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Assignment 02

1. Significant earthquakes since 2150 B.C.

1.1 [5 points] Read the .txt (or .tsv) file (signif.txt) with R and convert it to a tibble object named Sig_Eqs.

A: we can use “read.table()” and “as_tibble()” after loading package(“dplyr”) and convert it. When we read raw data, we should set different parameters adapt different conditions, such as “quotos=’’”, “header=T” and so on.

1.2 [5 points] Compute the total number of deaths caused by earthquakes since 2150 B.C. in each country, and then print the top ten countries along with the total number of deaths.

A: we can use “pipeline” to convert the output of function A to input of function B, in this program, we use “group_by()” to divide the countries into single country, and use ”summarize” to compute the total number of deaths caused by earthquakes. And what’s more we can use “head(10)” to print top ten items after sorting items by “arrange()”.

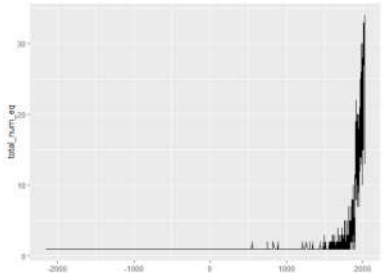
1.3 [10 points] Compute the total number of earthquakes with magnitude larger than 6.0 (use column EQ_PRIMARY as the magnitude) worldwide each year, and then plot the time series. Do you observe any trend? Explain why or why not?

A: We can use “filter()” to pick earthquakes with magnitude larger than 6.0, and use “ggplot()” in package “ggplot2” to plot the time series. And what we need to pay attention to , after we group_by(YEAR), is counting on the sum of earthquake in each year, which I use “n()” to finish it.

Q1: The number observed earthquake with magnitude larger than 6.0 increase hugely.

Q2: ①I think the technical for detecting earthquake help us find more earthquake in recent years.

②Environment change fast with human producing more CO2, and which changed the nature to some extent, leading to the increase of earthquake.



1.4 [10 points] Write a function CountEq_LargestEq that returns both (1) the total number of earthquakes since 2150 B.C. in a given country AND (2) the date of the largest earthquake ever happened in this country. Apply CountEq_LargestEq to each country, report your results in a descending order.

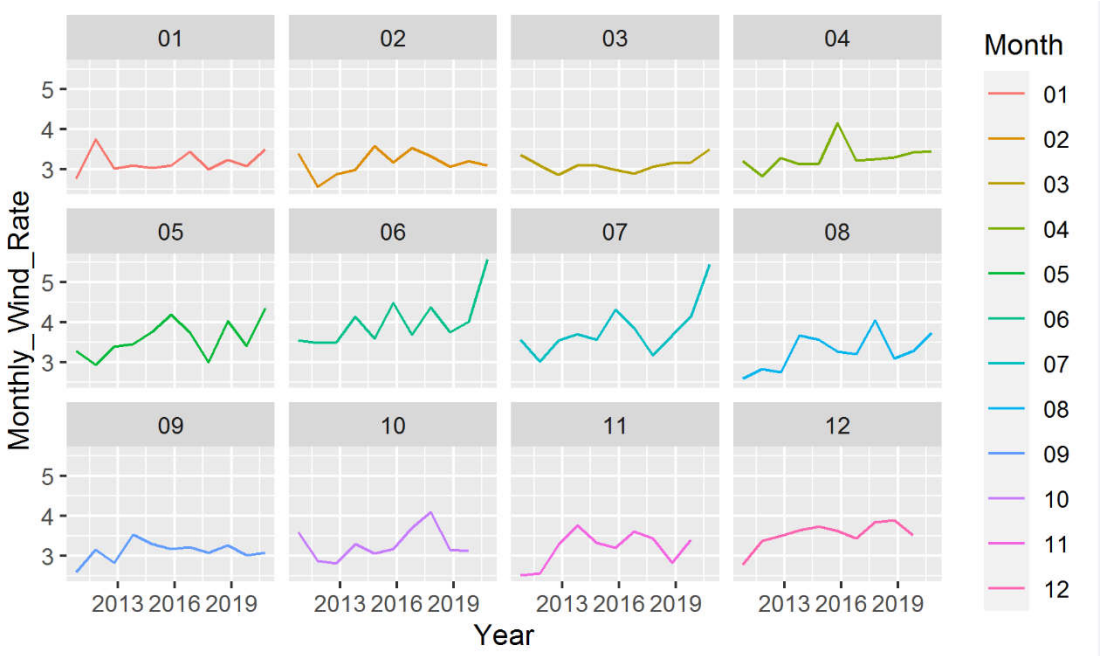
A1: We can get the result of the total number of earthquakes since 2015 B.C. in a given country and the date of the largest earthquakes ever happened in this country, and use “c()” combine and return it.

A2: Before we apply this function to achieve the sum and date, we should get the unique country with function “unique()” , and then we can use “for cycle” iterate every county and record the single result and combine them. what’ more, we can store the result of all countries to “TXT” file.

Q1: stored in “PS2_1_report.txt”

2. Wind speed in Shenzhen during the past 10 years

[10 points] Plot monthly averaged wind speed as a function of the observation time. Is there a trend in monthly averaged wind speed within the past 10 years?



Q: No, there isn't any trend within the past 10 years.

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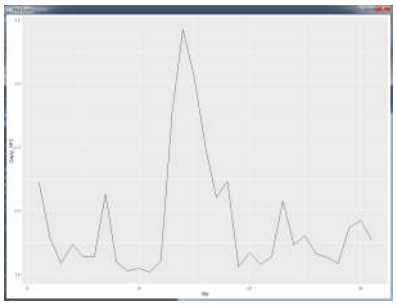
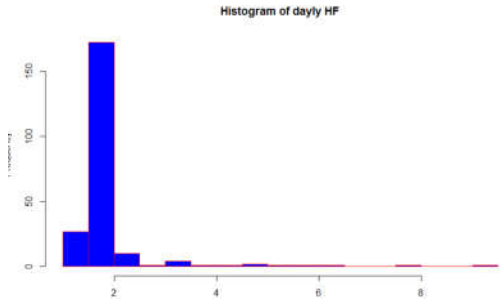
3. Revisit a data set

[10 points] Reproduce the same time series you made previously in Assignment 01.





A: We can use simple statistical function such as "min,max,table,mean,median" to inspect the characteristic of data.

conclusion:

The "HFC" distribute imbalance in 1994, and "HFC" get higher value between day of 10-20

every month.