Introduction to R for Data Management and Analysis

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Notes on last week's lecture

- Using c() with mixed data types
- ... ellipses
    - additional arguments to "lower level" functions (e.g., par() in plot())
- Any questions?

Brief recap

- Basic features of the language
    - interactive and *interpreted*
    - case sensitive, ignores spaces except between objects and functions
    - an object is any type of variable stored in R (i.e., data.frame, numeric vector, function, etc.)
    - Be familiar with the parts of a function
    - know your help pages (use ?functionname or help("functionname"))
    - Finding help and troubleshooting are critically important
    - Help pages can be intimidating but very useful

Today's lecture overview

- Importing and Exporting Data
- Classes and Data types in R
    - data.frame
    - data type coercion
- Subsetting
    - using brackets and dollar signs ([, $)
    - using vector operands
- More troubleshooting

Importing and Exporting Data

- Recognizing file types
  - File extensions (e.g., .tsv, .csv, .xlsx, .txt, .sav, .sasb7dat)
- Show file extensions on Windows
  - Windows Start button > Control panel > (View by: Large Icons) > Folder options > View tab > Advanced Settings: [**Deselect**] Hide extensions for known file types
- Downloading files from the internet

Packages for reading foreign data

- readr, readxl, haven

Exporting Data

- write.table()
- write.csv() / write_csv()
- write_delim()

Figure 1: Bicycle

What are classes?

- R objects have class attributes
- Define what functions/operations can be performed
- class() function
- Examples

Vectors, classes, and functions

- Vectors of class (may be named):
    - character, integer, numeric, logical, complex, raw (bytes)
    - factor: discrete levels
        - mostly used in regressions
        - set reference by `releveling` categories
        - `relevel` does not work with ordered factors
    - missing (`NA`)
- Tabular classes:
    - `data.frame`
    - `matrix`
- Non-tabular:
    - `function`
    - `list`
    - `array`
    - custom classes

Coercion

- as.*(class type here)*
- as.character
- as.numeric
- as.logical
- as.data.frame