



“Easy” (and Free) Charts and Maps

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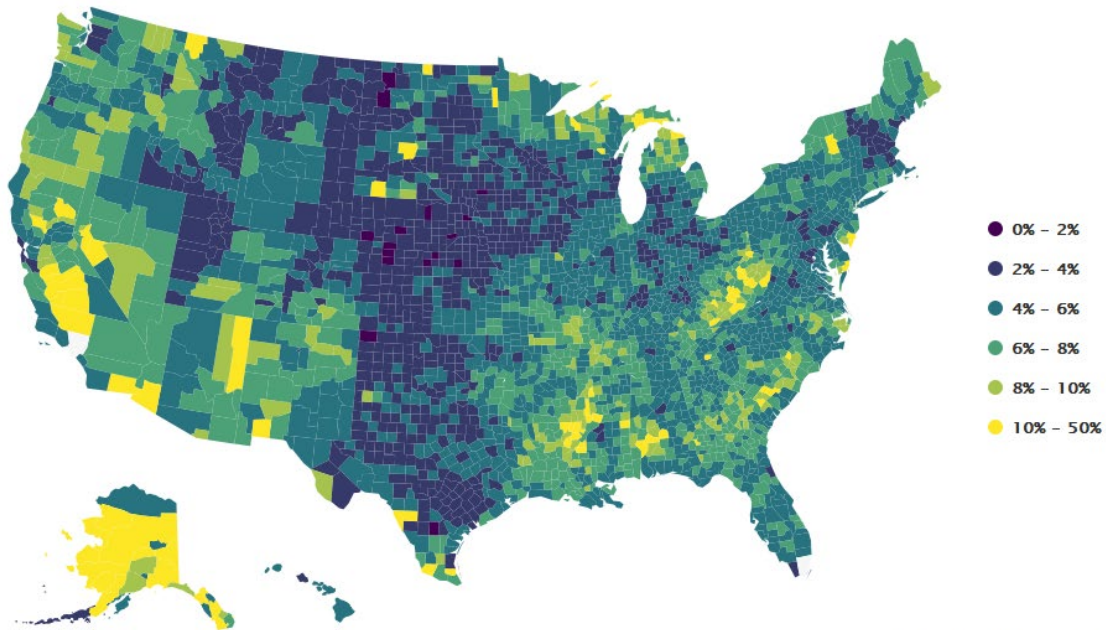
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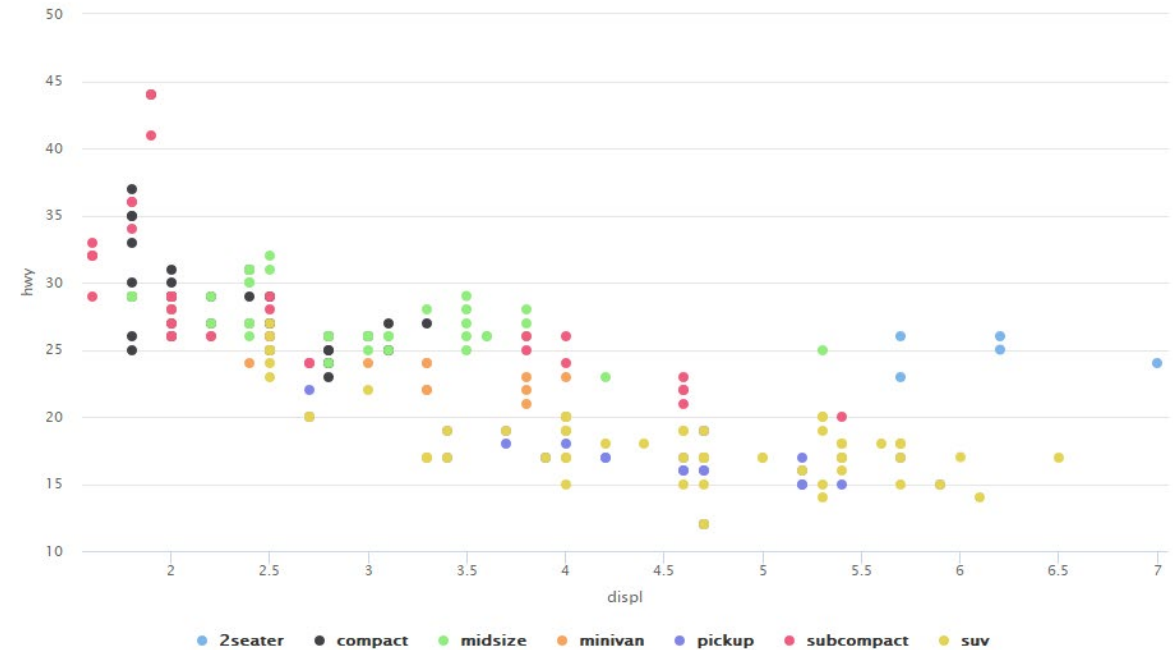
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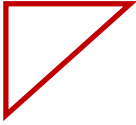
What are we doing here?

