Developing Data Products: R Markdown and Leaflet

Ingrid Tobar

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1. Project Goal

Create a webpage using R Markdown that features a map created with Leaflet. This webpage is hosted on GitHub pages and the date listed above is the date when it was created.

Data

The original data is available for download at: https://waterdata.usgs.gov (https://waterdata.usgs.gov)

The data displayed on this Leaflet map (Surface Water Stream Gauges for Harris County, TX) is available here:

https://github.com/itobar/itobar.github.io/blob/master/09_Developing_Data_Products/HarrisCounty_STGauges.csv (https://github.com/itobar/itobar.github.io/blob/master/09_Developing_Data_Products/HarrisCounty_STGauges.csv)

2. Code

Package Installation and Loading

Install and load the required Leaflet package for creating maps:

```
#install.packages("leaflet")
library(leaflet)
```

Data Loading and Inspection

Load the data and inspect the first 6 rows:

```
STGauges <- read.csv("HarrisCounty_STGauges.csv")
head(STGauges)
```

```
##   SiteNumber                              SiteName SiteCategory
## 1    8067074 CWA Canal at Thompson Rd nr Baytown TX           ST
## 2    8067510              Cedar Bayou nr Baytown TX           ST
## 3    8067520                  Goose Ck nr McNair TX           ST
## 4    8067525                 Goose Ck at Baytown TX           ST
## 5    8068325                Willow Ck nr Tomball TX           ST
## 6    8068520                 Spring Ck at Spring TX           ST
##   SiteAgency SiteLongitude SiteLatitude
## 1      TX003     -95.03240     29.80674
## 2       USGS     -94.91659     29.77023
## 3       USGS     -95.00437     29.80023
## 4      TX003     -94.99965     29.77078
## 5       USGS     -95.54661     30.10550
## 6       USGS     -95.40605     30.09216
##                                                                 SiteNWISURL
## 1 https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=08067074
## 2 https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=08067510
## 3 https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=08067520
## 4 https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=08067525
## 5 https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=08068325
## 6 https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=08068520
```

3. Map Results

Create Map with Leaflet

The following map shows **Surface Water Stream Gauges for Harris County, TX**. Stream gauges are colored by Site Agency (USGS or TX003) and a hyperlink to access data for each gauge is provided in the popup.

```
cof <- colorFactor(c("orange", "blue"), domain=c("USGS", "TX003"))
m <- leaflet(STGauges) %>% addTiles%>%
  setView(-95.3698, 29.7604, zoom = 10) %>%
  addCircleMarkers(~SiteLongitude, ~SiteLatitude, popup= ~paste("<h3 style='color: blue'>",SiteName,"</h3>","<b>Site Nu
mber:</b>",SiteNumber,"<br>","<b>Link:</b>", "<a href = ", SiteNWISURL, "> Access Data </a>", sep=" "), weight = 4, rad
ius=4,
                color=~cof(SiteAgency), stroke = TRUE, fillOpacity = 0.8) %>%
  addLegend("bottomright", colors= c("orange", "blue"), labels=c("USGS", "TX003"), title="Site Agency")

m
```