Mini Project 1

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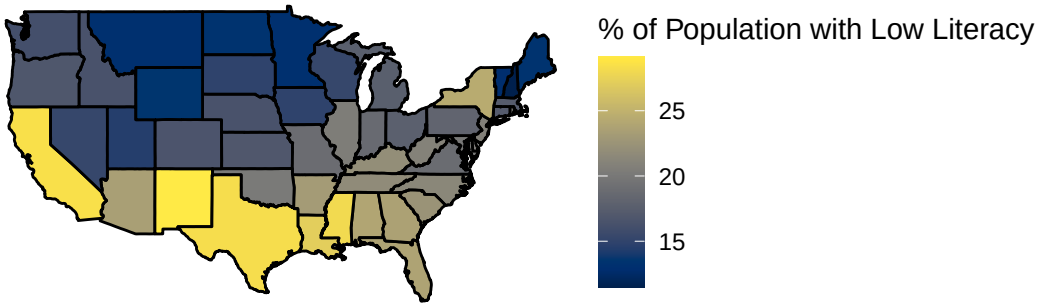
Static Plots

The first statistic I would like to investigate are the literacy rates among states. Literacy rates are incredibly important and have sweeping effects on people's employment opprtunites, educational attainment and overall quality of life. The data comes from the The World Population Review though it does not state the exact literacy rates. In actuality, it gives the percentage of the adult population that fall under the category of low literacy rates for 2024. According to the National Center for Education Statistics, low literacy is defined as "those performing at PIAAC literacy proficiency level 1 or below or who could not participate due to a language barrier or a cognitive or physical inability to be interviewed." These adults are able to process meaning at the sentence level meaning they can only read short, simple paragraphs. (https://nces.ed.gov/surveys/piaac/measure.asp)

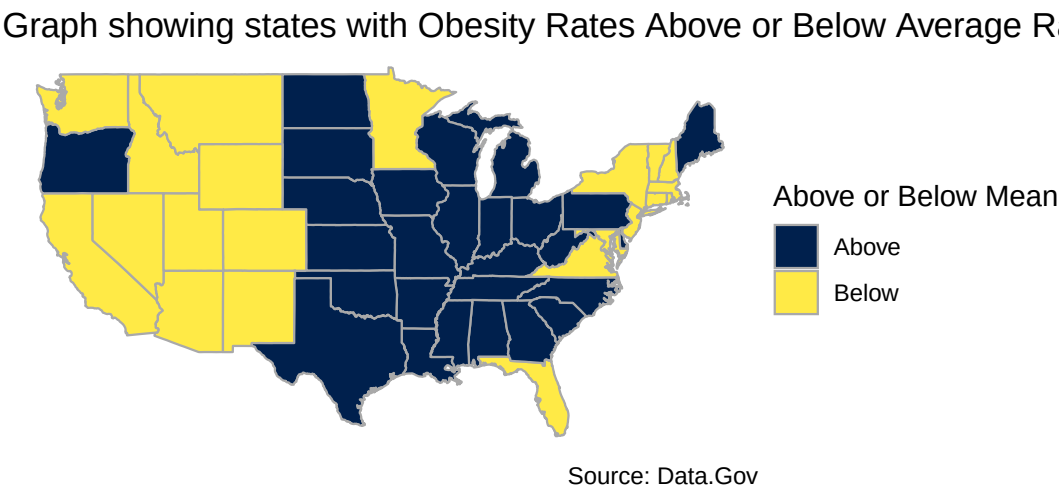
Map of the US showing % of State Population with Low Literacy



