Entering / cleaning data 1

Data cleaning: Extracting and rearranging rows

Extracting and rearranging rows

Next, we'll go deeper into how to extract certain rows, building on what we covered in the first week.

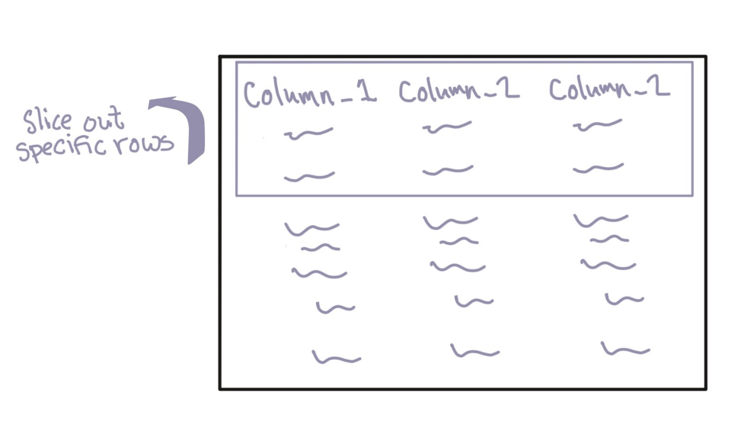
There are a few functions that are useful for extracting or rearranging rows in a dataframe:

- `slice`
- `sample_n`
- `arrange`
- `filter`

We'll go through what each of these does and how to use them.

Slicing to certain rows

The `slice` function from the `dplyr` package can extract certain rows based on their position in the dataframe.



Slicing to certain rows

Last week, you learned how to use the `slice` function to limit a dataframe to certain rows by row position.

For example, to print the first three rows of the `daily_show` data, you can run:

```r
library("dplyr")
slice(.data = daily_show, 1:3)
```

```
## # A tibble: 3 x 4
##   job                date   category guest_name
##   <chr>              <chr>  <chr>    <chr>
## 1 actor              1/11/~ Acting   Michael J. Fox
## 2 Comedian           1/12/~ Comedy   Sandra Bernha~
## 3 television actre~ 1/13/~ Acting   Tracey Ullman
```

Randomly sampling rows

There are some other functions you can use to extract rows from a tibble dataframe, all from the "dplyr" package.

For example, if you'd like to extract a random subset of *n* rows, you can use the `sample_n` function, with the `size` argument set to *n*.

To extract two random rows from the `daily_show` dataframe, run:

```r
sample_n(tbl = daily_show, size = 2)
```

```
## # A tibble: 2 x 4
##   job                date     category  guest_name
##   <chr>              <chr>    <chr>     <chr>
## 1 former us sena~ 10/23/08 Politici~ Jon Corzine
## 2 actor              2/27/01  Acting    Joe Pantolia~
```

Arranging rows

There is also a function, `arrange`, you can use to re-order the rows in a dataframe based on the values in one of its columns. The syntax for this function is:

```
# Generic code
arrange(.data = dataframe, column_to_order_by)
```

If you run this function to use a character vector to order, it will order the rows alphabetically by the values in that column. If you specify a numeric vector, it will order the rows by the numeric value.

Arranging rows

For example, we could reorder the daily_show data alphabetically by the values in the category column with the following call:

```r
daily_show <- arrange(.data = daily_show, category)
slice(.data = daily_show, 1:3)
```

```
## # A tibble: 3 x 4
##   job       date    category guest_name
##   <chr>     <chr>   <chr>    <chr>
## 1 professor 10/3/01 Academic Stephen S. Morse
## 2 Professor 12/3/01 Academic Nadine Strossen
## 3 Historian 11/4/03 Academic Michael Beschloss
```

Arranging rows

If you want the ordering to be reversed (e.g., from “z” to “a” for character vectors, from higher to lower for numeric, latest to earliest for a Date), you can include the `desc` function.

For example, to reorder the `daily_show` data by job category in descending alphabetical order, you can run:

```r
daily_show <- arrange(.data = daily_show,
                      desc(x = category))
slice(.data = daily_show, 1:2)
```

```
## # A tibble: 2 x 4
##   job          date    category guest_name
##   <chr>        <chr>   <chr>    <chr>
## 1 neurosurgeon 4/28/03 Science  Dr Sanjay Gupta
## 2 scientist    1/13/04 Science  Catherine Weitz
```

Filtering to certain rows

Next, you might want to filter the dataset down so that it only includes certain rows. You can use the `filter` function from the `dplyr` package to do that. The syntax is:

```
## Generic code
filter(.data = dataframe, logical expression)
```

Filtering to certain rows

The **logical expression** gives the condition that a row must meet to be included in the output data frame. For example, you might want to pull:

- Rows from 2015
- Rows where the guest was an academic
- Rows where the job is not missing

Filtering to certain rows

For example, the == logical operator tests if two values are equal. So if you want to create a data frame that only includes guests who were scientists, you can run:

```r
scientists <- filter(.data = daily_show, category == "Science")
head(scientists)
```

```
## # A tibble: 6 x 4
##   job          date    category guest_name
##   <chr>        <chr>   <chr>    <chr>
## 1 neurosurgeon 4/28/03 Science  Dr Sanjay Gupta
## 2 scientist    1/13/04 Science  Catherine Weitz
## 3 physician    6/15/04 Science  Hassan Ibrahim
## 4 doctor       9/6/05  Science  Dr. Marc Siegel
## 5 astronaut    2/13/06 Science  Astronaut Mike Mu~
## 6 Astrophysic~ 1/30/07 Science  Neil deGrasse Tys~
```

Common logical and relational operators in R

To build a logical statement to use in `filter`, you'll need to know some of R's logical and relational operators:

Operator	Meaning	Example
`==`	equals	`category == "Acting"`
`!=`	does not equal	`category != "Comedy`
`%in%`	is in	`category %in% c("Academic", "Science")`
`is.na()`	is NA	`is.na(job)`
`&`	and	`(year == 2015) & (category == "Academic")`
`|`	or	`(year == 2015) | (category == "Academic")`

Common logical and relational operators in R

We will cover logical operators and expressions in depth next week.

As a preview, the == operator will check each element of a vector against each corresponding element of another vector to see if it's equal.

The result will be a **logical vector**:

```
c(1, 2, 3) == c(1, 2, 4)
```

```
## [1]  TRUE  TRUE FALSE
```