Data Import : : CHEAT SHEET

R's **tidyverse** is built around **tidy data** stored in **tibbles**, which are enhanced data frames.

The front side of this sheet shows how to read text files into R with **readr**.

The reverse side shows how to create tibbles with **tibble** and to layout tidy data with **tidyr**.

OTHER TYPES OF DATA

Try one of the following packages to import other types of files

- **haven** - SPSS, Stata, and SAS files
- **readxl** - excel files (.xls and .xlsx)
- **DBI** - databases
- **jsonlite** - json
- **xml2** - XML
- **httr** - Web APIs
- **rvest** - HTML (Web Scraping)

Save Data

Save **x**, an R object, to **path**, a file path, as:

Comma delimited file

write_csv(x, path, na = "NA", append = FALSE, col_names = !append**)**

File with arbitrary delimiter

write_delim(x, path, delim = " ", na = "NA", append = FALSE, col_names = !append**)**

CSV for excel

write_excel_csv(x, path, na = "NA", append = FALSE, col_names = !append**)**

String to file

write_file(x, path, append = FALSE**)**

String vector to file, one element per line

write_lines(x,path, na = "NA", append = FALSE**)**

Object to RDS file

write_rds(x, path, compress = c("none", "gz", "bz2", "xz"), ...**)**

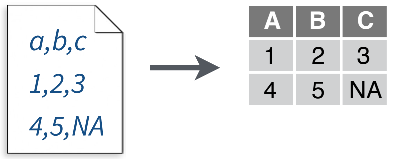
Tab delimited files

write_tsv(x, path, na = "NA", append = FALSE, col_names = !append**)**

Read Tabular Data

- These functions share the common arguments:

read_*(file, col_names = TRUE, col_types = NULL, locale = default_locale(), na = c("", "NA"), quoted_na = TRUE, comment = "", trim_ws = TRUE, skip = 0, n_max = Inf, guess_max = min(1000, n_max), progress = interactive())

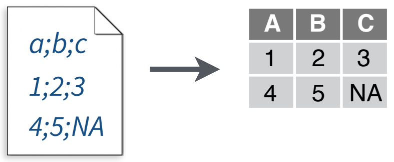


Comma Delimited Files

read_csv("file.csv"**)**

To make file.csv run:

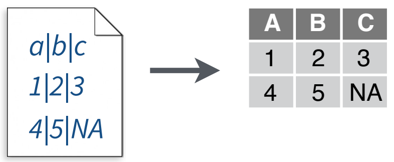
write_file(x = "a,b,c\n1,2,3\n4,5,NA", path = "file.csv")



Semi-colon Delimited Files

read_csv2("file2.csv"**)**

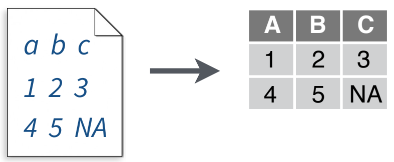
write_file(x = "a;b;c\n1;2;3\n4;5;NA", path = "file2.csv")



Files with Any Delimiter

read_delim("file.txt", delim = "|"**)**

write_file(x = "a|b|c\n1|2|3\n4|5|NA", path = "file.txt")



Fixed Width Files

read_fwf("file.fwf", col_positions = c(1, 3, 5)**)**

write_file(x = "a b c\n1 2 3\n4 5 NA", path = "file.fwf")

Tab Delimited Files

read_tsv("file.tsv"**)** Also **read_table().**

write_file(x = "a\tb\tc\n1\t2\t3\n4\t5\tNA", path = "file.tsv")

USEFUL ARGUMENTS

```
a,b,c
1,2,3
4,5,NA
```

Example file

write_file("a,b,c\n1,2,3\n4,5,NA","file.csv")
f <- "file.csv"

A	B	C
1	2	3
4	5	NA

No header

read_csv(f, **col_names = FALSE**)

x	y	z
A	B	C
1	2	3
4	5	NA

Provide header

read_csv(f, **col_names = c("x", "y", "z")**)

1	2	3
4	5	NA

Skip lines

read_csv(f, **skip = 1**)

A	B	C
1	2	3

Read in a subset

read_csv(f, **n_max = 1**)

A	B	C
NA	2	3
4	5	NA

Missing Values

read_csv(f, **na = c("1", ".")**)

Read Non-Tabular Data

Read a file into a single string

read_file(file, locale = default_locale()**)**

Read each line into its own string

read_lines(file, skip = 0, n_max = -1L, na = character(), locale = default_locale(), progress = interactive()**)**

Read Apache style log files

read_log(file, col_names = FALSE, col_types = NULL, skip = 0, n_max = -1, progress = interactive()**)**

Read a file into a raw vector

read_file_raw(file**)**

Read each line into a raw vector

read_lines_raw(file, skip = 0, n_max = -1L, progress = interactive()**)**

Data types

readr functions guess the types of each column and convert types when appropriate (but will NOT convert strings to factors automatically).

A message shows the type of each column in the result.

```
## Parsed with column specification:
## cols(
##   age = col_integer(),
##   sex = col_character(),
##   earn = col_double()
## )
```

age is an integer

earn is a double (numeric)

sex is a character

1. Use **problems()** to diagnose problems.
   x <- read_csv("file.csv"); problems(x)

2. Use a col_ function to guide parsing.
   - **col_guess()** - the default
   - **col_character()**
   - **col_double(), col_euro_double()**
   - **col_datetime(**format = ""**)** Also **col_date(**format = ""**)**, **col_time(**format = ""**)**
   - **col_factor(**levels, ordered = FALSE**)**
   - **col_integer()**
   - **col_logical()**
   - **col_number()**, **col_numeric()**
   - **col_skip()**

   x <- read_csv("file.csv", col_types = cols(
   A = col_double(),
   B = col_logical(),
   C = col_factor()))

3. Else, read in as character vectors then parse with a parse_ function.
   - **parse_guess()**
   - **parse_character()**
   - **parse_datetime()** Also **parse_date()** and **parse_time()**
   - **parse_double()**
   - **parse_factor()**
   - **parse_integer()**
   - **parse_logical()**
   - **parse_number()**

   x$A <- parse_number(x$A)

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