Data Import : : CHEAT SHEET

Read Tabular Data with readr

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

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

→

A	B	C
1	2	3
4	5	NA

read_csv("file.csv"**)** Read a comma delimited file.
To make file.csv, run:
write_file(x = "a,b,c\n1,2,3\n4,5,NA", file = "file.csv")

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

→

A	B	C
1	2	3
4	5	NA

read_csv2("file2.csv"**)** Read a semi-colon delimited file.
write_file(x = "a;b;c\n1;2;3\n4;5;NA", file= "file2.csv")

read_delim("file.txt", delim = "|"**)** Read files with any delimiter.
write_file(x = "a|b|c\n1|2|3\n4|5|NA", file = "file.txt")

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

→

A	B	C
1	2	3
4	5	NA

read_tsv("file.tsv"**)** Read a tab delimited file. Also **read_table()**.
write_file(x = "a\tb\tc\n1\t2\t3\n4\t5\tNA", file = "file.tsv")

read_fwf("file.fwf", col_positions = c(1, 3, 5)**)** Read a fixed width file.
write_file(x = "a\tb\tc\n1\t2\t3\n4\t5\tNA", file = "file.tsv")

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

→

A	B	C
1	2	3
4	5	NA

read_csv(file = c(“file1.csv”, “file2.csv”, “file3.csv”)**)** Read multiple files by passing file a vector of file paths.

USEFUL READ ARGUMENTS

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 a subset of lines
read_csv(f, **n_max = 1**)

A	B	C
NA	2	3
4	5	NA

Read values as missing
read_csv(f, **na = c("1", ".")**)

Save Data with readr

write_*(x, file, na = "NA", append = FALSE, col_names = !append, quote_escape = "double", eol = "\n")

A	B	C
1	2	3
4	5	NA

→

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

write_csv(x, file**)** Write a comma delimited file.

write_csv2(x, file**)** Write a semi-colon delimited file.

write_delim(x, file, delim = " "**)** Write files with any delimiter.

write_tsv(x, file**)** Write a tab delimited file.

Often one of the first steps of a project is to import outside data into R. Data is often stored in tabular formats, like csv files or spreadsheets.

The front page of this sheet shows how to import and save text files into R using **readr**.

The back page shows how to import spreadsheet data from Excel files using **readxl** or Google Sheets using **googlesheets4**.

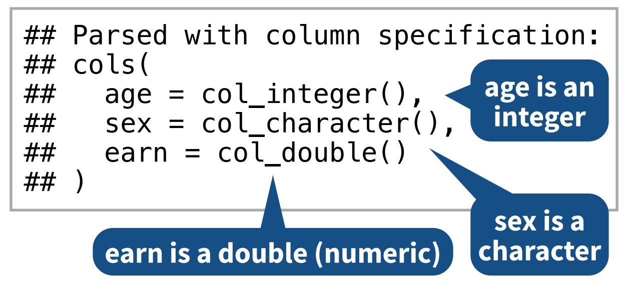
OTHER TYPES OF DATA

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)
- **readr::read_lines()** - text data

Column Specification with readr

Column specifications define what data type each column of a file will be imported as. By default readr will generate a column spec when a file is read.



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

COLUMN TYPES

Each column type has a function and corresponding string abbreviation.

- **col_logical()** - "l"
- **col_integer()** - "i"
- **col_double()** - "d"
- **col_number()** - "n"
- **col_character()** - "c"
- **col_factor(**levels, ordered = FALSE**)** - "f"
- **col_datetime(**format = ""**)** - "T"
- **col_date(**format = ""**)** - "D"
- **col_time(**format = ""**)** - "t"
- **col_skip()** - "-", "_"
- **col_guess()** - "?"

See readr.tidyverse.org/articles/readr for more information on parsing and debugging.

DEFINE COLUMN SPECIFICATION

If the default column specification isn't accurate, you can define it manually using the **col_type** argument.

Guess all columns
To "guess", **read_*()** looks at the first 1000 rows of data to guess what type a column is. Increase with the **guess_max** argument.

```
read_csv(path, col_types = NULL,
         guess_max = 1001)
```

Set a default type

```
read_csv(file,
      col_type = cols(.default = col_double()))
```

Use column type or string abbreviation

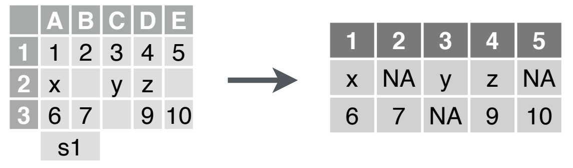
```
read_csv(file,
      col_type = cols(
                x = col_double(),
                y = col_logical(),
                z = col_skip()))
```

Use a single string of abbreviations

```
read_csv(file,
      col_type = "ddccl__li")
```

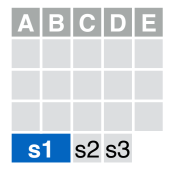
Import Spreadsheets with readxl

READ EXCEL FILES



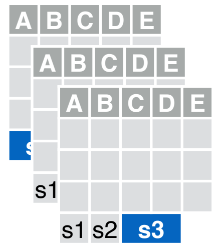
read_excel(path, sheet = NULL, range = NULL)
Read a .xls or .xlsx file based on the file extension. See front page for more read arguments. Also **read_xls()** and **read_xlsx()**.
read_excel("excel_file.xlsx")

