

Advanced R

Chapter 5

R4DS Reading Group

CONTROL FLOW

- if
- ifelse
- case_when
- switch
- for
- while
- repeat

But First... BEER!

- State (abbreviated)
- Year
- Barrels (barrels produced)
- Type (On premise, Bottles/Cans, Kegs/Barrels)

state	year	barrels	type
AK	2008	2067.69	On Premises
AK	2009	2263.65	On Premises
AK	2010	1929.15	On Premises
AK	2011	2251.02	On Premises
AK	2012	2312.43	On Premises
AK	2013	2155.60	On Premises

If and ifelse

Let's see if a random state in our dataset is my home town, NV

IF

```
if (sample(beer_states$state, 1) == "NV") print("My Home State")
```

IF ELSE

```
if (sample(beer_states$state, 1) == "NV") print("My Home State") else print("Not my home")
```

```
## [1] "Not my home"
```

IFELSE

```
ifelse((sample(beer_states$state, 1) == "NV"), print("My Home State"), print("Not my home"))
```

```
## [1] "Not my home"
```

```
## [1] "Not my home"
```

*Why does the **ifelse** statement print "Not my home" twice?* 4/10

CASE WHEN

Let's change the barrels column to categorical

```
beer_states %>%  
  mutate(  
    barrel_cat =  
      if (barrels >= 100000000) {  
        "A lot"  
      } else if (barrels >= 10000000) {  
        "Many"  
      } else if (barrels >= 1000000) {  
        "A few"  
      } else {  
        "Not much"  
      }  
  )
```

```
beer_states %>%  
  mutate(  
    barrel_cat = case_when(  
      barrels >= 100000000 ~ "A LOT!",  
      barrels >= 10000000 ~ "Many",  
      barrels >= 1000000 ~ "A few",  
      TRUE ~ "Not much"  
    )  
  )
```

barrel_cat	n
A LOT!	12
Many	98
Not much	1569
A few	193

SWITCH

Let's make a small shiny app to see the number of barrels per state

```
library(shiny)
library(tidyverse)

brewing_materials <- readr::read_csv('https://raw.githubusercontent.com/rfordatascience/tidybrewing_materials')
beer_taxed <- readr::read_csv('https://raw.githubusercontent.com/rfordatascience/tidybrewing_taxed')
brewer_size <- readr::read_csv('https://raw.githubusercontent.com/rfordatascience/tidybrewer_size')
beer_states <- readr::read_csv('https://raw.githubusercontent.com/rfordatascience/tidybeer_states')

ui <- FluidPage(
  sidebarLayout(
    sidebarPanel(
      selectInput(inputId = "dataset",
        label = "Choose a dataset:",
        choices = c("materials", "size", "states", "taxed"))
    ),
    mainPanel(
      verbatimTextOutput("summary")
    )
  )
)

server <- function(input, output) {
  datasetInput <- reactive({
    switch(input$dataset,
      "materials" = brewing_materials,
      "size" = brewer_size,
      "states" = beer_states,
      "taxed" = beer_taxed)
  })

  output$summary <- renderPrint({
    dataset <- datasetInput()
    summary(dataset)
  })
}

shinyApp(ui = ui, server = server)
```

Choose a dataset:

materials

data_type	material_type	year	month
Length:1440	Length:1440	Min. :2008	Min. : 1.00
Class :character	Class :character	1st Qu.:2010	1st Qu.: 3.75
Mode :character	Mode :character	Median :2012	Median : 6.50
		Mean :2012	Mean : 6.50
		3rd Qu.:2015	3rd Qu.: 9.25
		Max. :2017	Max. :12.00

type	month_current	month_prior_year	ytd_current
Length:1440	Min. : 0	Min. :0.000e+00	Min. :
Class :character	1st Qu.: 1682829	1st Qu.:2.396e+06	1st Qu.:
Mode :character	Median : 13820964	Median :4.687e+07	Median :
	Mean :111582326	Mean :1.908e+08	Mean :
	3rd Qu.: 84513176	3rd Qu.:1.145e+08	3rd Qu.:
	Max. :656596463	Max. :6.395e+09	Max. :
			NA's