- some of things we'll make in this session:



Highcharts.com © USA Census Bureau

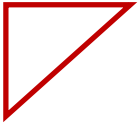




Downloading R

- Basic R download: <https://cran.r-project.org/>
- R Studio download:
<https://www.rstudio.com/products/rstudio/download/>

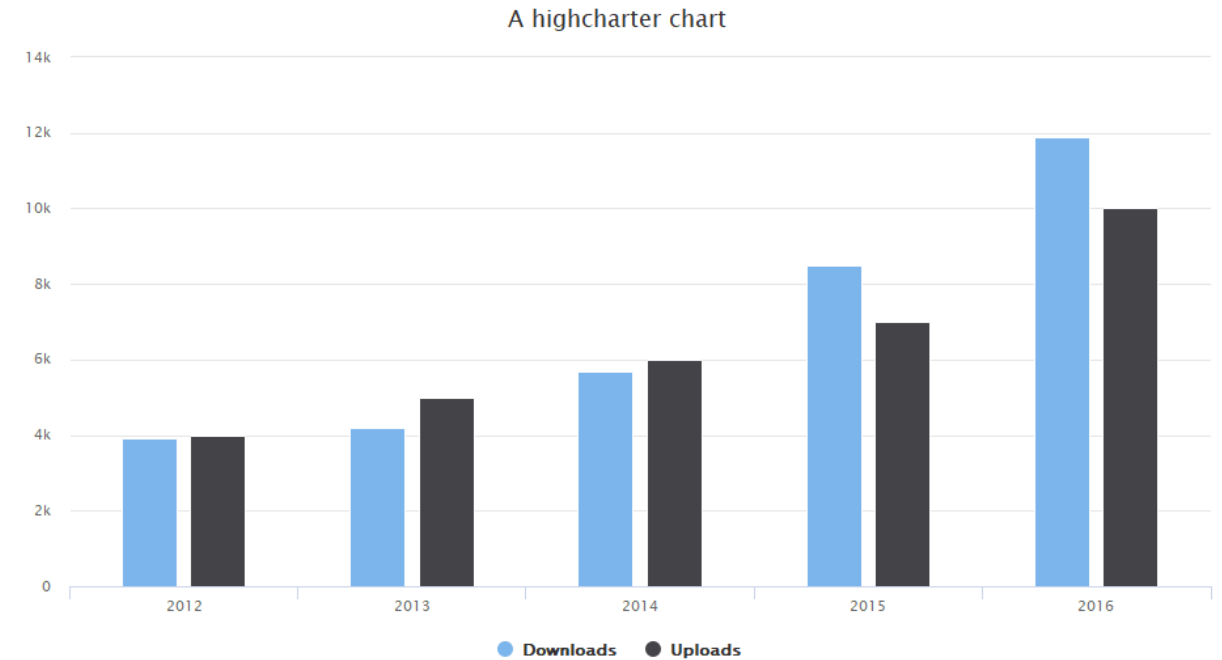


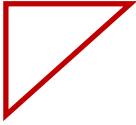


Simple Highchart

- Simple column chart, specifying data in the code

```
highchart() %>%  
  hc_chart(type = "column") %>%  
  hc_title(text = "A highcharter chart") %>%  
  hc_xAxis(categories = 2012:2016) %>%  
  hc_add_series(data = c(3900, 4200, 5700, 8500, 11900),  
               name = "Downloads") %>%  
  hc_add_series(data = c(4000, 5000, 6000, 7000, 10000), name = "Uploads")
```

