Assignment 1 - Basics

R workshop

Fall 2021

Guidelines

Use R markdown to complete your assignment. Please provide all the code to make your work reproducible.

1. Data structures

1.1. Create a new chuck below this text. Then create a vector called `v1` with three elements, where all the elements are characters (i.e., enclosed in single ” or double "" quotes). Print the values.

1.2. Create a vector `v2` that derives from `v1`, but is of class `factor`. Print the values. Change the order of the levels of the factor (to any random order you want) and print the values.

1.3. Create a list `l1` that contains `v1`, `v2` and an additional object of class “data.frame”.

2. Reading and saving files, accesing elements

2.1. Tillage

Read the file `tillage.csv` from the “data” folder.

2.1.a.

What is the mean pH value?

2.1.b.

Create a new column, Tmean, as the average between Tmax and Tmin, and compare it with Tave. Visualize the differences using `hist()`.

2.1.c.

Which years are contained in this dataset? (Hint: use function `unique`)

2.1.d.

How many observations are there per year? And per location?

2.1.e.

How many columns refer exclusively to no-till (i.e. have "NT" in it, but not "CT")? An "soil"?

2.2. USDA Census

Read the file `USDAsurvey_00-18.csv` from the "data" folder.

2.2.a.

Create a dataframe that has columns describing: state, county, year, state, average annual yield (US level), average annual yield (state level), and historic standard deviation of yield (state level) (Hint: check out `sd()`).

2.2.b.

Using the data frame above, which are the states with higher and lower variability in yield? Provide the top 3 of each. What are the environmental conditions in these states?

2.2.c.

Take the first dataset (with raw data) and keep only the rows where the yield is greater than the historical US average.

3. Find the error

```
mtcars %>% # this is a dataset that is included in RStudio
  rownames_to_column("model") %>%
  fliter(mpg>15)
```

```
mtcars %>%
  rownames_to_column("model") %>%
  mutate(p = hp/wt)

mtcars %>% rename(Model = model)
```

```
mtcars %>%
  rownames_to_column("model") %>%
  filter(model %in% c(Hornet Sportabout,
                      Duster 360,
                      Merc 230))
```

Improve the style:

```r
1a = mtcars%>%filter(vs!=am&disp<150)
```