datacamp

Data Manipulation with dplyr in R

Cheat Sheet

Learn R online at www.DataCamp.com

> Helpful Syntax

Installing and loading dplyr

```
# Install dplyr through tidyverse
install.packages("tidyverse")

# Install it directly
install.packages("dplyr")

# Load dplyr into R
library(dplyr)
```

The %>% operator

%>% is a special operator in R found in the `magrittr` and `dplyr` packages. %>% lets you pass objects to functions elegantly, and helps you make your code more readable. Consider this example of choosing columns a and b from the dataframe `df`

```
# Without the %>% operator
select(df, a, b)

# By using the %>% operator
df %>% select(a, b)
```

> Dataset used throughout this cheat sheet

Throughout this cheat sheet, we weill be using this example dataset called `airbnb_listings`, containing Airbnb listings with data on their location, year listed, number of rooms, and more.

airbnb_listings				
listing_id	city	country	number_of_rooms	year_listed
1	Paris	France	5	2018
2	Tokyo	Japan	2	2017
3	New York	USA	2	2022

> Transforming data with dplyr

Basic column operations with dplyr

```
# Select one or more columns with select()
airbnb_listings %>%
select(listing_id, city)

# Select columns based on start characters
airbnb_listings %>%
select(starts_with("c"))

# Select columns based on end characters
airbnb_listings %>%
select(ends_with("s"))

# Select all but one column (e.g., listing_id)
airbnb_listings %>%
select(-listing_id)

# Select all columns within a range
airbnb_listings %>%
select(country:year_listed)

# Reorder columns using relocate()
airbnb_listings %>%
relocate(city, country)

# Rename a column using rename()
airbnb_listings %>%
rename(year=year_listed)

# Select columns matching a regular expression
airbnb_listings %>%
select(matches("(.n.)|(n.)"))
```

Creating new columns with dplyr

```
# Create a time_on_market column using the difference of today's year and the year_listed
airbnb_listings %>%
mutate(time_on_market = 2022 - year_listed)

# Create a full_address column by combining city and country
airbnb_listings %>%
transmute(full_address = paste(city, country))

# Add the number of observations for a column (e.g., number of listings per city)
airbnb_listings %>%
add_count(city)
```

Working with rows

```
# Filter rows on one condition (e.g., country)
airbnb_listings %>%
filter(country=="France")

# Filter on two OR more conditions (country OR number_of_rooms)
airbnb_listings %>%
filter(country=="France" | number_of_rooms > 3)

# Filter on two AND more conditions (country AND number_of_rooms)
airbnb_listings %>%
filter(country=="France" & number_of_rooms > 3)

# Filter by checking if a value exists in another set of values
airbnb_listings %>%
filter(country %in% c("Japan", "France"))

# Filter rows based on index of rows (e.g., first 3 rows)
Airbnb_listings %>%
slice(1:3)

# Sort rows by values in a column in ascending order
airbnb_listings %>%
arrange(number_of_rooms)

# Sort rows by values in a column in descending order
airbnb_listings %>%
arrange(desc(city))

# Remove duplicate rows in all the dataset
airbnb_listings %>%
distinct()

# Find unique values in the country column
airbnb_listings %>%
distinct(country)

# Select rows based on top-n values of a column (e.g., top 3 listings with the highest amount of rooms)
airbnb_listings %>%
top_n(3, number_of_rooms)
```

> Aggregating data with dplyr

```
# Count groups within a column (e.g., count number of cities in airbnb_listings)
airbnb_listings %>%
count(city)

# Count groups within a column and return sorted
airbnb_listings %>%
count(country, sort=TRUE)

# Return the total sum of values for a column (e.g., total number of rooms)
airbnb_listings %>%
summarise(total_rooms=sum(number_of_rooms))

# Return the average of values for a column (e.g, average number of rooms in a given listing)
airbnb_listings %>%
summarise(avg_room=mean(number_of_rooms))

# Return a custom summary statistic (e.g., average amount of time a listing stays on)
airbnb_listings %>%
summarise(average_listing_duration= 2022 - mean(year_listed))

# Group by a variable and return counts of each group (e.g., number of listings by country)
airbnb_listings %>%
group_by(country) %>%
summarise(n=n())

# Group by a variable and return the average value per group (e.g., average number of rooms in listings per city)
airbnb_listings %>%
group_by(city) %>%
summarise(avg_rooms=mean(number_of_rooms))
```

> Combining tables in dplyr

x1	x2
1	2
3	6
5	4

df_1

x1	x2
1	2
4	6
2	5

df_2

```
# Appending a table to the right side (horizontal) of another
bind_cols(df_1, df_2)

# Appending a table to the bottom (vertical) of another
bind_rows(df_1, df_2)

# Combining rows that exist in both tables and dropping duplicates
union(df_1, df_2)

# Finding identical columns in both tables
intersect(df_1, df_2)

# Finding rows that don't exist in another table
setdiff(df_1, df_2)
```

> Joining Tables with dplyr

To showcase joins in `dplyr`, we'll use an additional dataset containing details on `host_listings` for airbnb listings

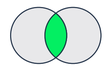
airbnb_listings				
listing_id	city	country	number_of_rooms	year_listed
1	Paris	France	5	2018
2	Tokyo	Japan	2	2017
3	New York	USA	2	2022

host_listings			
host_id	name	listing_id	number_of_reviews
1	Jen Bricker	1	34
2	Richie Cotton	2	12
3	Raven Todd Dasliva	3	55

Joining tables in dplyr

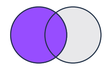
Inner Join

```
# Returns only records where a joining field finds a match in both tables.
airbnb_listings %>%
inner_join(host_listings, by="listing_id")
```



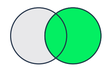
Left Join

```
# Returns rows in left table and missing values for any columns from the right table where joining field did not find a match
host_listings %>%
left_join(airbnb_listings, by="listing_id")
```



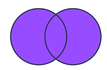
Right join

```
# Returns rows in right table and missing values for any columns from the left table where joining field did not find a match
host_listings %>%
right_join(airbnb_listings, by="listing_id")
```



Full Join

```
# Returns all records from both table, irrespective of whether there is a match on the joining field
host_listings %>%
full_join(airbnb_listings, by="listing_id")
```



Anti Join

```
# Returns records in the first table and excludes matching values from the second table
airbnb_listings %>%
anti_join(host_listings, by="listing_id")
```