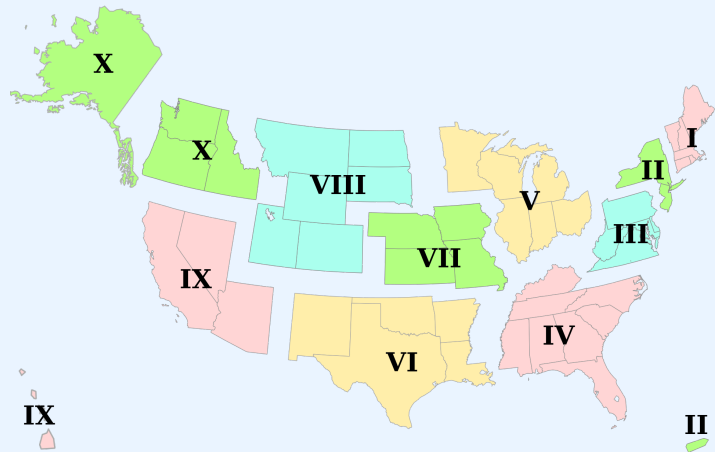
ytd_prior_year
Min. :2.714e+05
1st Qu.:2.573e+07
Median :2.346e+08
Mean :9.417e+08
3rd Qu.:8.498e+08
Max. :7.144e+09
NA's :432

```
runApp("Presentations/Week5/switch_app/app.R", display.mode = "showcase")
```

FOR

Create a "region" column based on each observation's state

```
for (i in 1:nrow(beer_states)) {  
  if (beer_states$state[i] %in% Region1) {  
    beer_states$region[i] <- "Region 1"  
  } else if (beer_states$state[i] %in% Region2) {  
    beer_states$region[i] <- "Region 2"  
  } else if (beer_states$state[i] %in% Region3) {  
    beer_states$region[i] <- "Region 3"  
  } else if (beer_states$state[i] %in% Region4) {  
    beer_states$region[i] <- "Region 4"  
  } else if (beer_states$state[i] %in% Region5) {  
    beer_states$region[i] <- "Region 5"  
  } else if (beer_states$state[i] %in% Region6) {  
    beer_states$region[i] <- "Region 6"  
  } else if (beer_states$state[i] %in% Region7) {  
    beer_states$region[i] <- "Region 7"  
  } else if (beer_states$state[i] %in% Region8) {  
    beer_states$region[i] <- "Region 8"  
  } else if (beer_states$state[i] %in% Region9) {  
    beer_states$region[i] <- "Region 9"  
  } else if (beer_states$state[i] %in% Region10) {  
    beer_states$region[i] <- "Region 10"  
  } else {  
    beer_states$region[i] <- "Missing"  
  }  
}
```



WHILE

```
library(shiny)

beer_states <- readr::read_csv('https://raw.githubusercontent.com/jhohnstn/beer_data/master/beer_data.csv')

ui <- fluidPage(
  sidebarPanel(numericInput('xqty', 'Number of States')),
  mainPanel(tableOutput("while_debug"))
)

server <- function(input, output, session) {
  states <- unique(beer_states$state)

  my_vector <- reactive({
    i <- 0
    my_vector <- vector()
    while (i <= input$xqty) {
      my_vector[i] <- i
      i = i+1
    }
    return(my_vector)
  })

  output$while_debug <- renderTable({
    beer_states %>%
      filter(state %in% unique(beer_states$state))
      filter(state != "total") %>%
      group_by(state) %>%
      summarise(num_barrels = sum(barrels))
  })
}

shinyApp(ui = ui, server = server)
```

Number of States

state	num_barrels
AK	2102840.30
AL	NA
AR	134412.58
AZ	1541402.30
CA	243098569.82

REPEAT

Let's revisit beer in Nevada - rather than take one sample, we can use repeat to continue sampling until we find beer!

```
repeat {  
  if (sample(beer_states$state, 1) == "NV") {  
    print("Go grab a beer!");  
    break  
  } else print("Maya doesn't live here");  
}
```

```
[1] "Maya doesn't live here"  
[1] "Maya doesn't live here"  
[1] "Maya doesn't live here"  
[1] "Maya doesn't live here"  
[1] "Maya doesn't live here"  
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[1] "Maya doesn't live here"  
[1] "Maya doesn't live here"  
[1] "Maya doesn't live here"  
[1] "Maya doesn't live here"  
[1] "Maya doesn't live here"  
[1] "Go grab a beer!"
```

ALL TOGETHER!

This diagram is incomplete - let's improve it together!

