masks stats::filter()
✖ dplyr::lag()    masks stats::lag()
ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to
become errors
```

```
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/maeveoak/Documents/GitHub/EDS223-HW1
```

```
library(stars) # for raster data
```

```
Loading required package: abind
```

```
library(tmap) # for static and interactive maps
library(viridis)
```

```
Loading required package: viridisLite
```

```
#loading data (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/maeveoak/Documents/GitHub/EDS223-
HW1/data/ejscreen/EJSCREEN_2023_BG_StatePct_with_AS_CNMI_GU_VI.gdb'
  using driver `OpenFileGDB'
```

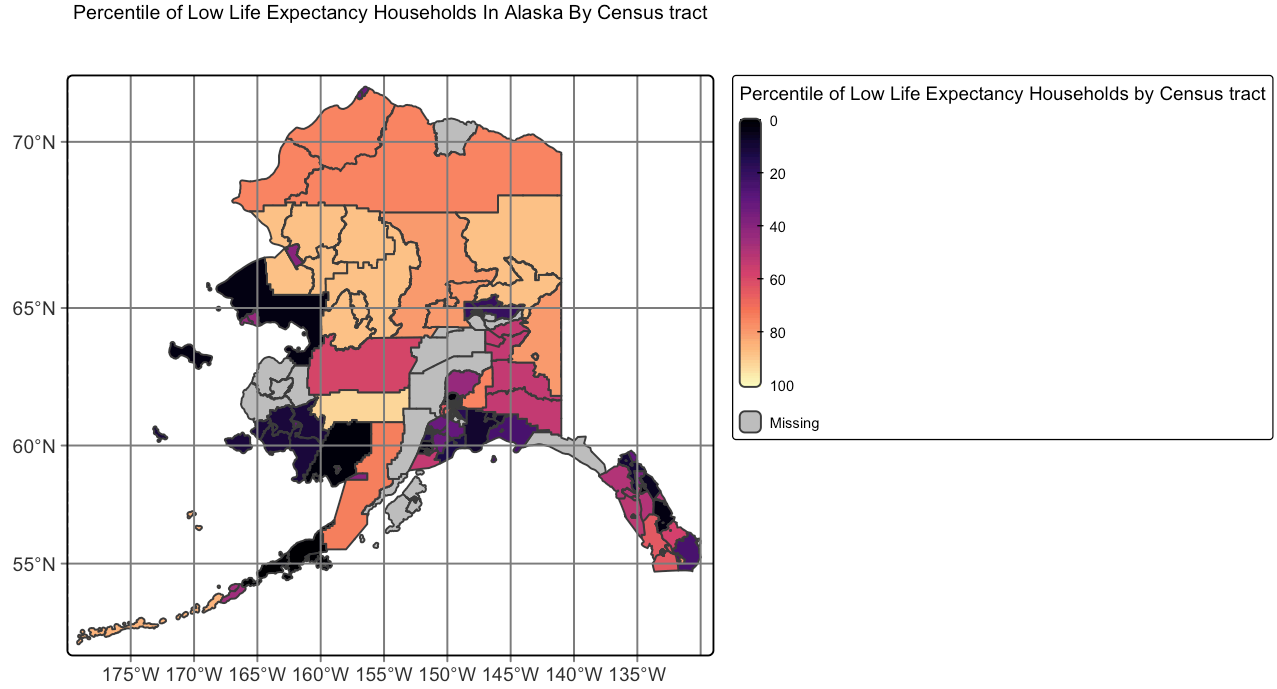
```
Simple feature collection with 243021 features and 223 fields
Geometry type: MULTIPOLYGON
Dimension:     XY
Bounding box:  xmin: -19951910 ymin: -1617130 xmax: 16259830 ymax: 11554350
Projected CRS: WGS 84 / Pseudo-Mercator
```

```
#Filtering only for AK
ejscreen_ak <- ejscreen %>% filter(ST_ABBREV == "AK")
```

Making Map 1 (Percentile of Low Life Expectancy Households for Alaska)

```
tm_shape(ejscreen_ak) +
  tm_polygons( fill = "P_LIFEEXPPCT",
               fill.scale = tm_scale_continuous(values = magma(8)),
               fill.legend = tm_legend( title = "Percentile of Low Life Expectancy Househ
       tm_graticules() +
       tm_title_out("Percentile of Low Life Expectancy Households In Alaska By Census tr
       position = tm_pos_out("center","top"))
```