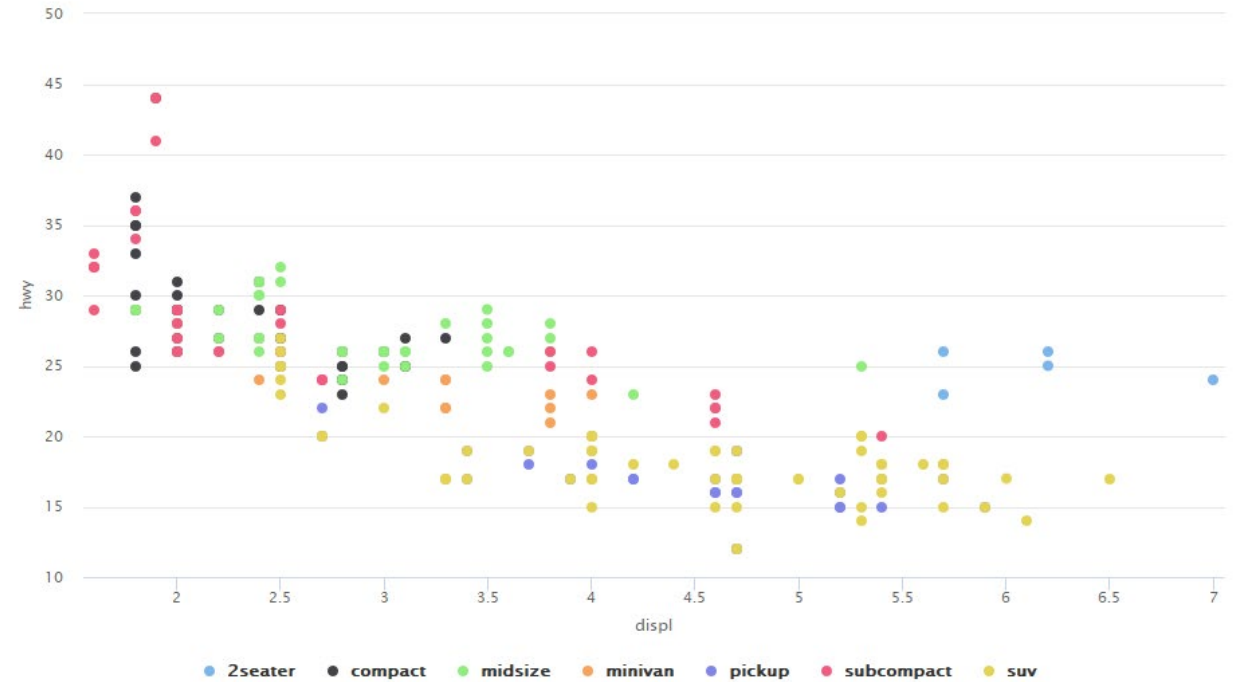




Fancier Highchart

- Multiple variables, external data

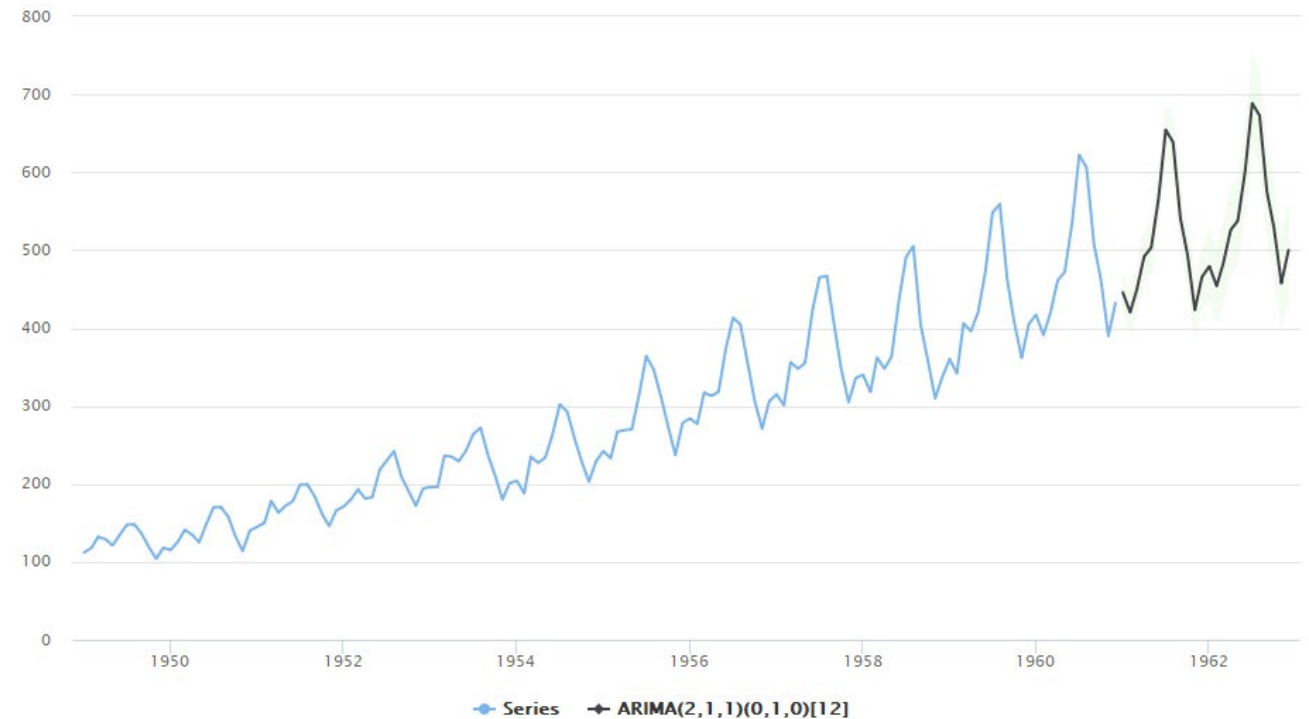
```
data(diamonds, mpg, package = "ggplot2")  
#specify existing variables for chart, group by another variable  
hchart(mpg, "scatter", hcaes(x = displ, y = hwy, group = class))
```

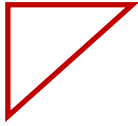


Fanciest Highchart

- Some statistical analysis, then a chart

```
#forecasting example  
library(forecast)  
airforecast <- forecast(auto.arima(AirPassengers), level = 95)  
AirPass <- hchart(airforecast)  
AirPass|
```