Source: The World Population Review

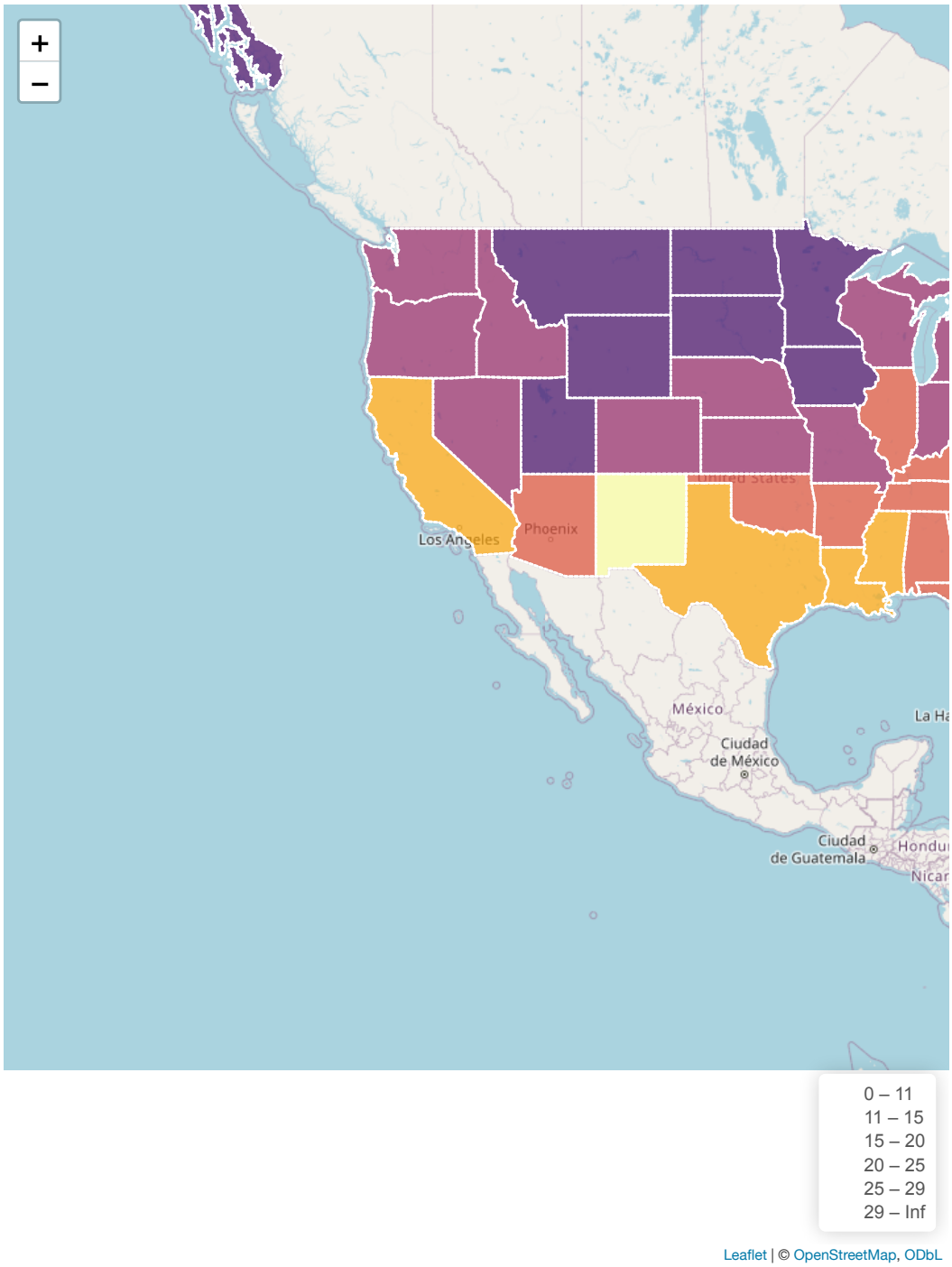
This is a color coded choropleth map showing the percentage of the state population that has a low literacy rate. The legend shows that the percentage of low literacy ranges from about 0 to over 25% with darker blue colors representing a small percentage of low literacy ranging to brighter yellow that represents a higher percentage of low literacy. We notice that southern states appear to have higher percentages of low literacy as notice they appear more yellow in color. Texas, California and New Mexico stand out as having the highest percentage. In contrast, northern states appear to have lower percentages of low literacy especially upper New England such as New Hampshire and Midwest states like Minnesota and Montana.

My second statistic I would like to to investigate are obesity rates in America. The data was sourced from Data.Gov gives the state obesity rate for 2015. Obesity is a growing problem in America, as it poses significant health risks to thousands of people. However different states have varying levels of obesity. Here we can investigate which states are above and below the average obesity percentage in America to see if there are any patterns in obesity rates.



From the graph above, we notice that the majority of states with obesity rates above the average are in the middle of the United States on the right side. The Left side of the United States remains mostly below the average apart from Oregon. We also notice Minnesota as anomaly in the middle being below the average obesity rate. This may point to cultural reasons for obesity, as many adjacent states share the same category, likely having similar food customs or ways of life that may lead to obesity. The spread is also vertical with similar categories spanning the length of the US and being split in half by the breadth. This map may be further enhanced if it could be cross referenced with a map showing the prevalence of fast food chains such as McDonald's.

Interactive Plots



```
#| warning: false
#| message: false
#| echo: false
#| results: hide



####################
# If want more HTML formatting, use these lines instead of those above:
#states <- states |>
#  mutate(labels = glue("<strong>{name}</strong><br/>{density} people / #mi<sup>2</sup>"))
####################


obesity_pal <- colorFactor(viridis(2), states$above_below) #This creates a color factor for a
```

