statebins plots

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[data source: 2017 Median Household Income by State (percent change)]https://geofred.stlouisfed.org/map/?th=bugn&cc=2&rc=false&im=user&sb&lng=-90.00&lat=39.98&zm=4&sl&sv&am=Average&at=Not%20Seasonally%20Adjusted,%20Annual,%20Current%20Dollars&sti=165&fq=Annual&rt=state&un=pch&dt=2017-01-01&ibs=0,20000000 [data source: 2017 Per Capita Personal Income by State (dollars)]https://geofred.stlouisfed.org/map/?th=ylorbr&cc=8&rc=false&im=fractile&sb&lng=-105.56&lat=43.80&zm=4&sl&sv&am=Average&at=Not%20Seasonally%20Adjusted,%20Annual,%20Dollars&sti=882&fq=Annual&rt=state&un=lin&dt=2017-01-01

load and library packages

```
library(pacman)
p_load("tidyverse", "broom", "coefplot", "cowplot",
                 "gapminder", "GGally", "ggrepel", "ggridges", "gridExtra",
                 "here", "interplot", "margins", "maps", "mapproj",
                 "mapdata", "MASS", "quantreg", "rlang", "scales",
                 "survey", "srvyr", "viridis", "viridisLite", "devtools", "socviz", "statebins")
# Enter one or more numbers separated by spaces, or an empty line to cancel
# 1:
#devtools::install_github("kjhealy/socviz")
```

read data

```
library(readxl)
Household_Income <- read_excel("GeoFRED_Median_Household_Income_by_State_Percent_Change.xls",
                               col_types = c("text", "text", "text",
        "numeric"))

colnames(Household_Income) <-c("ID", "state", "code", "value")
str(Household_Income)
```

```
## Classes 'tbl_df', 'tbl' and 'data.frame':    51 obs. of  4 variables:
##  $ ID   : chr  "MEHOINUSALA646N" "MEHOINUSAKA646N" "MEHOINUSAZA646N" "MEHOINUSARA646N" ...
##  $ state: chr  "Alabama" "Alaska" "Arizona" "Arkansas" ...
##  $ code : chr  "01" "02" "04" "05" ...
##  $ value: num  8.24 -4.61 7.05 6.37 4.69 ...
```

```
Personal_Income <- read_excel("GeoFRED_Per_Capita_Personal_Income_by_State_Dollars.xls",
    col_types = c("text", "text", "text",
        "numeric"))
colnames(Personal_Income) <-c("ID", "state", "code", "value")
str(Personal_Income)
```

```
## Classes 'tbl_df', 'tbl' and 'data.frame':    51 obs. of  4 variables:
##  $ ID   : chr  "ALPCPI" "AKPCPI" "AZPCPI" "ARPCPI" ...
##  $ state: chr  "Alabama" "Alaska" "Arizona" "Arkansas" ...
```

```
##  $ code : chr  "01" "02" "04" "05" ...
##  $ value: num  40805 57179 42280 41046 59796 ...
```

```
library(maps)
us_states <- map_data("state")
head(us_states)
```

