**RFM** (recency, frequency, monetary) analysis is a behavior based technique used to segment customers by examining their transaction history such as:

* how recently a customer has purchased (recency)
* how often they purchase (frequency)
* how much the customer spends (monetary)

It is based on the marketing axiom that **80% of your business comes from 20% of your customers**. RFM analysis helps to identify customers who are more likely to respond to promotions by segmenting them into various categories.

To calculate the RFM score we need the following info for each customer:

* a unique customer id
* date of transaction/order
* transaction/order amount

RFM Code

library(rfm)

library(magrittr)

library(dplyr)

library(lubridate)

## ----transaction data----------------------------------------------------

setwd("C:\\Users\\TOSHIBA\\Desktop\\Data Codes\\Apriori")

rfmders <- read.csv('RFMler.csv')

## ----rfm table-----------------------------------------------------------

analysis\_date <- lubridate::as\_date("2001-10-29", tz = "UTC")

rfm\_result <- rfm\_table\_order(rfm\_data\_orders, customer\_id, order\_date, revenue, analysis\_date)

rfm\_result

## ----segments------------------------------------------------------------

segment\_names <- c("Champions", "Loyal Customers", "Potential Loyalist",

"New Customers", "Promising", "Need Attention", "About To Sleep",

"At Risk", "Can't Lose Them", "Hibernating", "Lost")

recency\_lower <- c(4, 2, 3, 4, 3, 3, 2, 1, 1, 2, 1)

recency\_upper <- c(5, 4, 5, 5, 4, 4, 3, 2, 1, 3, 1)

frequency\_lower <- c(4, 3, 1, 1, 1, 3, 1, 2, 4, 2, 1)

frequency\_upper <- c(5, 4, 3, 1, 1, 4, 2, 5, 5, 3, 1)

monetary\_lower <- c(4, 4, 1, 1, 1, 3, 1, 2, 4, 2, 1)

monetary\_upper <- c(5, 5, 3, 1, 1, 4, 2, 5, 5, 3, 1)

segments <- rfm\_segment(rfm\_result, segment\_names, recency\_lower, recency\_upper,

frequency\_lower, frequency\_upper, monetary\_lower, monetary\_upper)

segments

## ----tabulate segments---------------------------------------------------

segments %>%

dplyr::count(segment) %>%

dplyr::arrange(dplyr::desc(n)) %>%

dplyr::rename(Segment = segment, Count = n)

## ----average recency-----------------------------------------------------

rfm\_plot\_median\_recency(segments)

## ----average frequency---------------------------------------------------

rfm\_plot\_median\_frequency(segments)

## ----average monetary value----------------------------------------------

rfm\_plot\_median\_monetary(segments)

## ----heatmap-------------------------------------------------------------

rfm\_heatmap(rfm\_result)

## ----barchart------------------------------------------------------------

rfm\_bar\_chart(rfm\_result)

## ----histogram-----------------------------------------------------------

rfm\_histograms(rfm\_result)

library(dplyr)

> setwd("C:\\Users\\TOSHIBA\\Desktop\\Data Codes\\Apriori")

> rfmders <- read.csv('RFMler.csv')

> View(rfmders)

> ilk <- min(rfmders$order\_date)

> print(ilk)

[1] "2001-10-29"

> ## ----rfm table-----------------------------------------------------------

> analysis\_date <- lubridate::as\_date("2001-10-29", tz = "UTC")

Warning message:

`tz` argument is ignored by `as\_date()`

> rfm\_result <- rfm\_table\_order(rfm\_data\_orders, customer\_id, order\_date, revenue, analysis\_date)

> View(rfm\_result)

> rfm\_result

# A tibble: 995 × 9

customer\_id date\_most\_recent recency\_days transaction\_count amount recency\_score

