library(sp)

library(maptools)

library(ggplot2)

library(colorspace)

library(maps)

library(mapproj)

library(Cairo)

gpclibPermit()

theme\_clean <- function(base\_size = 12) {

require(grid)

theme\_grey(base\_size) %+replace%

theme(

axis.title = element\_blank(),

axis.text = element\_blank(),

panel.background = element\_blank(),

panel.grid = element\_blank(),

axis.ticks.length = unit(0, "cm"),

axis.ticks.margin = unit(0, "cm"),

panel.margin = unit(0, "lines"),

plot.margin = unit(c(0,0,0,0), "lines"),

complete = TRUE)

}

load("USA\_adm1.RData")

> gadm.data.frame <- fortify(gadm)

Regions defined for each Polygons

> gadm.data.frame$state <- factor(gadm.data.frame$id, levels = 1:length(gadm$NAME\_1), labels = gadm$NAME\_1)

> gadm.data.frame$state <- as.character(gadm.data.frame$state)

> my.data.frame <- read.csv()

Error in read.table(file = file, header = header, sep = sep, quote = quote, :

argument "file" is missing, with no default

> my.data.frame <- read.csv("data\_sat\_scores\_2013.csv", header = TRUE)

> my.data.frame$State <- as.character(my.data.frame$State)

> if(!setequal(unique(my.data.frame$State), unique(gadm.data.frame$state))) {

+ cat("\n\nState names from input data:\n\n")

+ print(sort(unique(my.data.frame$State)))

+ cat("\n\nState names from GIS database:\n\n")

+ print(sort(unique(gadm.data.frame$state)))

+ cat("\n\n")

+ stop("\n\nExecution terminated")

+ }

> combined.data.frame <- merge(gadm.data.frame, my.data.frame,

+ by.x = "state", by.y = "State")

> us.data.frame <- subset(combined.data.frame,

+ subset = ((long >= -124.7625) & (long <= -66.9326) &

+ (lat >= 24.5210) & (lat <= 49.3845)))

> selected.us.data.frame <- subset(us.data.frame, subset = (!hole))

> us.map.object <- ggplot(data = selected.us.data.frame,

+ aes(map\_id = id, x = long, y = lat, fill = SAT)) +

+ geom\_map(map = selected.us.data.frame, colour = "black") +

+ coord\_map("albers", lat0 = 24.5210, lat1 = 49.3845) +

+ scale\_fill\_gradient2(low = hex(HLS(12,0.5,0.9)),

+ mid = "gray90",

+ high = hex(HLS(253,0.5,0.9)),

+ midpoint = median(my.data.frame$SAT))

> print(us.map.object)

> us.map.object <- ggplot(data = selected.us.data.frame,

+ aes(map\_id = id, x = long, y = lat, fill = SAT)) +

+ geom\_map(map = selected.us.data.frame, colour = "black") +

+ coord\_map("albers", lat0 = 24.5210, lat1 = 49.3845) +

+ scale\_fill\_gradient2(low = hex(HLS(12,0.5,0.9)),

+ mid = "gray90",

+ high = hex(HLS(253,0.5,0.9)),

+ midpoint = median(my.data.frame$SAT)) +

+ theme\_clean()

Loading required package: grid

Warning message:

`axis.ticks.margin` is deprecated. Please set `margin` property of `axis.text` instead

> print(us.map.object)

> pdf(file = "plot\_map\_sat\_scores\_by\_state.pdf", width = 11, height = 8.5)

> print(us.map.object)

> dev.off()

RStudioGD

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> svg(file = "plot\_map\_sat\_scores\_by\_state.svg", width = 11, height = 8.5)

> print(us.map.object)

> dev.off()

RStudioGD

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> CairoPNG(file = "plot\_map\_sat\_scores\_by\_state.png", width = 792, height = 612)

> print(us.map.object)

> dev.off()