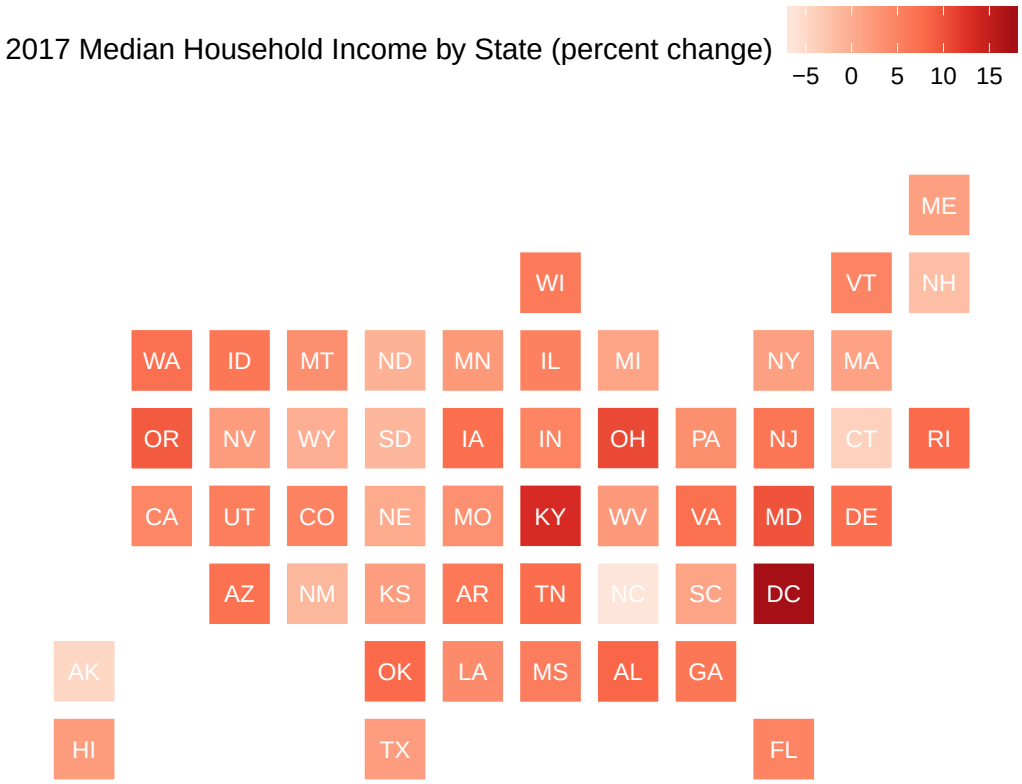
```
##        long      lat group order  region subregion
## 1 -87.46201 30.38968     1     1 alabama      <NA>
## 2 -87.48493 30.37249     1     2 alabama      <NA>
## 3 -87.52503 30.37249     1     3 alabama      <NA>
## 4 -87.53076 30.33239     1     4 alabama      <NA>
## 5 -87.57087 30.32665     1     5 alabama      <NA>
## 6 -87.58806 30.32665     1     6 alabama      <NA>
```

```
library(statebins)
```

2017 Median Household Income by State (percent change)

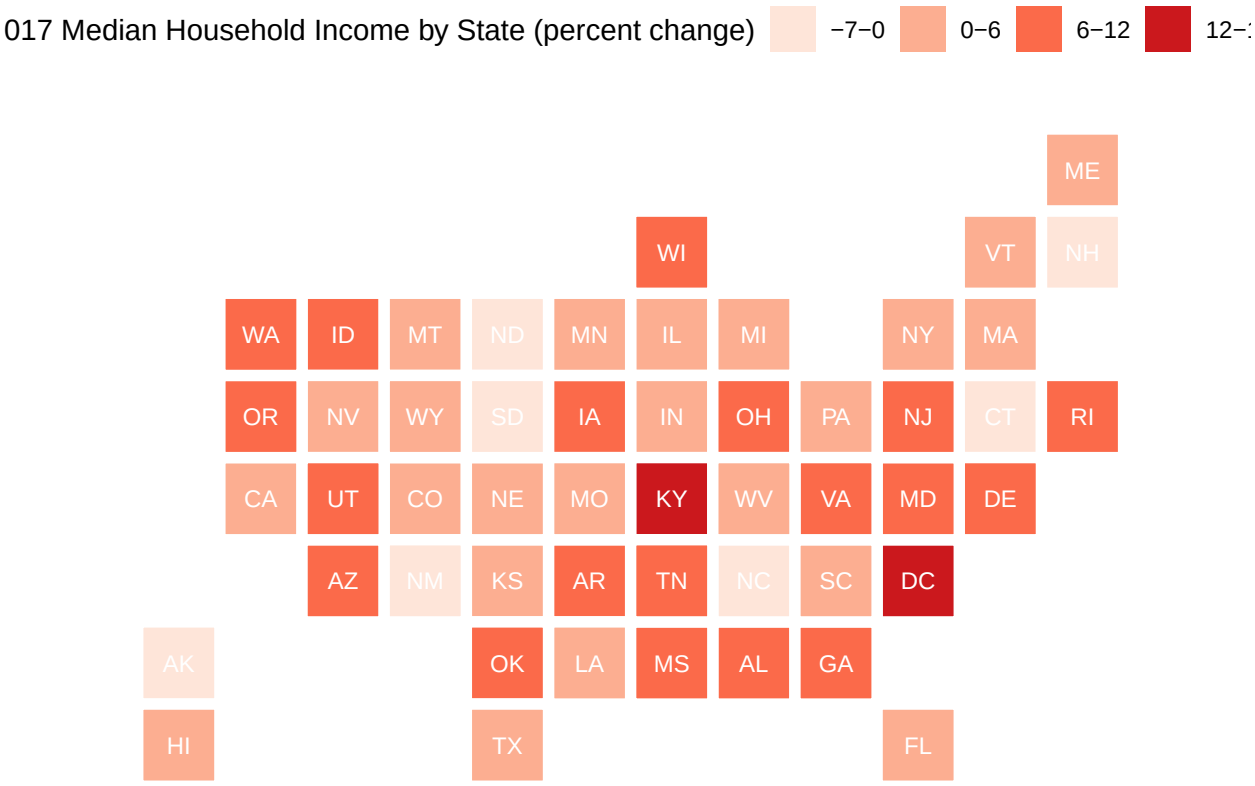
```
statebins_continuous(state_data = Household_Income, state_col = "state",
                     text_color = "white", value_col = "value",
                     brewer_pal="Reds", font_size = 3,
                     legend_title="2017 Median Household Income by State (percent change)")
```

```
## Warning: `show_guide` has been deprecated. Please use `show.legend`
## instead.
```




```
#View(Household_Income)
statebins(state_data = Household_Income,
          state_col = "state", value_col = "value",
          text_color = "white", breaks = 4,
          labels = c("-7-0", "0-6", "6-12", "12-18"),
          brewer_pal="Reds", font_size = 3, legend_title="2017 Median Household Income by State (percen
```

```
## Warning: `show_guide` has been deprecated. Please use `show.legend`
## instead.
```

