

# 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)

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

m

