REVOLUTION ANALYTICS

Introduction to Merging Data with R

Revolution Analytics

Outline

Overview

In this session we'll cover data merging. The objectives of this session are to learn how to:

- Combine two datasets into a single data set that has variables from both of the initial data sets

Outline

Merging data sets

- Many uses
- Most common in relational databases
- Table 1 might have a variable we care about, but Table 2 might have everything else
- How do we put them together?

In R, we use the `merge()` function.

Reading some public data

For this example we'll use a data set detailing average national incomes and alcohol consumption:

```
richest.nations <- read.csv("http://opendata.socrata.com/views/7nh3-7ib4/rows.csv?accessType=DOWN
  header = TRUE)

richest.nations$Countries <- gsub(":", "", richest.nations$Countries)
richest.nations$Amount <- gsub(" per capita", "", richest.nations$Amount)
richest.nations$Amount <- gsub(",", "", richest.nations$Amount)
richest.nations$Amount <- sapply(richest.nations$Amount, function(x) substr(x,
  2, nchar(x)))
richest.nations$Amount <- as.numeric(richest.nations$Amount)
head(richest.nations)
```

```
##   Rank   Countries   Amount
## 1   #1  Luxembourg 89563.63
## 2   #2      Norway 66964.36
## 3   #3     Iceland 53029.30
## 4   #4     Ireland 52892.89
## 5   #5       Qatar 52239.72
## 6   #6 Switzerland 51032.66
```

Inspecting the data

```
alcohol.consumption <- read.csv("http://opendata.socrata.com/views/hj43-2bpj/rows.csv?accessType=
  header = TRUE)
dim(alcohol.consumption)
```

```
## [1] 195   2
```

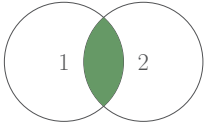
```
head(alcohol.consumption)
```

```
##              Location Liters.per.capita.pure.alcohol.adult.consumption
## 1         Afghanistan                                              0.01
## 2             Albania                                              2.01
## 3             Algeria                                              0.15
## 4             Andorra                                                NA
## 5              Angola                                              3.86
## 6 Antigua and Barbuda                                              5.73
```

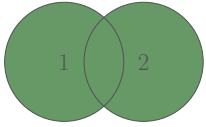
Types of merge

Using the argument `all=...` in `merge()` to change the merge type:

Type = inner
merge(x, y, all=FALSE)

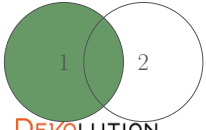


Type = full
merge(x, y, all=TRUE)

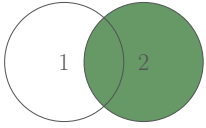


Type = oneToOne
cbind(x, y)

Type = left
merge(x, y, all.x=TRUE)



Type = right
merge(x, y, all.y=TRUE)



Type = union
rbind(x, y)

Merging data sets, all=FALSE

With `merge()` we can join these two datasets using the `Countries` and `Location` columns.

```
new.data.frame <- merge(x = richest.nations, y = alcohol.consumption,
  by.x = "Countries", by.y = "Location", all = FALSE)
dim(new.data.frame)
```

```
## [1] 171   4
```

```
head(new.data.frame)
```

```
##     Countries                                          Rank   Amount
## 1             Historical countries, unions or other regions:       NA
## 2             Historical countries, unions or other regions:       NA
## 3                                          European Union 24217.28
## 4                                          European Union 24217.28
## 5 Afghanistan                                        #197   270.44
## 6     Albania                                        #112  2911.90
```

Merging data sets, all=TRUE

```
new.data.frame.2 <- merge(x = richest.nations, y = alcohol.consumption,
  by.x = "Countries", by.y = "Location", all = TRUE)
dim(new.data.frame.2)
```

```
## [1] 237   4
```

Exercise 1: Practice with `merge()`

- Read in the `Vlookup.csv` file from our course `data` directory
- Split the `value` and `metric` tables into two different objects.
  - Hint: Remember column indexing from prior session.
- Then merge these objects using the key column.
- Write this modified table to file.

Advanced Exercise

- What happens if both names in the component data.frames are the `Key` and `Value`?
- What happens if that is the case, but you specify `by`?

Module review questions

- What is a data merge?
- What command does this in R, and what are the key arguments?

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Thank you

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