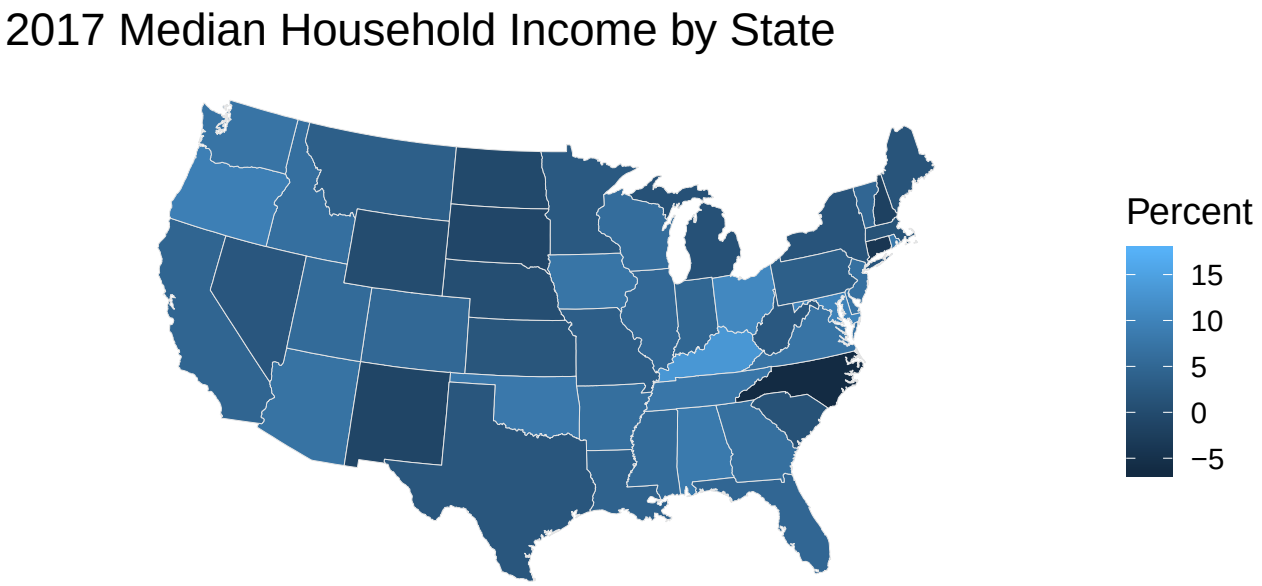


Other practice

```
Household_Income$region <- tolower(Household_Income$state)
us_states_elec <- left_join(us_states, Household_Income)
```

