Lab 3

GIS 3- Thomas Weil

- Load in Libraries
- Read in data
- Manipulate data
- Tmap

Load in Libraries

```
library(sf)
```

```
## Warning: package 'sf' was built under R version 3.5.2
```

```
## Linking to GEOS 3.6.1, GDAL 2.1.3, PROJ 4.9.3
```

```
library(sf)
library(raster)
```

```
## Warning: package 'raster' was built under R version 3.5.2
```

```
## Loading required package: sp
```

```
library(dplyr)
```

```
## Warning: package 'dplyr' was built under R version 3.5.2
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:raster':
##
##     intersect, select, union
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(stringr)
```

```
## Warning: package 'stringr' was built under R version 3.5.2
```

```
library(tidyr)
```

```
## Warning: package 'tidyr' was built under R version 3.5.2
```

```
##
## Attaching package: 'tidyr'
```

```
## The following object is masked from 'package:raster':
##
##     extract
```

```
library(spData)
library(spDataLarge)
library(rmapshaper)
library(tmap)
```

Read in data

```
 pa<- read.csv("https://data.pa.gov/api/views/azzc-q64m/rows.csv?accessType=DOWNLOAD")
 class(pa)
```

```
## [1] "data.frame"
```

```
 setwd("/Users/thomasweil/Desktop/YEAR2/ZOOM university/GIS 3/lab 3")
 #download.file(url, destfile, method = "auto", quiet=FALSE)

 download.file("https://data.pa.gov/api/geospatial/xq2b-bzbq?method=export&format=Shapefile", "dataset2.zip")
 unzip ("dataset2.zip", exdir = "./")
 setwd("/Users/thomasweil/Desktop/YEAR2/ZOOM university/GIS 3/lab 3/dataset2")
 county<-st_read("geo_export_bdc05895-252e-4afa-a11e-df6ae7aef11d.shp")
```

```
## Reading layer `geo_export_bdc05895-252e-4afa-a11e-df6ae7aef11d' from data source `/Users/thomasweil/Desktop/YEAR2/ZOOM university/GIS 3/lab 3/dataset2/geo_export_bdc05895-252e-4afa-a11e-df6ae7aef11d.shp' using driver `ESRI Shapefile'
## Simple feature collection with 67 features and 10 fields
## geometry type:  MULTIPOLYGON
## dimension:      XY
## bbox:           xmin: -80.5194 ymin: 39.71986 xmax: -74.68956 ymax: 42.26941
## epsg (SRID):    4326
## proj4string:    +proj=longlat +ellps=WGS84 +no_defs
```

Manipulate data

```
#filter to yuear 2018
pa2<- filter(pa, Year == 2018)
#filter out summary row
pa2 <- filter( pa2, County != "Pennsylvania")
#merge overdose to map of PA
total <- merge(county, pa2, by.y="County.Code.Number", by.x= "c
ounty_cod", all.x=TRUE, all.y=FALSE)
```

Tmap

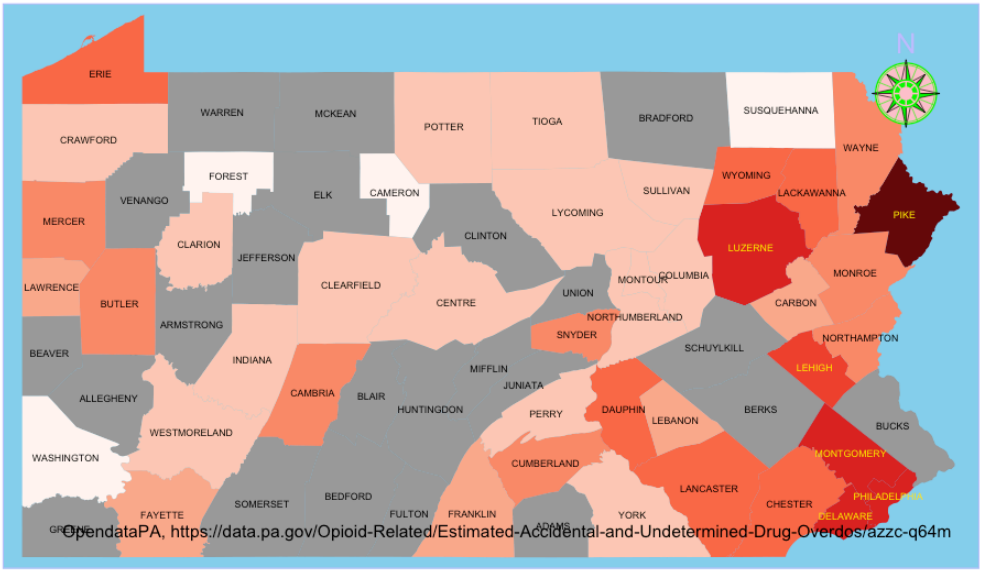
```
#set style to albartorss
tmap_style("albatross")
```

```
## tmap style set to "albatross"
```

```
## other available styles are: "white", "gray", "natural", "cob
alt", "col_blind", "beaver", "bw", "classic", "watercolor"
```

```
#use Tmap to make a map
tm_shape(total)+tm_fill("Count", palette="Reds",title= "Death C
ount", breaks= c(0,1,10,25,45,75,125,150,200,250,1000,1500))+ t
m_layout(bg.color="skyblue", legend.outside = TRUE
,legend.outside.position="right", legend.text.color="black", ma
in.title = "Heroin Overdose- PA 2018", compass.type="rose")+tm_
compass(position= c("right", "top"), color.dark="green", color.
light="pink", text.color= "red", size=2)+  tm_text("county_nam"
, remove.overlap = FALSE,size=11/40)+tm_credits("OpendataPA, ht
tps://data.pa.gov/Opioid-Related/Estimated-Accidental-and-Undet
ermined-Drug-Overdos/azzc-q64m", col="black")
```

Heroin Overdose- PA 2018



Death Count

- 0 to 1
- 1 to 10
- 10 to 25
- 25 to 45
- 45 to 75
- 75 to 125
- 125 to 150
- 150 to 200
- 200 to 250
- 250 to 1,000
- 1,000 to 1,500
- Missing