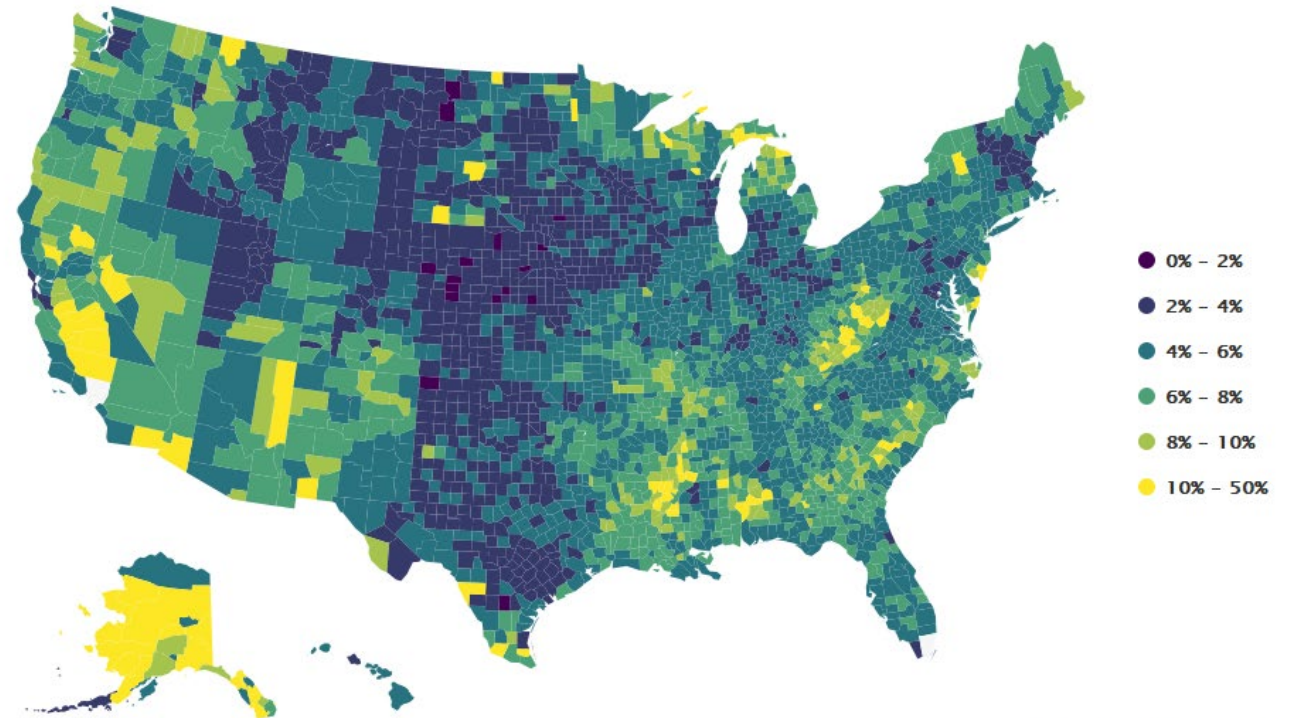




Highmap (all US counties)

```
#map example
data(unemployment)

hcmmap("countries/us/us-all-all", data = unemployment,
       name = "unemployment", value = "value", joinBy = c("hc-key", "code"),
       borderColor = "transparent") %>%
  hc_colorAxis(dataClasses = color_classes(c(seq(0, 10, by = 2), 50))) %>%
  hc_legend(layout = "vertical", align = "right", verticalAlign = "middle",
           floating = FALSE, valueDecimals = 0, valuesuffix = "%")
```

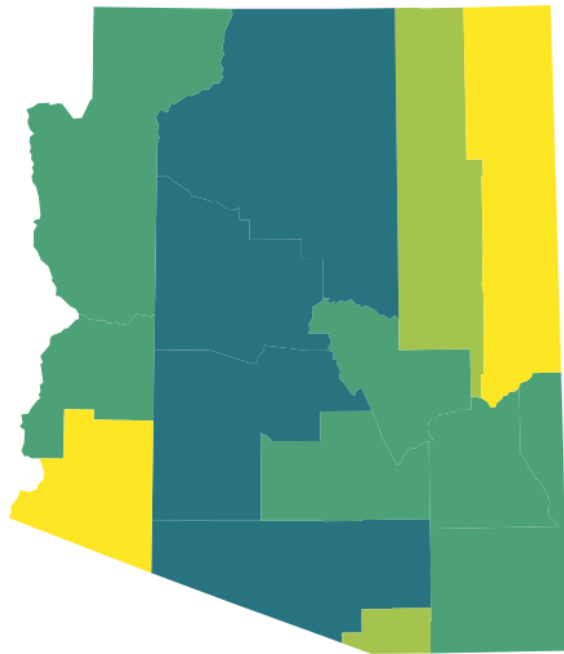


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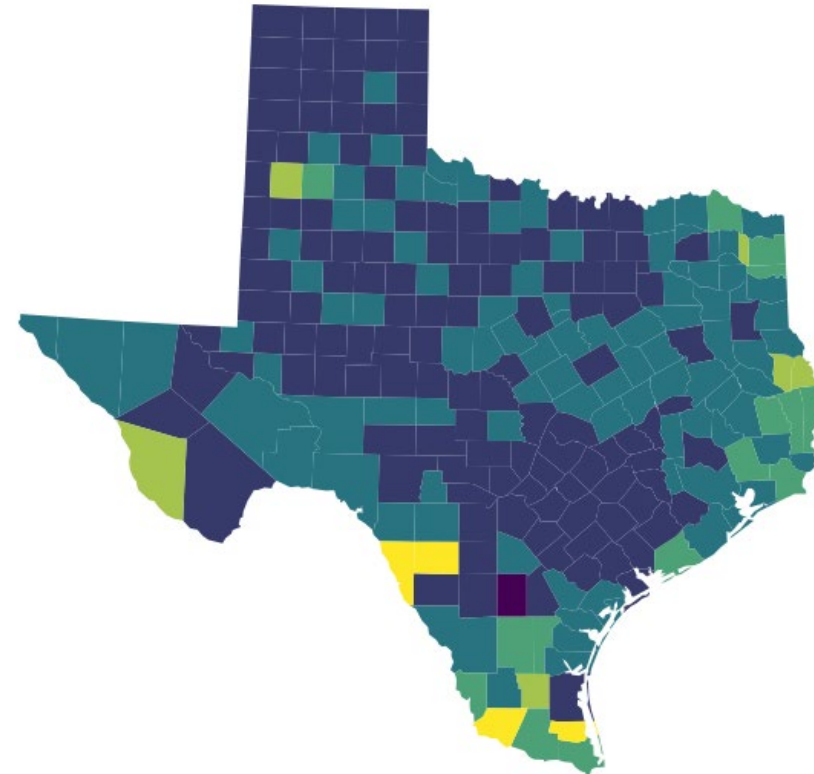
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Highmaps (single states)