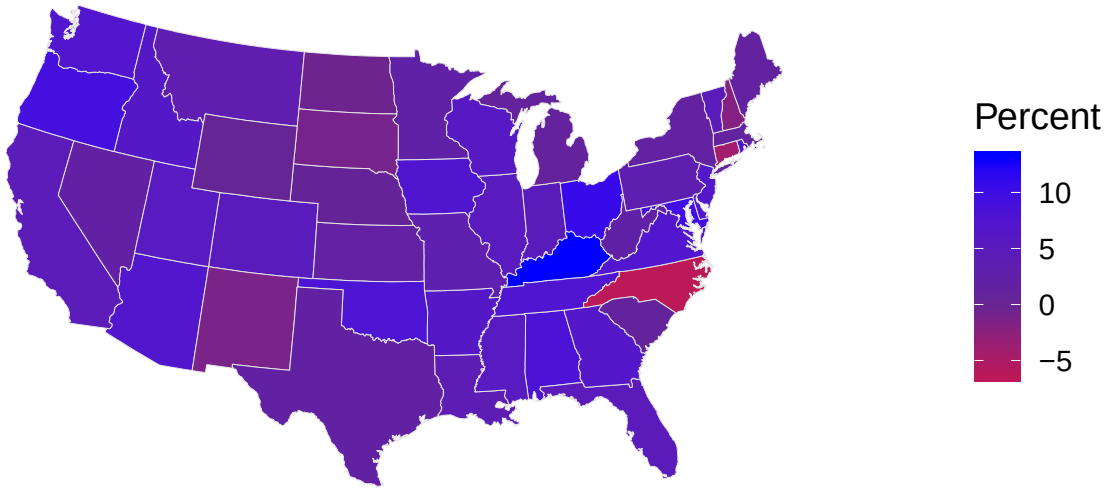
```
## Joining, by = "region"
```

```
p0 <- ggplot(data = us_states_elec,
             mapping = aes(x = long, y = lat, group = group, fill = value))
p1 <- p0 + geom_polygon(color = "gray90", size = 0.1) +
    coord_map(projection = "albers", lat0 = 39, lat1 = 45)
p1 + labs(title = "2017 Median Household Income by State ") + theme_map() + labs(fill = "Percent")
```




```
p0 <- ggplot(data = subset(us_states_elec,
                           region %nin% "district of columbia"),
             aes(x = long, y = lat, group = group, fill = value))
p1 <- p0 + geom_polygon(color = "gray90", size = 0.1) +
    coord_map(projection = "albers", lat0 = 39, lat1 = 45)
p2 <- p1 + scale_fill_gradient2(low = "red",
                                mid = scales::muted("purple"),
                                high = "blue") +
    labs(title = "2017 Median Household Income by State ")
p2 + theme_map() + labs(fill = "Percent")
```