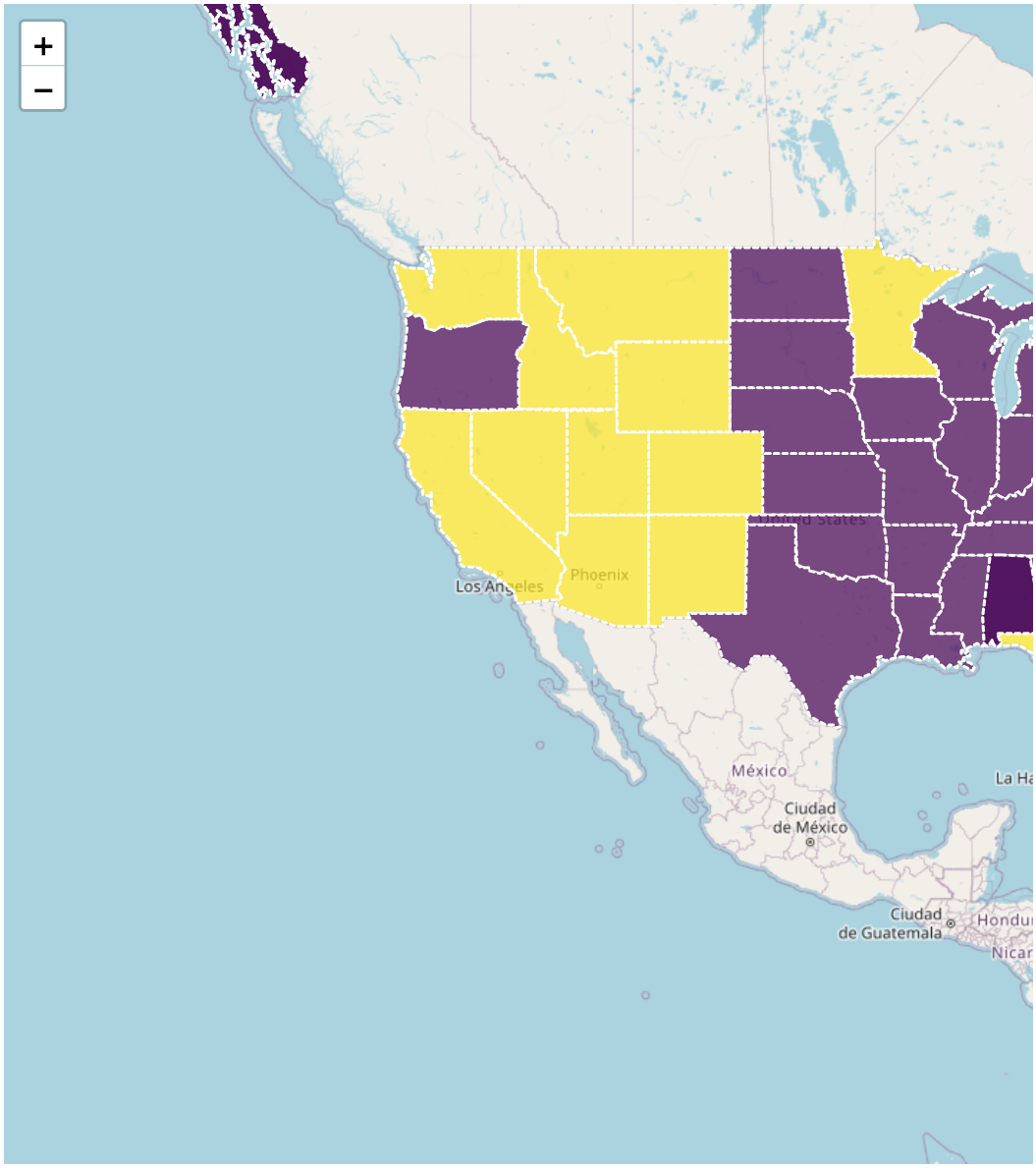
```
Warning: Unknown or uninitialised column: `above_below`.
```

```
obesity <- obesity |>
  mutate(labels = str_c(str_to_title(state), ": ", Obesity)) %>% #show the obesity rate when
  arrange(state) #need to arrange so when merged with states data it lines up correctly for c

labels <- lapply(obesity$labels, HTML) #

obesity <- obesity %>%
   filter(state != "district of columbia" & state != "puerto rico" ) #do the same for obesity

states <- states %>%
  mutate(name = str_to_lower(name)) %>%
  filter(name != "district of columbia" & name != "puerto rico" ) #need to remove these two i

states$above_below <- obesity$above_below # Add above below to states data

# obesity %>%
#   anti_join(states, by = c("state" = "name"))

leaflet(states) |>
  setView(-96, 37.8, 4) |>
  addTiles() |>
  addPolygons(
    fillColor = ~obesity_pal(above_below), #use the pal from above
```

```
    weight = 2,
    opacity = 1,
    color = "white",
    dashArray = "3",
    fillOpacity = 0.7,
    highlightOptions = highlightOptions(
      weight = 5,
      color = "#666",
      dashArray = "",
      fillOpacity = 0.7,
      bringToFront = TRUE),
    label = labels,
    labelOptions = labelOptions(
      style = list("font-weight" = "normal", padding = "3px 8px"),
      textsize = "15px",
      direction = "auto")) |>
  addLegend(pal = obesity_pal, values = obesity$above_below, opacity = 0.7, title = NULL,
    position = "bottomright")
```

```
Warning in sf::st_is_longlat(x): bounding box has potentially an invalid value
range for longlat data
```

```
file:////private/var/folders/cl/07lpcsgs3jgbg80xbpw43rn40000gn/T/RtmpTjT6sx/file4a816b182df0,
```


+
−
Phoenix
México
Ciudad
de México
Ciudad
de Guatemala
Above
Below
Leaflet | © OpenStreetMap, ODbL