READ SHEETS



read_excel(path, **sheet = NULL)** Specify which sheet to read by position or name.
read_excel(path, sheet = 1)
read_excel(path, sheet = "s1")

excel_sheets(path) Get a vector of sheet names.
excel_sheets("excel_file.xlsx")



To **read multiple sheets:**

1. From a file path, create a vector of sheet names.
2. Set the vector names to be the sheet names.
3. Use purrr:map() to iterate

```
path <- "your_file_path.xlsx"
path %>% excel_sheets() %>%
         set_names() %>%
         map(read_excel, path = path)
```

OTHER USEFUL EXCEL PACKAGES

openxlsx::write.xlsx(x, file) Write data to a .xlsx file. See **ycphs.github.io/openxlsx/** for more information.

tidxl is a package for non tabular Excel data. See **github.com/nacnudus/tidyxl** for more information.

READXL COLUMN SPECIFICATION

Column specifications define what data type each column of a file will be imported as.

Use the **col_types** argument of **read_excel()** to set the column specification.

Guess all columns
To "guess", **read_excel()** looks at the first 1000 rows of data to guess what type a column is. Increase with the **guess_max** argument.

```
read_excel(path, col_types = NULL,
           guess_max = 1001)
```

Set all columns

```
read_excel(path, col_types = "text")
```

Set each column

```
read_excel(path,
           col_types = c("text",
                         "guess",
                         "guess",
                         "numeric"))
```

COLUMN TYPES

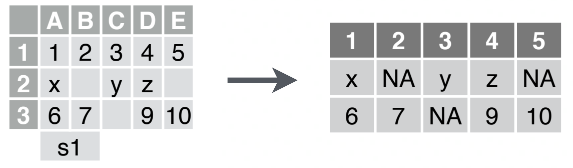
logical	numeric	text	date	list
TRUE	2	hello	1947-01-08	hello
FALSE	3.45	world	1956-10-21	1

- skip
- guess
- logical
- numeric
- text
- date
- list

Use **list** for columns that include multiple data types. See **tidyr** and **purrr** for list column data.

with googlesheets4

READ SHEETS



read_sheet(ss, sheet = NULL, range = NULL)
Read a sheet from a URL, a Sheet ID, or a dribble from the googledrive package. See front page for more read arguments. Same as **range_read()**.

SHEETS METADATA

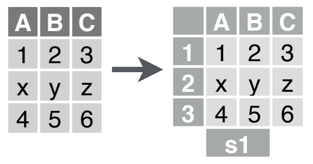
URLs are in the form:
https://docs.google.com/spreadsheets/d/
SPREADSHEET_ID/edit#gid=**SHEET_ID**

gs4_get(ss) Get spreadsheet meta data.

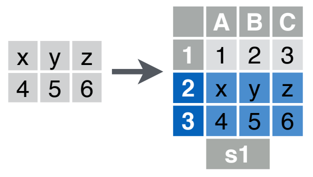
gs4_find(...) Get data on all spreadsheet files.

sheet_properties(ss) Get a tibble of properties for each worksheet. Also **sheet_names()**.

WRITE SHEETS



sheet_write(data, ss = NULL, sheet = NULL)
Write a data frame into a new or existing Sheet.



sheet_append(ss, data, sheet = 1) Add rows to the end of a worksheet. Also **range_write()**, **range_flood()**, and **range_clear()**.

GOOGLESHEETS4 COLUMN SPECIFICATION

Column specifications define what data type each column of a file will be imported as.

Use the **col_types** argument of **read_sheet()/ range_read()** to set the column specification.

Guess all columns
To "guess", **read_sheet()/range_read()** looks at the first 1000 rows of data to guess what type a column is. Change with **guess_max**.

```
read_sheet(path, col_types = NULL,
           guess_max = 1001)
```

Set all columns

```
read_sheet(path, col_types = "c")
```

Set each column

```
read_sheets(ss,
            col_types = "cci?l")
```

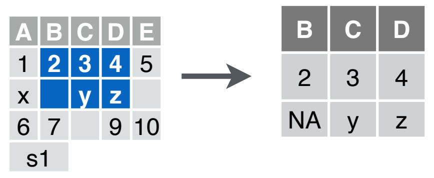
COLUMN TYPES

l	n	c	D	L
TRUE	2	hello	1947-01-08	hello
FALSE	3.45	world	1956-10-21	1

- skip - "_" or "-"
- guess - "?"
- logical - "l"
- integer - "i"
- double - "d"
- numeric - "n"
- date - "D"
- datetime - "T"
- character - "c"
- list-column - "L"
- cell - "C" Returns list of raw cell data.

Use list for columns that include multiple data types. See **tidyr** and **purrr** for list column data.

CELL SPECIFICATION FOR READXL AND GOOGLESHEETS4



Use the **range** argument of **readxl::read_excel()** or **googlesheets4::read_sheet()** to read a subset of cells from a sheet.

```
read_excel(path, range = "Sheet1!D12:F15")
range_read_cells(ss, range = "D12:F15")
```

Also use the cell specification functions **cell_limits, cell_rows, cell_cols,** and **anchored.**

FILE LEVEL OPERATIONS

googlesheets4 also provides some functions for modifying spreadsheet files. Go to **googlesheets4.tidyverse.org** to read more.

Also see the tidyverse package **googledrive** at **googledrive.tidyverse.org** for file level operations using Google Drive.