Joining and Pivoting

Advanced data manipulation

Download the section 6 .Rmd handout to `STAT240/lecture/06-join-pivot`.

Material in this section is covered by Chapter 8 on the notes website.

Joining combines information from two dataframes (e.g. the `produce` from last section).

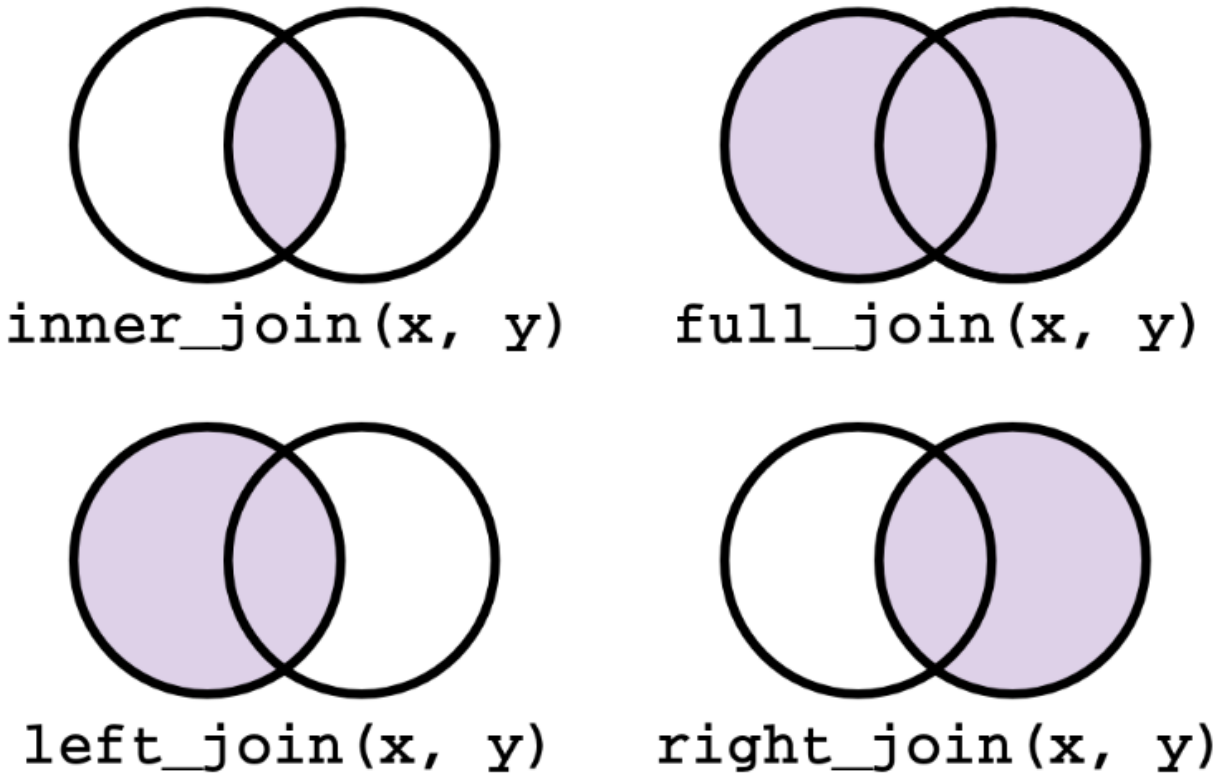
- **Mutating joins** append columns together
- **Filtering joins** keeps rows based on another df

Mutating join arguments:

- Two data frames
- `by =` Names of columns to join

`left_join()`, `right_join()`, `full_join()`, `inner_join()`

Which dataset is given "priority"?



from tavareshugo.github.io

`left_join(x, y)` keeps all rows in `x`.

- `x` is "nailed down"
- Then `y` columns are added
- Can induce `NA` in `y`'s columns

`right_join(x, y)` keeps all rows in `y`.

Be mindful of column names!

- Best practice: provide "by"
- R will try to match names

If the dataframes have no columns in common, and by is not given, we get an error.

`full_join()` keeps all rows from both dataframes.

- Like `left_join()`, but all rows get added
- Can induce `NA` values for columns in `x` or `y`

This is not the same as "stacking" the dataframes.

`inner_join()` keeps only rows appearing in both dataframes.

- Does not induce `NA` values

`full_join()` and `inner_join()` are symmetric.

Predict what will happen when joining `band_instruments` and `band_members`.

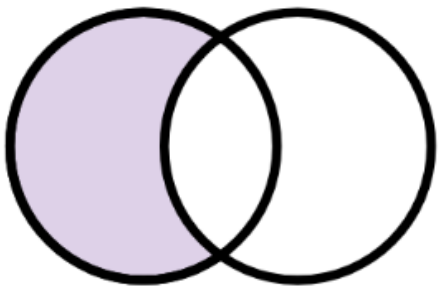
- How many rows and columns will there be?
- Will there be any `NA`s?

Uncomment the lines to see if you were right.

