REVOLUTION ANALYTICS

Intro to R: Plotting maps

Revolution Analytics

Overview

In this session you create maps of the airline data using the `ggplot2` package

Plot map with airport locations

As a final example, let's take airport locations around the United States.

You can download the data available from http://stat-computing.org/dataexpo/2009/airports.csv and it is also in the course data folder.

```
# airports.url <-
# 'http://stat-computing.org/dataexpo/2009/airports.csv'

airports <- read.csv("../data/airports.csv")
```

Airports dataset

```
str(airports)
```

```
## 'data.frame':    3376 obs. of  7 variables:
##  $ iata   : Factor w/ 3375 levels "0.00E+00","00M",..: 2 3 4 5 6 7 8 9 10 11 ...
## $ airport: Factor w/ 3245 levels "Abbeville Chris Crusta Memorial",..: 2913 1726 1893 2299 1334 29
## $ city   : Factor w/ 2675 levels "Abbeville","Aberdeen",..: 162 1381 509 1873 1074 189 462 287 696 1
##  $ state  : Factor w/ 56 levels "AK","AL","AR",..: 29 48 7 38 12 29 2 54 39 28 ...
## $ country: Factor w/ 5 levels "Federated States of Micronesia",..: 5 5 5 5 5 5 5 5 5 5 ...
##  $ lat    : num  32 30.7 38.9 42.7 30.7 ...
##  $ long   : num  -89.2 -95 -104.6 -78.1 -81.9 ...
```

Isolate only US airports

Subset the data to only contain US airports:

```
unique(airports$country)
```

```
## [1] USA                              Thailand
## [3] Palau                            N Mariana Islands
## [5] Federated States of Micronesia
## 5 Levels: Federated States of Micronesia N Mariana Islands ... USA
```

```
usAirports <- airports[airports$country == "USA", ]
```

Create country and state border data

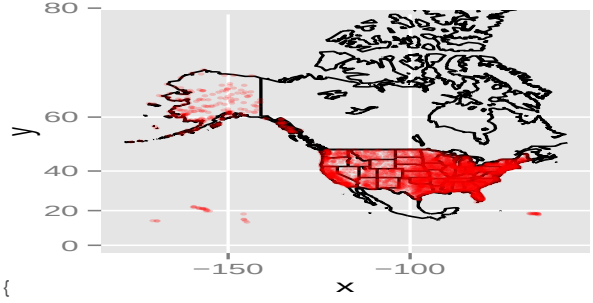
Next, use some data in the package `maps` to create polygon data for country and state boundaries.

```
library(maps)
states <- data.frame(map("state", plot = FALSE)[c("x", "y")])
world <- data.frame(map("world", regions = c("USA", "canada", "mexico"),
  plot = FALSE, xlim = c(-180, -60))[c("x", "y")])
```

Plot the airports data on world map

Finally, you are ready to plot the map

```
library(ggplot2)
ggplot() + geom_path(data = world, aes(x = x, y = y)) + geom_path(data = states,
  aes(x = x, y = y)) + geom_point(data = usAirports, aes(x = long,
  y = lat), alpha = 0.2, size = 1, color = "red") + coord_map()
```



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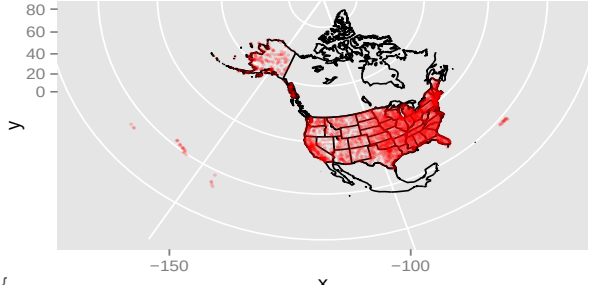
Explore other projections

The package `mapproj` contains the transformation for different map projections.

For example, try an equal area projection:

```
ggplot() + geom_path(data = world, aes(x = x, y = y)) + geom_path(data = states,
  aes(x = x, y = y)) + geom_point(data = usAirports, aes(x = long,
  y = lat), alpha = 0.2, size = 1, color = "red") + coord_map("azequalarea")
```



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Thank you

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