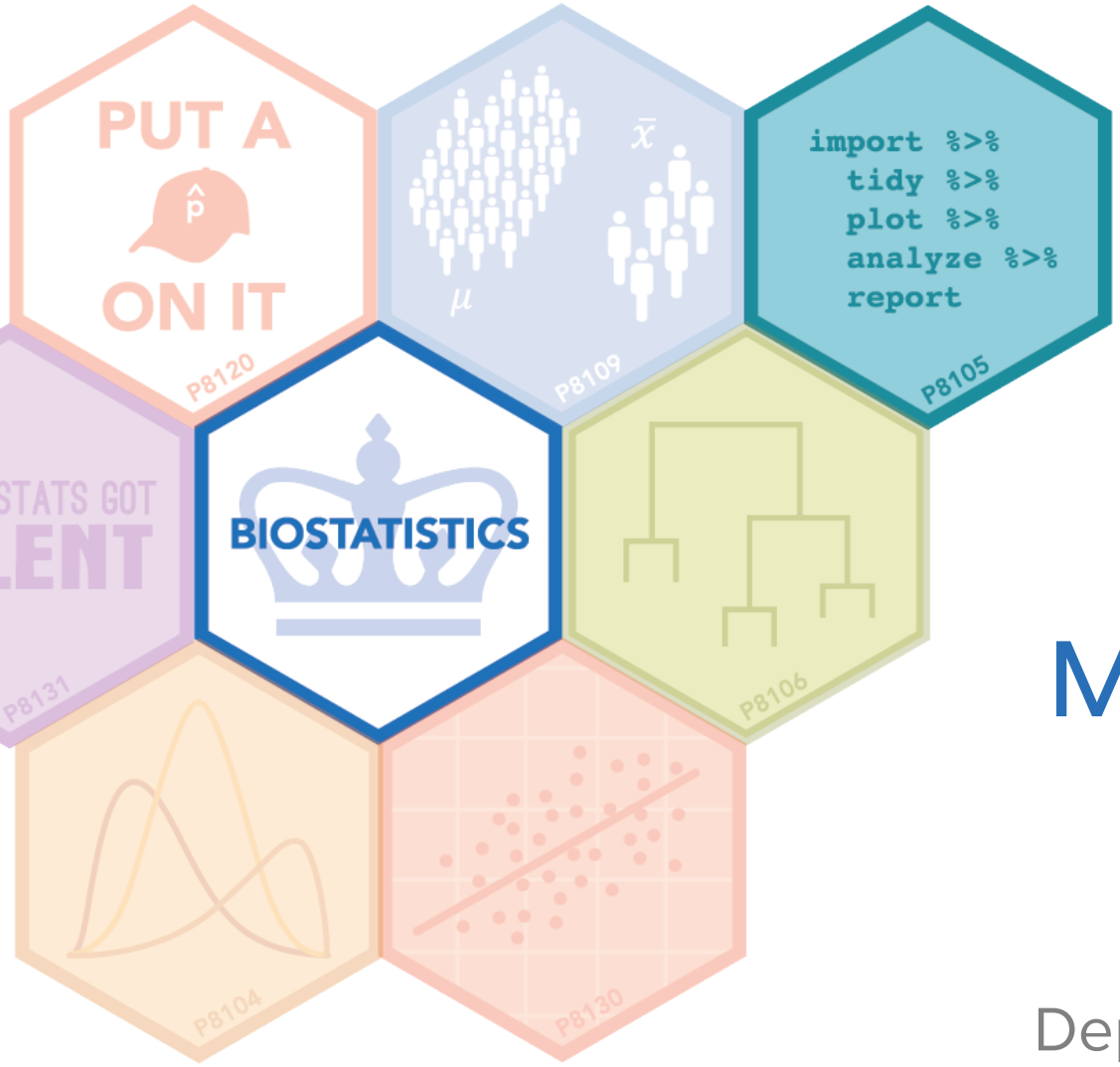

DATA MANIPULATION

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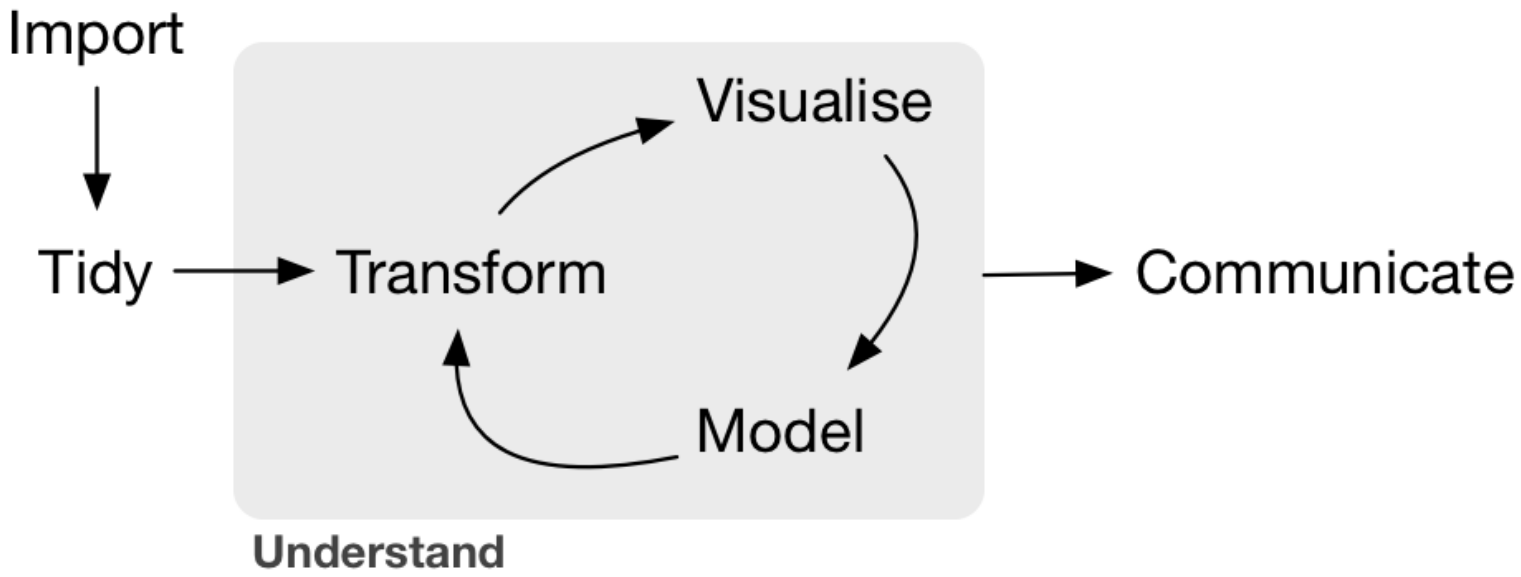
Data manipulation

- Manipulate (aka transform, manage, clean) is the third step in wrangling



R for Data Science

Major steps

- There are a few things you're going to do a lot of when you manipulate data:
  - Select relevant variables
  - Filter out unnecessary observations
  - Create new variables, or change existing ones
  - Arrange in an easy-to-digest format

dplyr

- The `dplyr` package has specific functions that map to each of these major steps
  - `select` relevant variables
  - `filter` out unnecessary observations
  - `mutate` (sorry) new variables, or change existing ones
  - `arrange` in an easy-to-digest format

dplyr

- The modularity is intentional
  - Each function is designed to do one thing, and do it well
  - This is true of other functions as well (and there are several others)

- These functions share a structure: the first argument is always a data frame, and the returned objects is always a data frame
  - "tibble comes in, tibble goes you, you can't explain that"

Pipes

- Piping allows you to tie together a sequence actions
  - New to R (2014)
  - Comes from the `magrittr` package; loaded by everything in the tidyverse

Pipes

- Sequence of actions to start my days
  - Wake up
  - Brush teeth
  - Do data science

- In “R”, I can nest these actions:

```
do_ds(brush_teeth(wake_up(Jeff)))
```

- Alternatively, I could name a bunch of intermediate objects

```
awake_jeff = wake_up(Jeff) %>%
clean_teeth_jeff = brush_teeth(awake_jeff) %>%
happy_jeff = do_ds(clean_teeth_jeff)
```

Pipes

- Using pipes is easier to read and understand, and avoids clutter

```
wake_up(Jeff) %>%
  brush_teeth() %>%
  do_ds()
```

- Read "%>%" as "and then"
- The result of one function gets passed as the first argument to the next one by default, although you can be more specific
- Works very well with "tibble in, tibble out" philosophy

- You will probably never fully appreciate how great piping is
  - You should be glad that that's true