RStudioGD

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**CODE EDIT ITERATIONS TO CHANGE LONGITUDE FOR ALASKA AND HAWAII:**

> us.map.object <- ggplot(data = selected.us.data.frame,

+ aes(map\_id = id, x = long, y = lat, fill = SAT)) +

+ geom\_map(map = selected.us.data.frame, colour = "black") +

+ coord\_map("albers", lat0 = 24.5210, lat1 = 49.3845, long0 = -200, long1 = -20) +

+ scale\_fill\_gradient2(low = hex(HLS(12,0.5,0.9)),

+ mid = "gray90",

+ high = hex(HLS(253,0.5,0.9)),

+ midpoint = median(my.data.frame$SAT))

> print(us.map.object)

Error in mapproj::mapproject(x, y, projection = coord$projection, parameters = coord$params, :

albers projection requires 2 parameters

> us.map.object <- ggplot(data = selected.us.data.frame,

+ aes(map\_id = id, x = long, y = lat, fill = SAT)) +

+ geom\_map(map = selected.us.data.frame, colour = "black") +

+ coord\_map("albers", lat0 = 24.5210, lat1 = 49.3845, lon0 = -200, lon1 = -20) +

+ scale\_fill\_gradient2(low = hex(HLS(12,0.5,0.9)),

+ mid = "gray90",

+ high = hex(HLS(253,0.5,0.9)),

+ midpoint = median(my.data.frame$SAT))

> print(us.map.object)

Error in mapproj::mapproject(x, y, projection = coord$projection, parameters = coord$params, :

albers projection requires 2 parameters

> us.data.frame <- subset(combined.data.frame,

+ subset = ((long >= -300.7625) & (long <= -20.9326) &

+ (lat >= 24.5210) & (lat <= 49.3845)))

> us.map.object <- ggplot(data = selected.us.data.frame,

+ aes(map\_id = id, x = long, y = lat, fill = SAT)) +

+ geom\_map(map = selected.us.data.frame, colour = "black") +

+ coord\_map("albers", lat0 = 24.5210, lat1 = 49.3845, long0 = -200, long1 = -20) +

+ scale\_fill\_gradient2(low = hex(HLS(12,0.5,0.9)),

+ mid = "gray90",

+ high = hex(HLS(253,0.5,0.9)),

+ midpoint = median(my.data.frame$SAT))

> print(us.map.object)

Error in mapproj::mapproject(x, y, projection = coord$projection, parameters = coord$params, :

albers projection requires 2 parameters

> us.map.object <- ggplot(data = selected.us.data.frame,

+ aes(map\_id = id, x = long, y = lat, fill = SAT)) +

+ geom\_map(map = selected.us.data.frame, colour = "black") +

+ coord\_map("albers", long0 = -200, long1 = -20) +

+ scale\_fill\_gradient2(low = hex(HLS(12,0.5,0.9)),

+ mid = "gray90",

+ high = hex(HLS(253,0.5,0.9)),

+ midpoint = median(my.data.frame$SAT))

> print(us.map.object)

> us.map.object <- ggplot(data = selected.us.data.frame,

+ aes(map\_id = id, x = long, y = lat, fill = SAT)) +

+ geom\_map(map = selected.us.data.frame, colour = "black") +

+ coord\_map("albers", long0 = -300.7625, long1 = -20.9326) +

+ scale\_fill\_gradient2(low = hex(HLS(12,0.5,0.9)),

+ mid = "gray90",

+ high = hex(HLS(253,0.5,0.9)),

+ midpoint = median(my.data.frame$SAT))

> print(us.map.object)

> us.map.object <- ggplot(data = selected.us.data.frame,

+ aes(map\_id = id, x = long, y = lat, fill = SAT)) +

+ geom\_map(map = selected.us.data.frame, colour = "black") +

+ coord\_map("albers", lat0 = -80, long0 = -300) +

+ scale\_fill\_gradient2(low = hex(HLS(12,0.5,0.9)),

+ mid = "gray90",

+ high = hex(HLS(253,0.5,0.9)),

+ midpoint = median(my.data.frame$SAT))

> print(us.map.object)