Geographic Information Science III - Lab 1

Mark Baker

Verifying that verison of R:

```
R.version.string
```

```
## [1] "R version 3.6.0 (2019-04-26)"
```

After running this code, it is clear that R version 3.6.0 was utilized.

Examining Vector Data

Installing and Loading Necessary Packages

Installing Packages

```
# packages were installed and then commented
#install.packages("sf")
#install.packages("raster")
#install.packages("spData")
```

Loading Libraries

```
library(sf)          # classes and functions for vector data
```

```
## Linking to GEOS 3.5.1, GDAL 2.2.2, PROJ 4.9.2
```

```
library(raster)      # classes and functions for raster data
```

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

```
library(spData)        # load geographic data
```

```
## To access larger datasets in this package, install the spDataLarge
## package with: `install.packages('spDataLarge',
## repos='https://nowosad.github.io/drat/', type='source')`
```

Examining the world spatial object

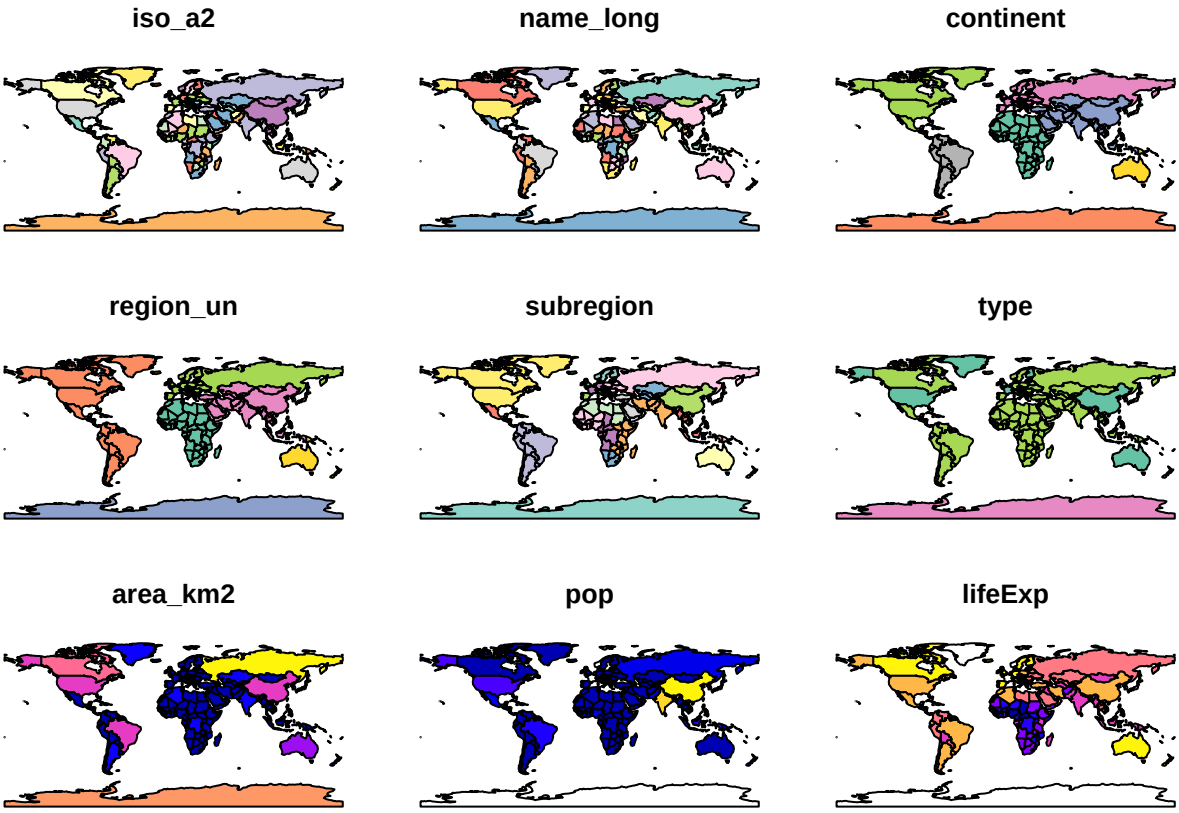
Plotting the World:

```
# the names of world can be returned using name()
names(world)
```

```
##  [1] "iso_a2"    "name_long" "continent" "region_un" "subregion" "type"
##  [7] "area_km2"  "pop"       "lifeExp"   "gdpPercap" "geom"
```

```
# the function plot() can be used for visualization
plot(world)
```

```
## Warning: plotting the first 9 out of 10 attributes; use max.plot = 10 to plot
## all
```



Being able to treat spatial objects as regular dataframes with spatial powers has advantages. For instance, we can summarize the life expectancies:

```
summary(world["lifeExp"])
```

```
##     lifeExp                  geom
##  Min.   :50.62   MULTIPOLYGON :177
##  1st Qu.:64.96   epsg:4326    :  0
##  Median :72.87   +proj=long...:  0
##  Mean   :70.85
##  3rd Qu.:76.78
##  Max.   :83.59
##  NA's   :10
```

Additionally, we are able to see **sf** objects are easy to subset as well.

```
world_mini = world[1:2, 1:3]
world_mini
```

```
## Simple feature collection with 2 features and 3 fields
## geometry type:  MULTIPOLYGON
## dimension:      XY
## bbox:           xmin: -180 ymin: -18.28799 xmax: 180 ymax: -0.95
## CRS:            EPSG:4326
##   iso_a2 name_long continent                             geom
## 1     FJ      Fiji   Oceania MULTIPOLYGON (((180 -16.067...
## 2     TZ  Tanzania    Africa MULTIPOLYGON (((33.90371 -0...
```

TroubleShooting:

Working through this Lab, I did not run into any large problems.