*<chr>* *<date>* *<dbl>* *<dbl>* *<dbl>* *<int>*

1 Abbey O'Re… 2006-06-09 -1684 6 472 3

2 Add Senger 2006-08-13 -1749 3 340 4

3 Aden Lesch… 2006-06-20 -1695 4 405 3

4 Admiral Se… 2006-08-21 -1757 5 448 4

5 Agness O'K… 2006-10-02 -1799 9 843 5

6 Aileen Bar… 2006-10-08 -1805 9 763 5

7 Ailene Her… 2006-03-25 -1608 8 699 3

8 Aiyanna Br… 2006-04-29 -1643 4 157 3

9 Ala Schmid… 2006-01-16 -1540 3 363 2

10 Alannah Bo… 2005-04-21 -1270 4 196 1

# ℹ 985 more rows

# ℹ 3 more variables: frequency\_score <int>, monetary\_score <int>, rfm\_score <dbl>

# ℹ Use `print(n = ...)` to see more rows

> ## ----segments------------------------------------------------------------

> segment\_names <- c("Champions", "Loyal Customers", "Potential Loyalist",

+ "New Customers", "Promising", "Need Attention", "About To Sleep",

+ "At Risk", "Can't Lose Them", "Hibernating", "Lost")

> recency\_lower <- c(4, 2, 3, 4, 3, 3, 2, 1, 1, 2, 1)

> recency\_upper <- c(5, 4, 5, 5, 4, 4, 3, 2, 1, 3, 1)

> frequency\_lower <- c(4, 3, 1, 1, 1, 3, 1, 2, 4, 2, 1)

> frequency\_upper <- c(5, 4, 3, 1, 1, 4, 2, 5, 5, 3, 1)

> monetary\_lower <- c(4, 4, 1, 1, 1, 3, 1, 2, 4, 2, 1)

> monetary\_upper <- c(5, 5, 3, 1, 1, 4, 2, 5, 5, 3, 1)

> segments <- rfm\_segment(rfm\_result, segment\_names, recency\_lower, recency\_upper,

+ frequency\_lower, frequency\_upper, monetary\_lower, monetary\_upper)

> segments

# A tibble: 995 × 9

customer\_id segment rfm\_score transaction\_count recency\_days amount

*<chr>* *<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 Abbey O'Reilly DVM Need Attenti… 343 6 -1684 472

2 Add Senger Potential Lo… 412 3 -1749 340

3 Aden Lesch Sr. Potential Lo… 323 4 -1695 405

4 Admiral Senger Potential Lo… 433 5 -1757 448

5 Agness O'Keefe Champions 555 9 -1799 843

6 Aileen Barton Champions 555 9 -1805 763

7 Ailene Hermann Others 355 8 -1608 699

8 Aiyanna Bruen PhD Potential Lo… 321 4 -1643 157

9 Ala Schmidt DDS About To Sle… 212 3 -1540 363

10 Alannah Borer Others 121 4 -1270 196

# ℹ 985 more rows

# ℹ 3 more variables: recency\_score <int>, frequency\_score <int>,

# monetary\_score <int>

# ℹ Use `print(n = ...)` to see more rows

> ## ----tabulate segments---------------------------------------------------

> segments %>%

+ dplyr::count(segment) %>%

+ dplyr::arrange(dplyr::desc(n)) %>%

+ dplyr::rename(Segment = segment, Count = n)

# A tibble: 8 × 2

Segment Count

*<chr>* *<int>*

1 Potential Loyalist 277

2 Champions 158

3 At Risk 148

4 Others 128

5 Loyal Customers 126

6 Lost 75

7 About To Sleep 65

8 Need Attention 18

> ## ----average recency-----------------------------------------------------

> rfm\_plot\_median\_recency(segments)

> ## ----average frequency---------------------------------------------------

> rfm\_plot\_median\_frequency(segments)

> ## ----average monetary value----------------------------------------------

> rfm\_plot\_median\_monetary(segments)

> ## ----heatmap-------------------------------------------------------------

> rfm\_heatmap(rfm\_result)

> ## ----barchart------------------------------------------------------------

> rfm\_bar\_chart(rfm\_result)