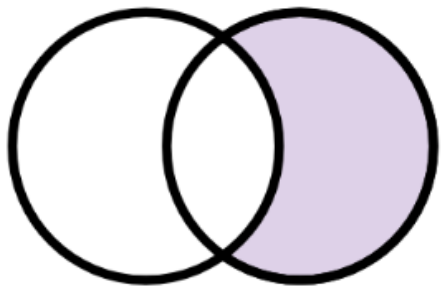
Filtering joins remove rows of the `x` dataset.

- `semi_join()` keep rows that also appear in `y`
- `anti_join()` keep rows that don't appear in `y`

No columns from `y` appear in the output.



anti_join(x, y)



anti_join(y, x)

from tavareshugo.github.io

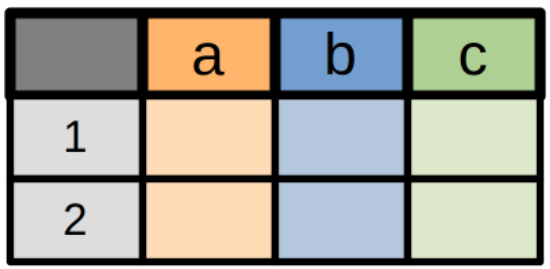
Now predict the output when filter-joining `band_instruments` and `band_members`.

- How many rows and columns will there be?
- Will there be any `NA`s?

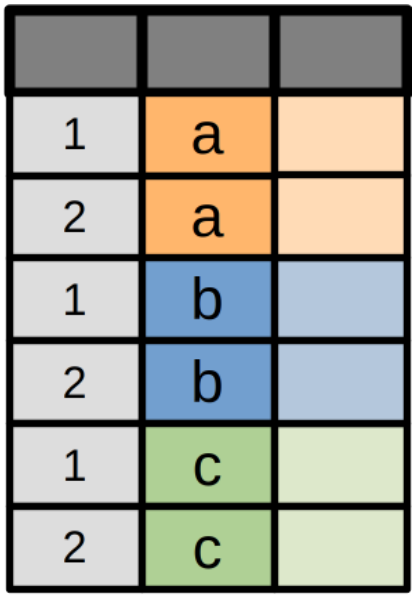
Uncomment the lines to see if you were right.

Pivoting changes the shape of the dataframe while retaining all of its information.

Datasets can be `wide` or `long`, depending on how we want to structure the rows.



