An edav project: hurricane analysis

Romane Shoshana Goldmuntz, Vy Tan, and Jianqiong Zhan

2019-10-31

Contents

Chapter 1

Preface

This is a *edav class* final project written in **Markdown**. we are working on it.

Chapter 2

Introduction

explain why we chose this topic, and the questoins we are interested in studying.

we can write citation, for example, we are using the **bookdown** package (Xie, 2019) in this sample book, which was built on top of R Markdown and **knitr** (Xie, 2015).

reading

Robert Lang has a tutorial that uses publicly available hurricane mapping sites to understand hurricane tracks. Visit: How Can Looking at Hurricane Tracks Help to Understand Them?

https://www.goes-r.gov/featureStories/monitoringHurricanes.html

Chapter 3

Methods

3.1 Data sources

(We describe our data sources, our methods in this chapter.ion)

Storm tracks data can be downloaded from National Hurricane Center and Central Pacific Hurricane Center. The data using in the project is known as Atlantic hurricane database (HURDAT2) 1851-2018 (5.9MB download). The data has a comma-delimited, text format with six-hourly information on the location, maximum winds, central pressure, and (beginning in 2004) size of all known tropical cyclones and subtropical cyclones.

3.2 read data

```
library(tidyverse)
library(stringr)
# Read in data set so each line is a character string
storm_strings <- read_lines("https://www.nhc.noaa.gov/data/hurdat/hurdat2-1851-2018-051019.txt")

# Identify the header lines that have three commas
library(stringr)
header_locations <- (1:length(storm_strings))[str_count(storm_strings, "\\,") == 3]

# Extract length of each sub-dataset
headers <- as.list(storm_strings[header_locations])
headers_df <- headers %>%
  map(str_sub, start = 1, end = -2) %>% # to remove trailing comma
```

```
  map(paste0, "\n") %>%                  # to trigger literal read
  map_df(read_csv, col_names = c("id", "name", "n_obs")) %>%
  mutate(name = recode(name, "UNNAMED" = id), skip = header_locations) %>%
  select(name, skip, n_obs)

# Read in the sub-datasets as data frames
df_names <- c(
  "date", "time", "record_type", "status", "lat", "long", "wind", "pressure",
  "extent_34_NE", "extent_34_SE", "extent_34_SW", "extent_34_NW",
  "extent_50_NE", "extent_50_SE", "extent_50_SW", "extent_50_NW",
  "extent_64_NE", "extent_64_SE", "extent_64_SW", "extent_64_NW", "nas"
)

storm_dfs <- vector("list", nrow(headers_df))
names(storm_dfs) <- headers_df$name
```

3.3 Data transformat

Describe the process of getting the data into a form in which you could work with it in R.

3.4 Missing values

Describe any patterns you discover in missing values.

** Reading **

- HURDAT
- rrricanes
- Storm tracks data
- Visualizing Hurricane Data with Shiny
- Chapter 6: Hurricane Data
- Mapping Global Earthquakes and Hurricane tracks with R
- How would you visulize hurricanes
- [Tracking Atlantic Hurricanes Using Statistical Methods] ("https://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=5927&context=etd")

Chapter 4

Results

Provide a short nontechnical but *significant* summary of the most revealing findings of your analysis written for a nontechnical audience. Take extra care to clean up your graphs, ensuring that best practices for presentation are followed, as described in the audience ready style section below.

Chapter 5

Discussion

Interactive component

D3

Select one (or more) of your key findings to present in an interactive format. Be selective in the choices that you present to the user; the idea is that in 5-10 minutes, users should have a good sense of the question(s) that you are interested in and the trends you've identified in the data. In other words, they should understand the value of the analysis, be it business value, scientific value, general knowledge, etc.

Chapter 6

Summary and Conclusion

Discuss limitations and future directions, lessons learned.

Bibliography

Xie, Y. (2015). *Dynamic Documents with R and knitr*. Chapman and Hall/CRC, Boca Raton, Florida, 2nd edition. ISBN 978-1498716963.

Xie, Y. (2019). *bookdown: Authoring Books and Technical Documents with R Markdown*. R package version 0.14.