Cabell County Association Between Income and Hazardous Waste Proximity

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```
# Load in data
library(tidyverse)
library(sf)
library(here)
library(dplyr)
library(tmap)
```

Read in Data and Filter to Cabell County

```
# 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_CNM
```

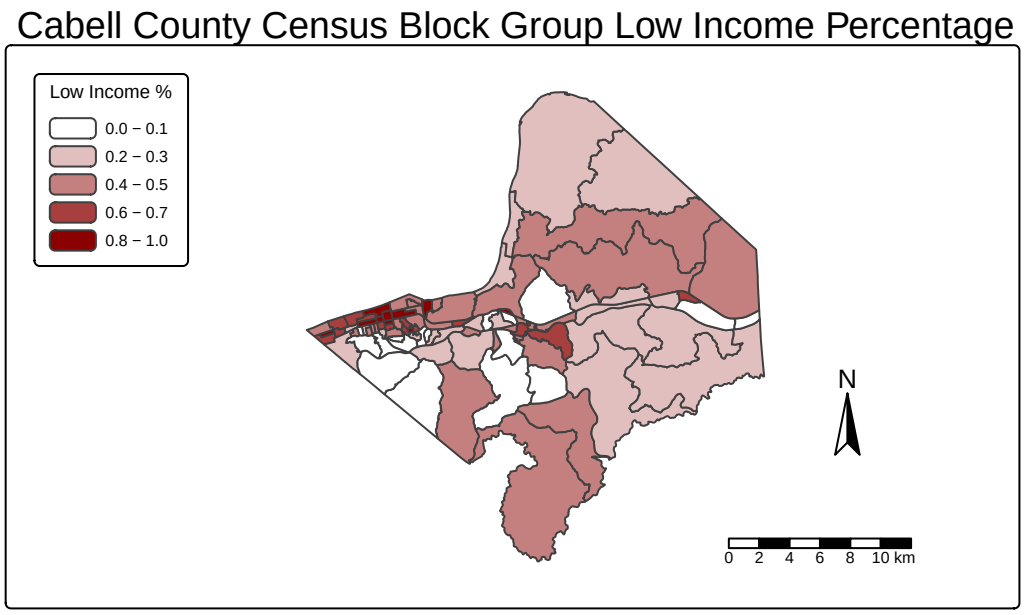
```
# Filter dataset to only include Cabell County West Virgina
cabell_ej <- ejscreen %>%
  filter(ST_ABBREV == "WV") %>%
  filter(CNTY_NAME %in% c("Cabell County"))
```

Map 1: Low Income Percentage per Census Block Group

The following map shows areas of high low income as darker red

```
tm_shape(cabell_ej) +
  tm_polygons(fill = "LOWINCPCT", # Fill polygons based on low income percentage
              fill.scale = tm_scale(values = c("white", "darkred")), # Set high low income to
              fill.legend = tm_legend(title = "Low Income %",
```

```
            position = "left")) +
  tm_scalebar(position = c(0.70, 0.15)) +
  tm_compass(position = c(0.80, 0.45)) +
  tm_title(text = "Cabell County Census Block Group Low Income Percentage") +
  tm_layout(inner.margins = c(0.1, 0.2, 0.1, 0.1), # Add white space to fit compass and leger
            asp = 1.8, # Custom aspect ratio (height and width)
          legend.title.size = 0.6,
          legend.text.size = 1,
          legend.width = 4,
          legend.height = 5,
          title.position = c(0, 1.08))
```

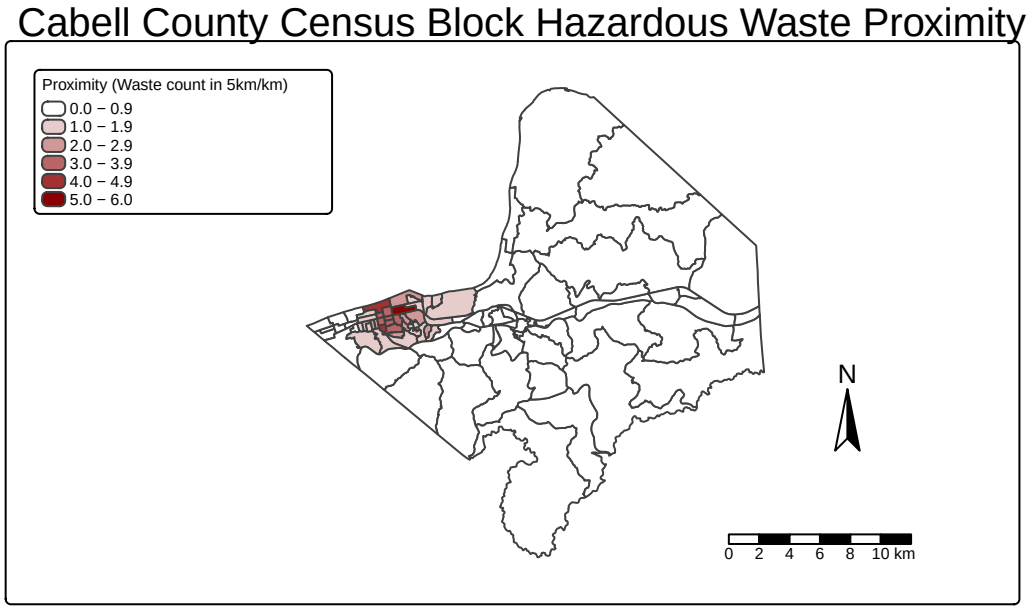


Map 2: Hazardous Waste Proximity per Census Block Group

The following map shows areas of higher hazardous waste proximity as darker red

```
tm_shape(cabell_ej) +
  tm_polygons(fill = "PTSDF", # Fill polygons based on hazardous waste proximity
        fill.scale = tm_scale(values = c("white", "darkred")), # Set high waste proximity to
        fill.legend = tm_legend(title = "Proximity (Waste count in 5km/km)",
              position = "left")) +
```

```
  tm_scalebar(position = c(0.70, 0.15)) +
  tm_compass(position = c(0.80, 0.45)) +
  tm_title(text = "Cabell County Census Block Hazardous Waste Proximity") +
  tm_layout(inner.margins = c(0.1, 0.2, 0.1, 0.1), # Add white space to fit compass and lege
              asp = 1.8, # Custom aspect ratio (height and width)
            legend.title.size = 0.5,
            legend.text.size = 0.5,
            legend.width = 15.5,
            legend.height = 7.5,
            title.position = c(0, 1.08))
```



What do these maps communicate?

These maps demonstrate that low income census blocks in Cabell County, West Virginia tend seem to live closer to hazardous waste. On the first map, darker areas correspond to a higher portion of the population that is low income. On the second map, darker areas correspond to a higher hazardous waste proximity index which is calculated by counting the number of waste facilities within 5km from a block and dividing each by the distance from that facility in km. It is apparent by comparing the two maps that there is an overlap between the darker areas, which suggest blocks closest to hazardous waste tend to be more low income. This may be due to the fact that areas closest to hazardous waste are often considered undesirable property and

are therefore affordable. This demonstrates how low income communities are disproportionately affected by environmental hazards due to poverty reducing their environmental resilience.

Citation:

United States Environmental Protection Agency. 2015. EJSCREEN. Retrieved: 10, 06, 2025, from https://pedp-ejscreen.azurewebsites.net/