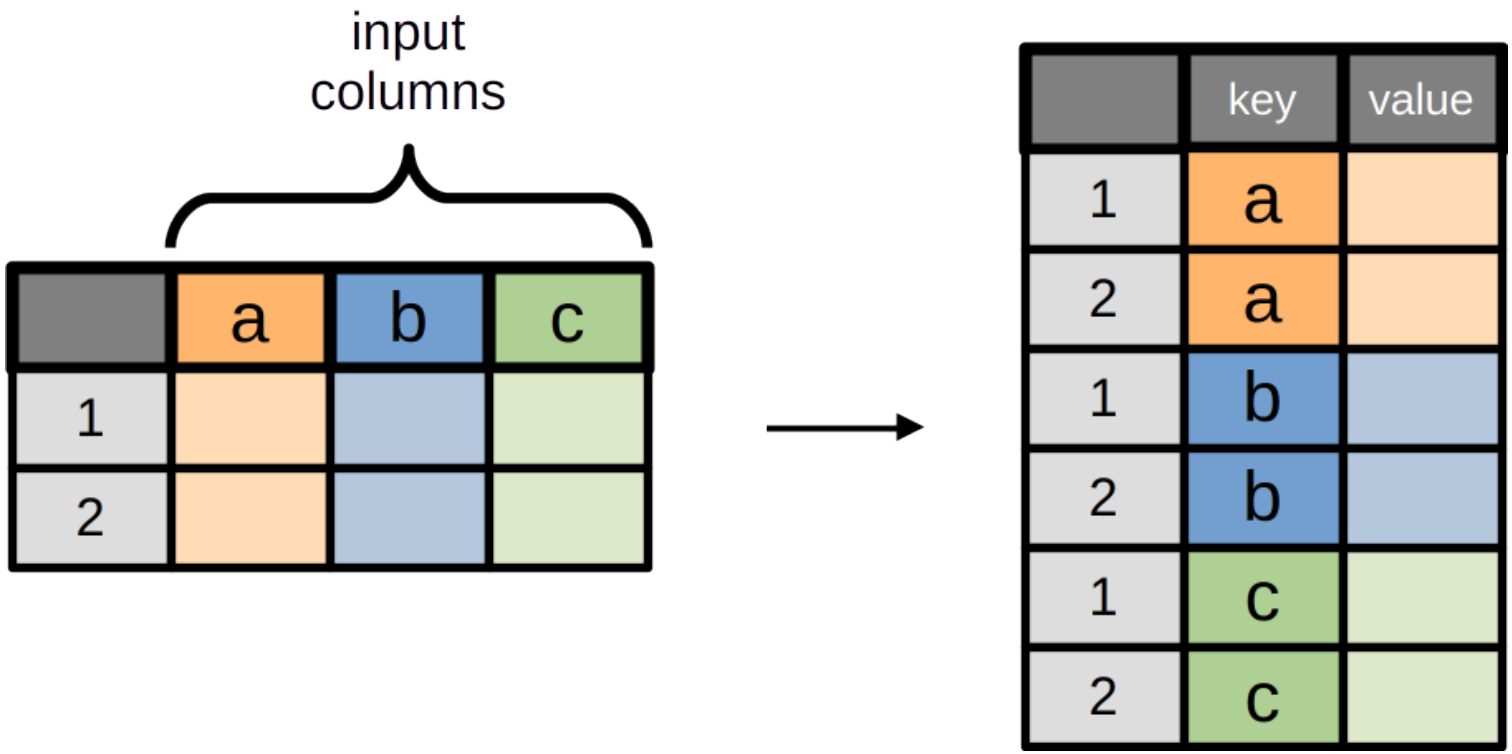
wide form



long form

Switch between them with `pivot_longer()` and `pivot_wider()`.

`pivot_longer()`:

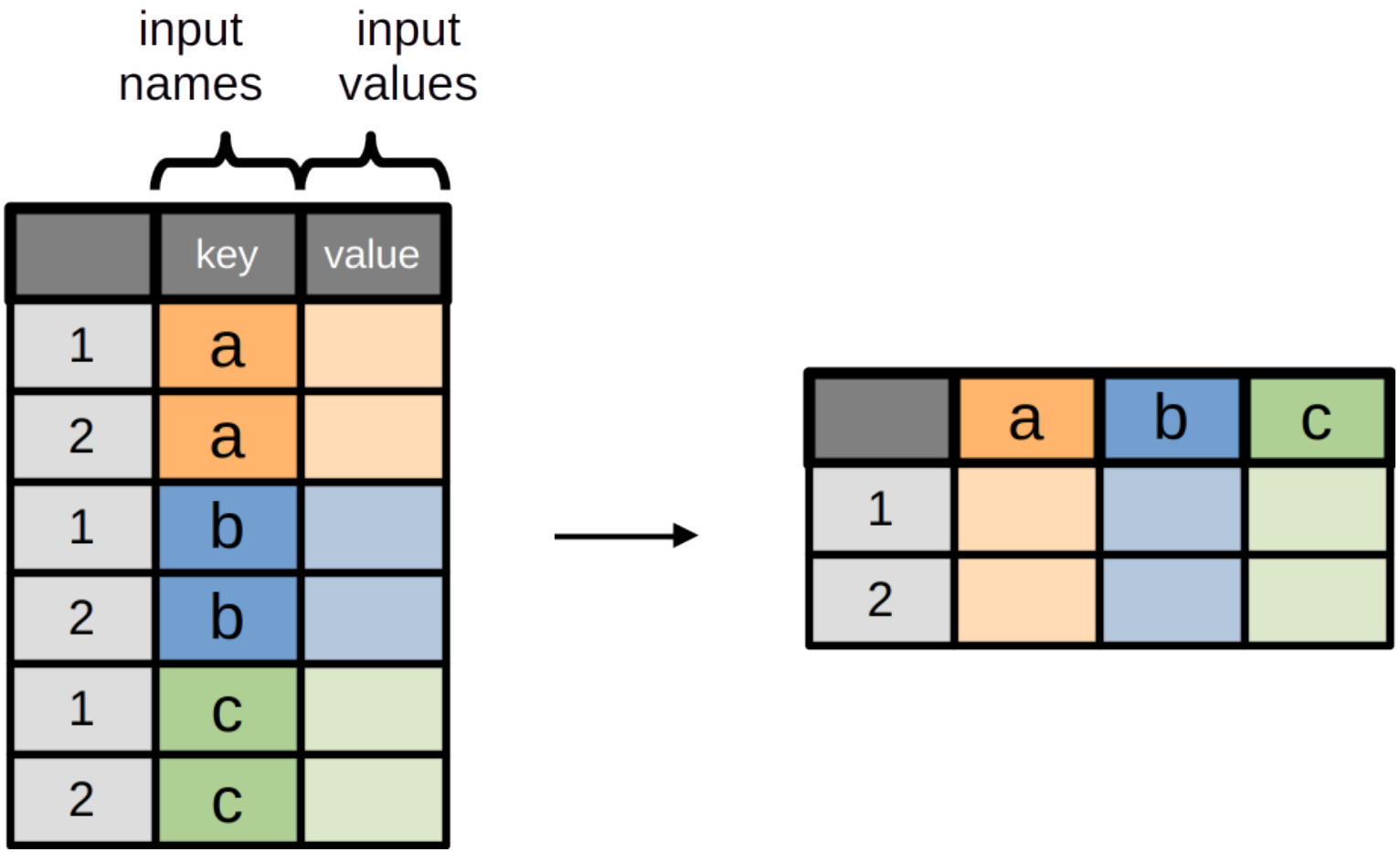


`pivot_longer()` increases rows and decreases columns.

- We specify existing columns

Those columns will be merged into one long column.

`pivot_wider()`:



`pivot_wider()` decreases rows and increases columns.

- We specify the column to split and the values for the new columns

These become the names and values of the new columns.