- 0% - 2%
- 2% - 4%
- 4% - 6%
- 6% - 8%
- 8% - 10%
- 10% - 50%

Highcharts.com © USA Census Bureau



- 0% - 2%
- 2% - 4%
- 4% - 6%
- 6% - 8%
- 8% - 10%
- 10% - 50%

Highcharts.com © USA Census Bureau

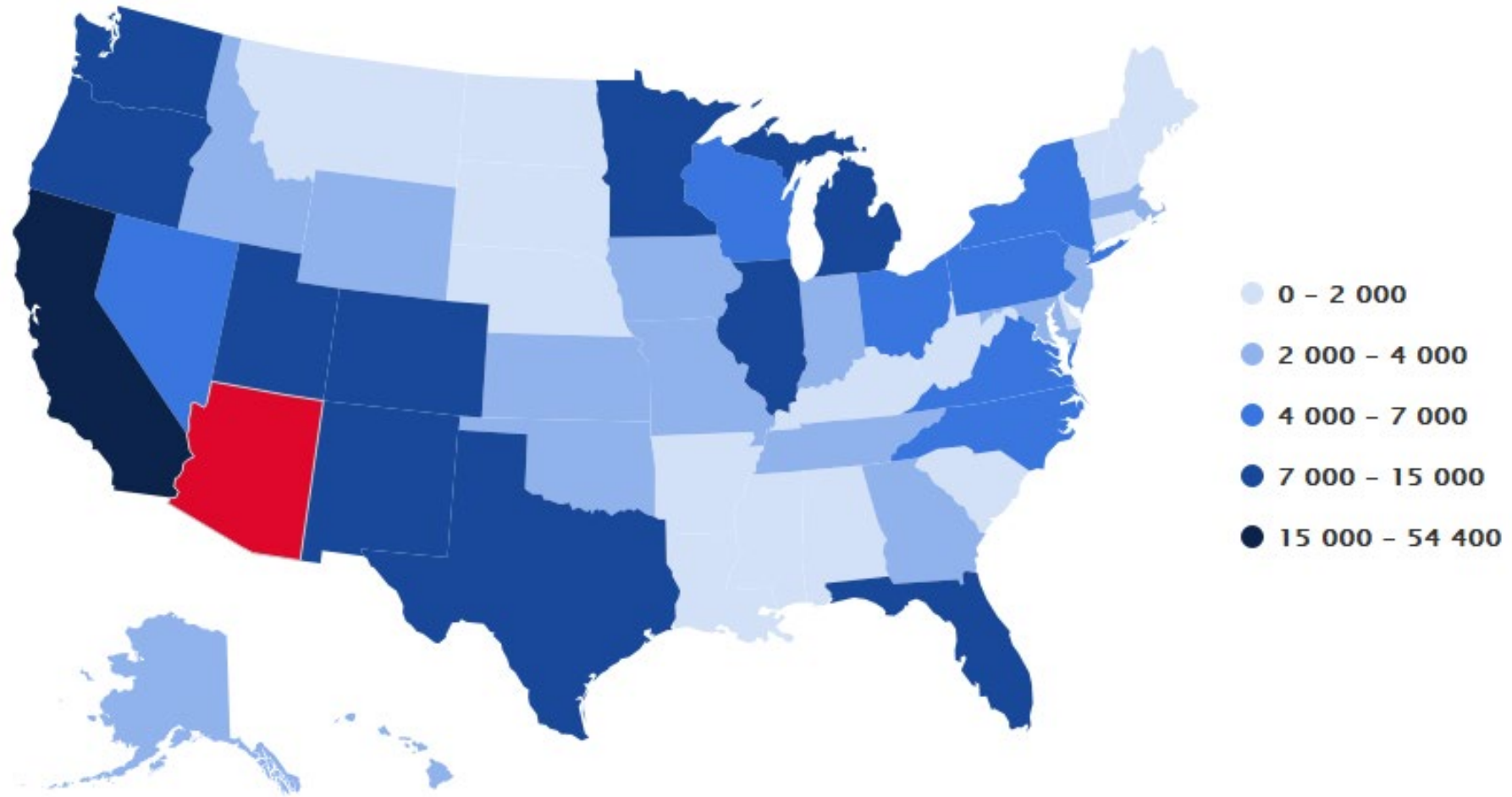
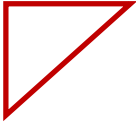