```
[plot mode] fit legend/component: Some legend items or map compoments do not
fit well, and are therefore rescaled.
ℹ Set the tmap option `component.autoscale = FALSE` to disable rescaling.
```

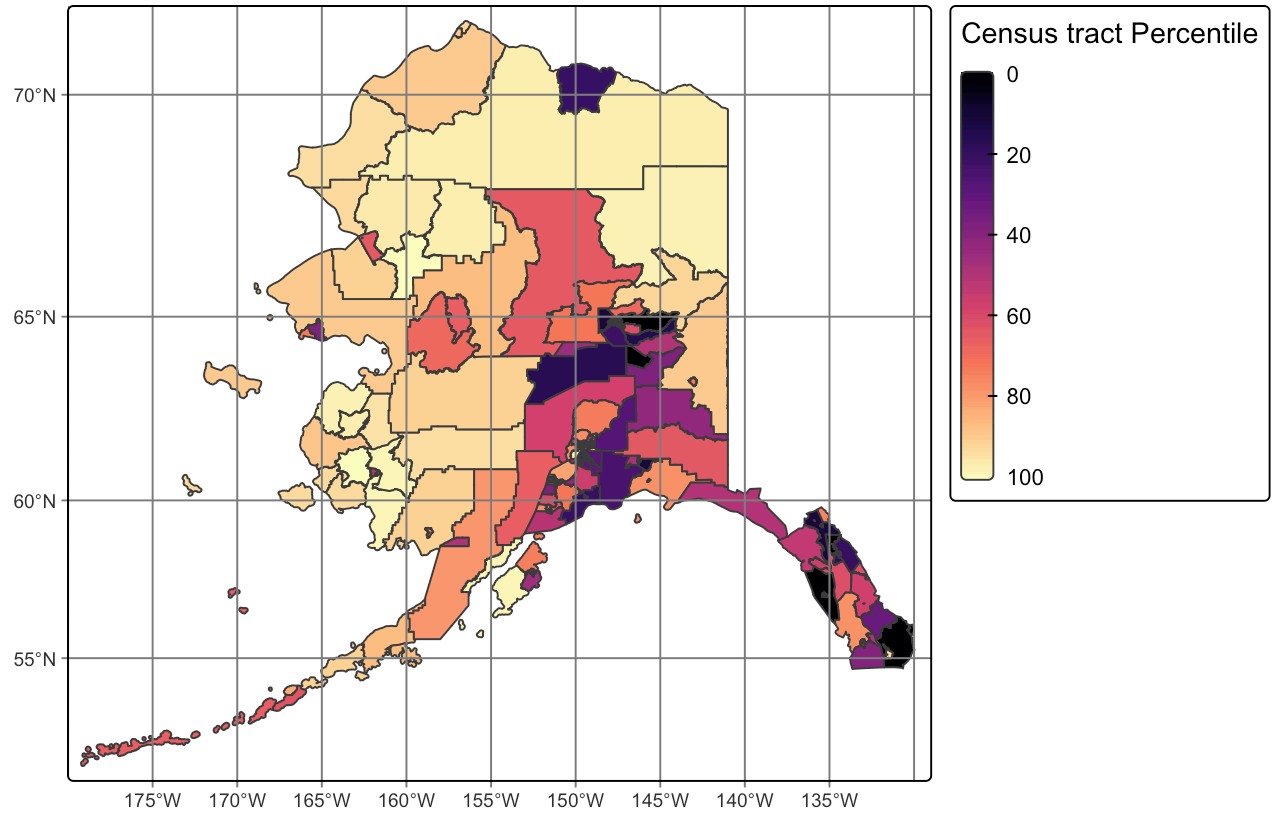


Making Map 2 (Percentile of Low income households by Census Tract in Alaska)

```
tm_shape(ejscreen_ak) +
  tm_polygons( fill = "P_LESSHSPCT",
               fill.scale = tm_scale_continuous(values = magma(8)),
               fill.legend = tm_legend( title = "Census tract Percentile", position = tm_
        tm_graticules() +
        tm_title_out("Percentile of people with less than a High School Education in Alas
        position = tm_pos_out("center","top"))
```

```
[plot mode] fit legend/component: Some legend items or map compoments do not
fit well, and are therefore rescaled.
ℹ Set the tmap option `component.autoscale = FALSE` to disable rescaling.
```

Percentile of people with less than a High School Education in Alaska



What do the maps communicate?

I made two maps of Alaska, both are organized by Census tract, using EJScreen data from the EPA. The first describes the percentile of low life expectancy households for the state, with 0 being the highest concentration of low life expectancy households in the state, and 100 being the lowest. The second map describes the concentration of households in a tract with less than a highschool education, organized by percentile. These maps depict a relationship between low life expectancy and educational access, as many of the tracts which rank highly for life expectancy also rank highly for educational access, and vis versa. What is likely happening is that groups who have low educational access have reduced access to health care or other life-extending resources, which reduces their life expectancy for the household. ## Data Citation: EPA, 2024, “Environmental Justice Mapping and Screening Tool (EJScreen)”, https://doi.org/10.7910/DVN/RLR5AX, Harvard Dataverse, V4, UNF:6:Ew64oHBMGoTrNkLoYBJcUw== [fileUNF]