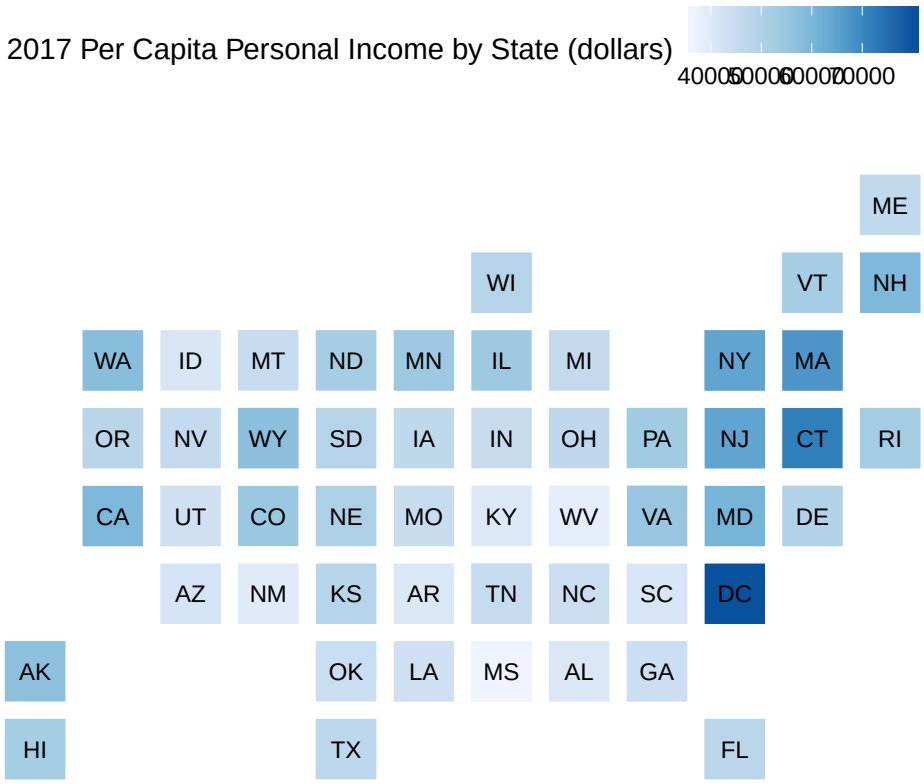
2017 Median Household Income by State



2017 Per Capita Personal Income by State (dollars)

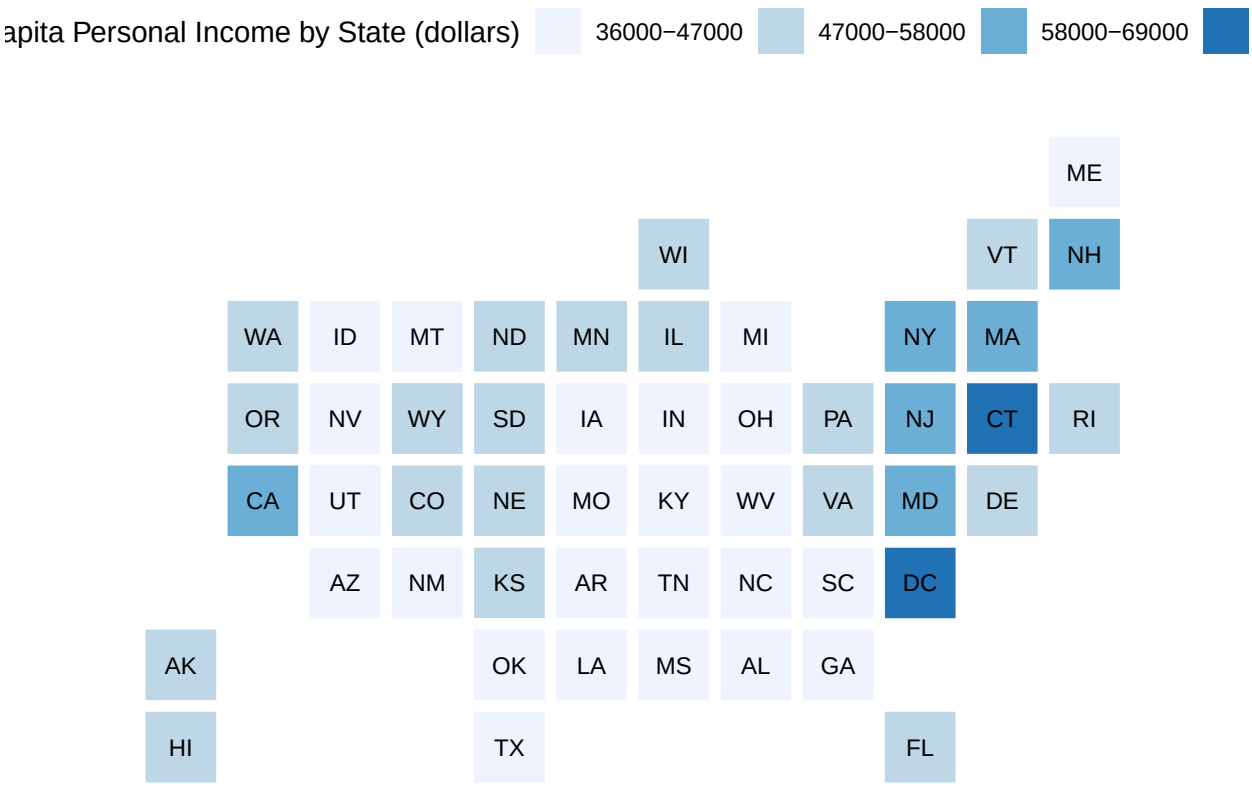
```
statebins_continuous(state_data = Personal_Income, state_col = "state",
                     text_color = "black", value_col = "value",
                     brewer_pal="Blues", font_size = 3,
                     legend_title="2017 Per Capita Personal Income by State (dollars)")
```

```
## Warning: `show_guide` has been deprecated. Please use `show.legend`
## instead.
```




```
#View(Personal_Income)
statebins(state_data = Personal_Income,
          state_col = "state", value_col = "value",
          text_color = "black", breaks = 4,
          labels = c("36000-47000", "47000-58000", "58000-69000", "69000-80000"),
          brewer_pal="Blues", font_size = 3, legend_title="2017 Per Capita Personal Income by State (do
```

```
## Warning: `show_guide` has been deprecated. Please use `show.legend`
## instead.
```



Other practice

```
Personal_Income$region <- tolower(Personal_Income$state)
us_states_elec <- left_join(us_states, Personal_Income)
```

```
## Joining, by = "region"
```

```
p0 <- ggplot(data = us_states_elec,
             mapping = aes(x = long, y = lat, group = group, fill = value))
p1 <- p0 + geom_polygon(color = "gray90", size = 0.1) +
    coord_map(projection = "albers", lat0 = 39, lat1 = 45)
p1 + labs(title = "2017 Per Capita Personal Income by State (dollars)") + theme_map() + labs(fill = "Do
```

2017 Per Capita Personal Income by State (dollars)