A more complicated map

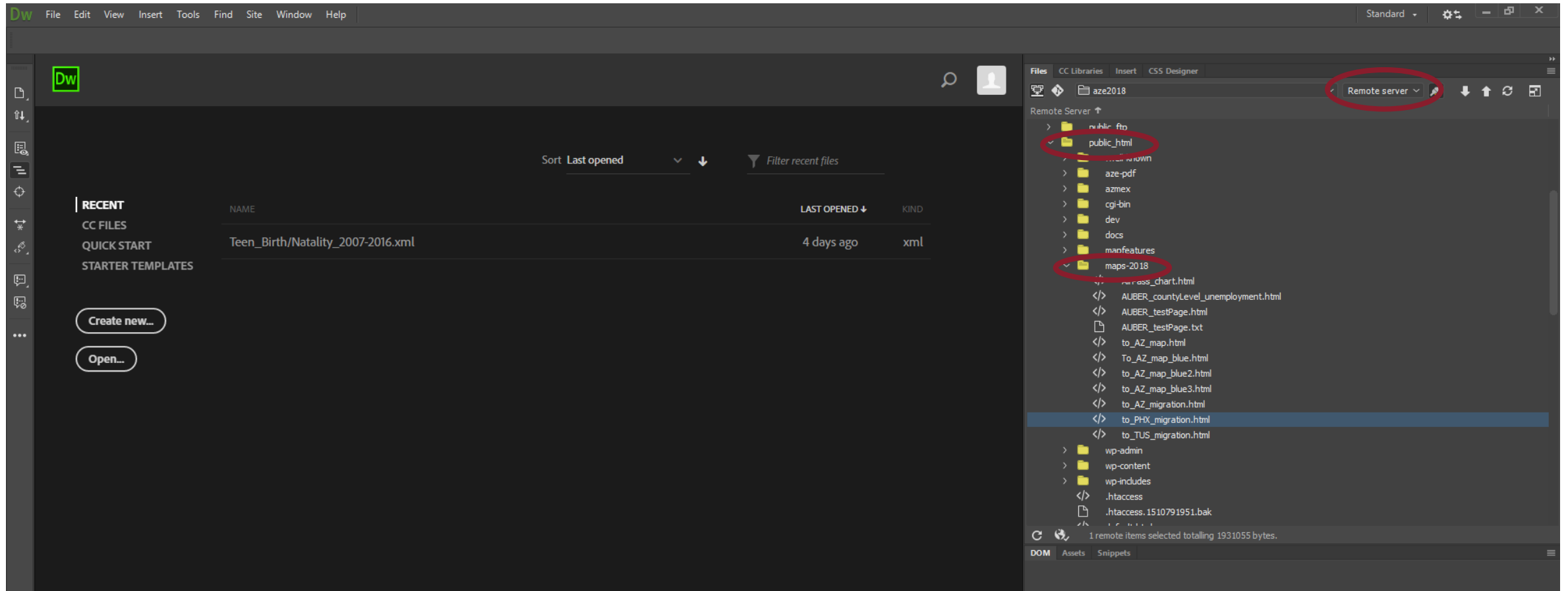
```
#migration data map
to_AZ <- read_excel("migration_toArizona.xlsx")
AZ_only <- read_excel("migration_AZonly.xlsx")
map <- download_map_data("countries/us/us-all")
hc1 <- highchart(type = "map") %>%
  hc_plotOptions(map = list(
    allAreas = FALSE,
    joinBy = c("hc-a2", "states"),
    mapData = map
  )) %>%
  #joinby here: hc-key is highmaps column, code is my matching column
  hc_add_series(name = "Migration to Arizona 2012-2016", data = to_AZ, joinBy = c("hc-key", "code"), color = "#A1A1A1", borderColor = "transparent") %>%
  #these are my own breaks in the data and my own colors (hues of AZ blue)
  hc_colorAxis(dataClasses = color_classes(c(0,2000,4000,7000,15000,54400), colors = c("#d3e1f8", "#91b3ed", "#3a76df", "#19489a", "#0c234b"))) %>%
  hc_legend(layout = "vertical", align = "right", verticalAlign = "middle",
    floating = FALSE, valueDecimals = 0) %>%
  #this adds AZ as red
  hc_add_series(name = "Arizona", joinBy = c("hc-key", "code"), data = AZ_only, color = "#df072b")
```



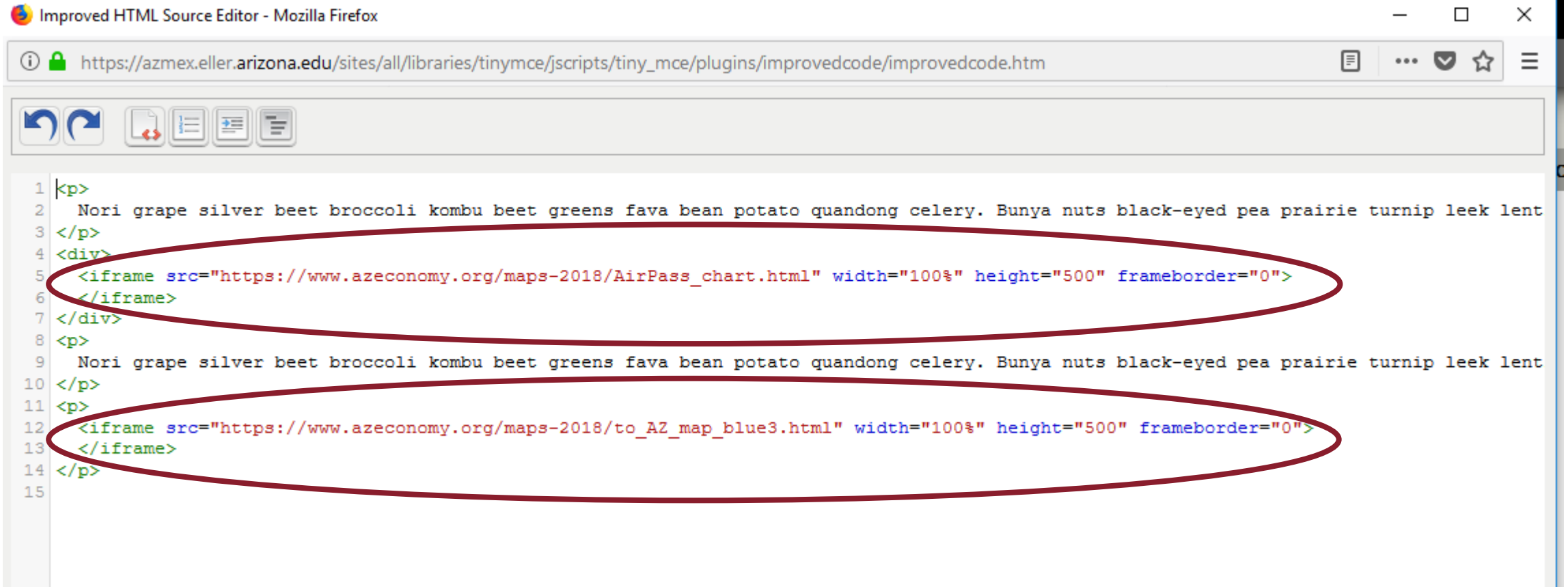


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Saving files via FTP connection



Dropping HTML file onto a webpage



```
1 <p>
2   Nori grape silver beet broccoli kombu beet greens fava bean potato quandong celery. Bunya nuts black-eyed pea prairie turnip leek lent
3 </p>
4 <div>
5   <iframe src="https://www.azeconomy.org/maps-2018/AirPass_chart.html" width="100%" height="500" frameborder="0">
6 </iframe>
7 </div>
8 <p>
9   Nori grape silver beet broccoli kombu beet greens fava bean potato quandong celery. Bunya nuts black-eyed pea prairie turnip leek lent
10 </p>
11 <p>
12   <iframe src="https://www.azeconomy.org/maps-2018/to_AZ_map_blue3.html" width="100%" height="500" frameborder="0">
13 </iframe>
14 </p>
15
```

<https://azmex.eller.arizona.edu/11oct2018/auber-charts-and-maps>





Next Steps...

WITH SOME HELP FROM OUR STUDENTS



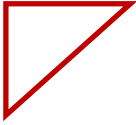
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High Charts/High Maps are Very Flexible

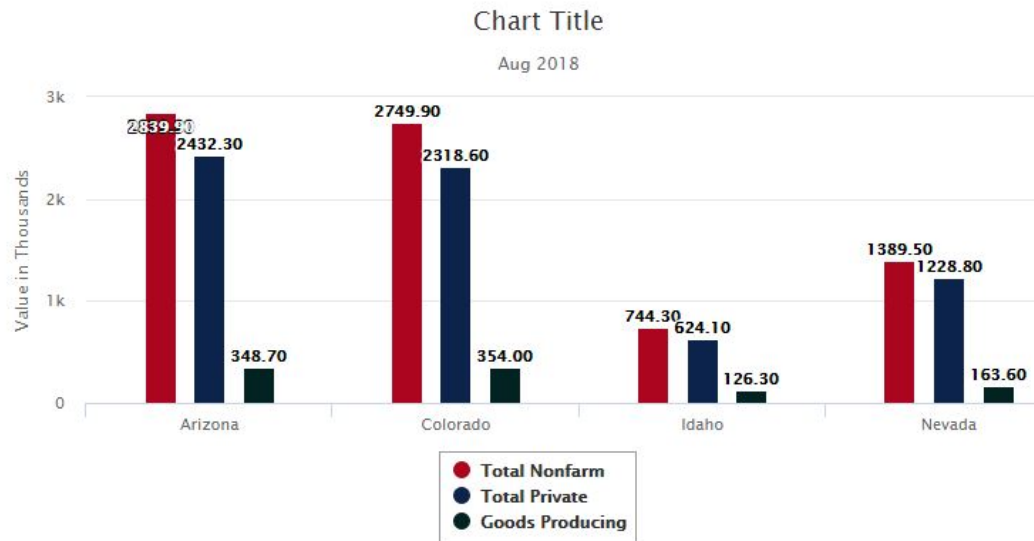
- dataZoa now provides customizable High Charts widgets
- Can also update from API's - e.g., dataZoa, FRED, BLS
 - Need to host JS files easily done using JS Injector in WP or DRUPAL without full administrative access.
 - These solutions are more involved...
 - To look at some examples, here's my play site:
<http://devdr.azmex.arizona.edu/>



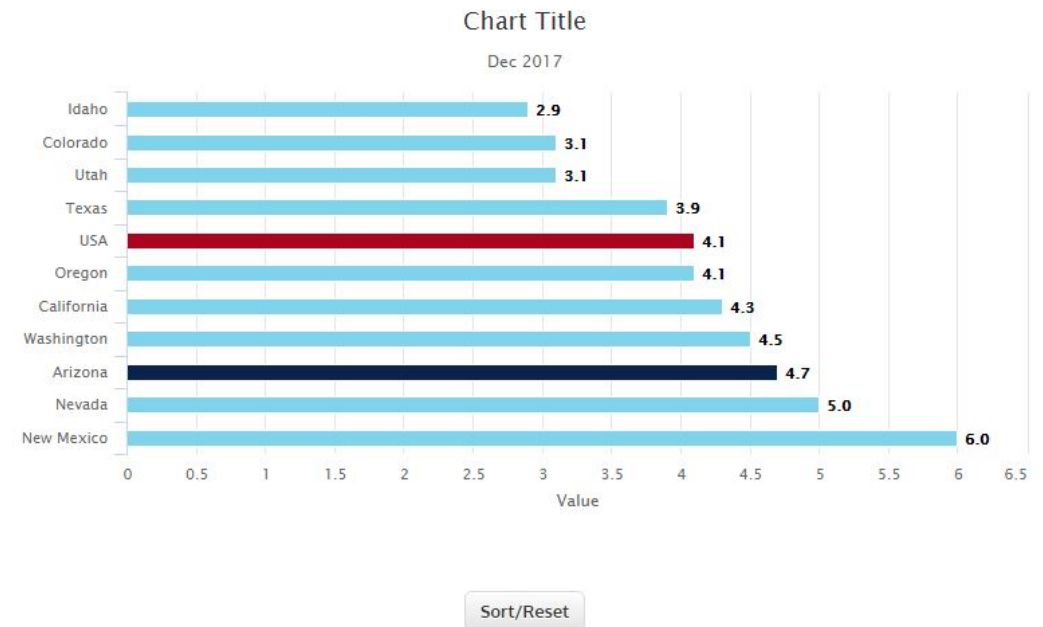


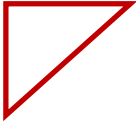
Some Examples

Categorical Bar Chart Demo



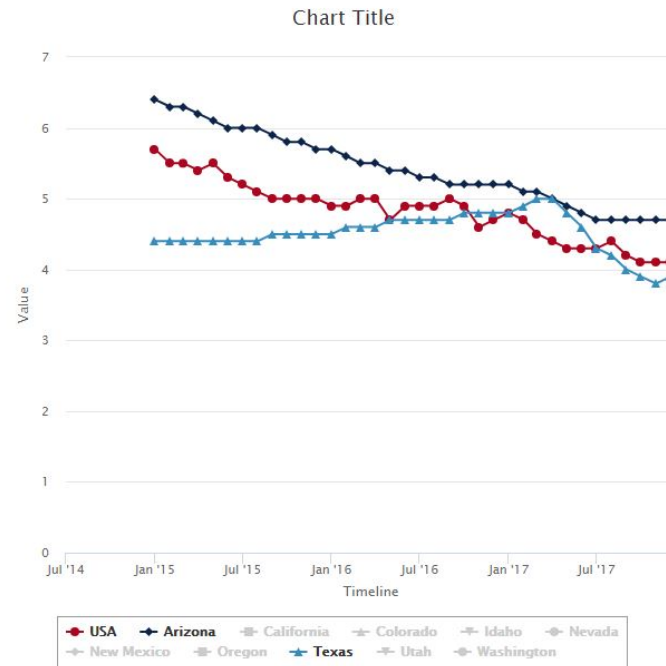
Hanging Bar Chart Demo



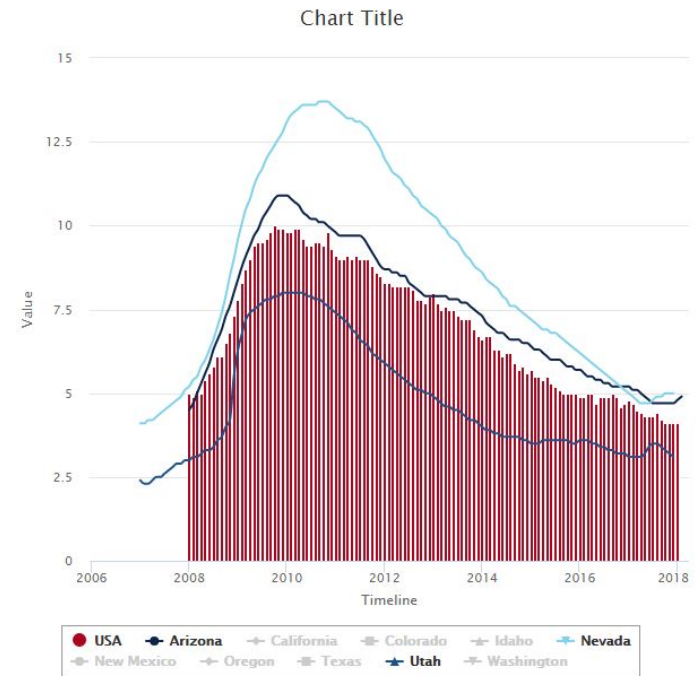


Some Examples

Line Chart Demo



Line and Bar Chart Demo





QUESTIONS!



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