RBC Credit Risk Case

Andy Ran

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R Markdown

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When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

Reading Data

```
library(readxl)
Risk_Data <-
read_excel("C:/Users/ranic/OneDrive/Documents/Credit_Risk_Data.xlsx")

library(tidyverse)

## ── Attaching packages ─────────────────────────────────────── tidyverse
1.3.2 ──
## ✓ ggplot2 3.4.0      ✓ purrr   1.0.0
## ✓ tibble  3.1.8      ✓ dplyr   1.0.10
## ✓ tidyr   1.2.1      ✓ stringr 1.5.0
## ✓ readr   2.1.3      ✓ forcats 0.5.2

## Warning: package 'stringr' was built under R version 4.2.3

## ── Conflicts ────────────────────────────────────────
tidyverse_conflicts() ──
## ✖ dplyr::filter() masks stats::filter()
## ✖ dplyr::lag()    masks stats::lag()

library(dplyr)
```

Revenue and Cost

```
data <- Risk_Data
data$Reward_Expense <- data$NET_PURCH_SUM * data$Cost_per_Spend



data$Net_Credit_Loss <- data$WO_AMT_SUM - (data$Recovery_Rate2 *
data$WO_AMT_SUM)
interchange <- 0.014
data$Revenue <- data$ANNUAL_FEE_SUM + data$OVERLIMIT_SUM +
```

```
data$PROF_INT_INC_SUM + (data$NET_PURCH_SUM * data$Foreign_Spend *
data$Foreign_Exchange_Rate) + (data$NET_PURCH_SUM * interchange)
cost_of_rewards <- 0.015

data$Total_Cost <- data$Opex + data$Insurance_cost + data$Signup_Bonus +
data$Net_Credit_Loss + data$Reward_Expense
data$Net_income <- data$Revenue - data$Total_Cost
data$Resilience_Rate <- data$Net_income / data$Net_Credit_Loss
data$ULR <- data$WO_CNT_SUM / data$RESTATE_CNT_SUM

data$active_per_open <- data$ACTIVE_CNT_SUM/ data$RESTATE_CNT_SUM

data$limit_per_person <- data$LIMIT_MTH_SUM / data$RESTATE_CNT_SUM
data$Opex_Per_Open <- (data$Opex/data$ACTIVE_CNT_SUM) / data$active_per_open
data$Balance_Utilization <- (data$RESTATE_BAL_SUM / data$LIMIT_MTH_SUM) /
data$RESTATE_CNT_SUM
data$purchase_utilization <- (data$NET_PURCH_SUM / data$LIMIT_MTH_SUM)
/data$RESTATE_CNT_SUM
data$revolving_rate <- (data$REVOLVE_BAL_SUM / data$LIMIT_MTH_SUM) /
data$RESTATE_CNT_SUM
data$OVERLIMIT_Per_Open <- data$OVERLIMIT_SUM/ data$RESTATE_CNT_SUM
data$ANNUAL_FEE_Per_Open <- data$ANNUAL_FEE_SUM/ data$RESTATE_CNT_SUM

data$open_accounts <- data$RESTATE_CNT_SUM/(data$CNT_SUM+data$WO_CNT_SUM)
```

grouping by segment

```
segmentation <- data %>%
  group_by(SEGMENTATION_VAR_2, SEGMENTATION_VAR_3, SEGMENTATION_VAR_4,
SEGMENTATION_VAR_5) %>%
  summarise(
    average_ULR = mean(ULR, na.rm = TRUE),
    average_net_income = mean(Net_income, na.rm = TRUE),
    average_resilience_rate = case_when(
      (mean(Net_income, na.rm = TRUE) != 0 & mean(Net_Credit_Loss, na.rm =
TRUE) == 0) ~ Inf,
      (mean(Net_income, na.rm = TRUE) == 0 & mean(Net_Credit_Loss, na.rm =
TRUE) == 0) ~ NA_real_,
      TRUE ~ mean(Net_income, na.rm = TRUE) / mean(Net_Credit_Loss, na.rm =
TRUE),
    ),

    .groups = "drop"
  )
```

Group by ULR

```
data %>%
  group_by(SEGMENTATION_VAR_1, SEGMENTATION_VAR_2, SEGMENTATION_VAR_3,
SEGMENTATION_VAR_4, SEGMENTATION_VAR_5) %>%
  summarise(
    average_ULR = mean(ULR, na.rm = TRUE),
```

```
    .groups = "drop"
  ) %>%
  print(n = Inf)
```

```
## # A tibble: 151 × 6
##    SEGMENTATION_VAR_1 SEGMENTATION_VAR_2 SEGMENTATION_VAR_3
SEGMENTATION_VAR_4
##    <chr>              <chr>              <chr>              <chr>
##  1 Branch             ESTABLISHED        EXISTING           H5
##  2 Branch             ESTABLISHED        EXISTING           H5
##  3 Branch             ESTABLISHED        EXISTING           H5
##  4 Branch             ESTABLISHED        EXISTING           H5
##  5 Branch             ESTABLISHED        EXISTING           H6
##  6 Branch             ESTABLISHED        EXISTING           H6
##  7 Branch             ESTABLISHED        EXISTING           H6
##  8 Branch             ESTABLISHED        EXISTING           H6
##  9 Branch             ESTABLISHED        EXISTING           H7
## 10 Branch             ESTABLISHED        EXISTING           H7
## 11 Branch             ESTABLISHED        EXISTING           H7
## 12 Branch             ESTABLISHED        EXISTING           H7
## 13 Branch             ESTABLISHED        EXISTING           Low
## 14 Branch             ESTABLISHED        EXISTING           Low
## 15 Branch             ESTABLISHED        EXISTING           Low
## 16 Branch             ESTABLISHED        EXISTING           Low
## 17 Branch             ESTABLISHED        EXISTING           Med
## 18 Branch             ESTABLISHED        EXISTING           Med
## 19 Branch             ESTABLISHED        EXISTING           Med
## 20 Branch             ESTABLISHED        EXISTING           Med
## 21 Branch             ESTABLISHED        EXISTING           SafetyNet
## 22 Branch             ESTABLISHED        EXISTING           SafetyNet
## 23 Branch             ESTABLISHED        EXISTING           SafetyNet
## 24 Branch             ESTABLISHED        EXISTING           SafetyNet
## 25 Branch             ESTABLISHED        NEW                H5
## 26 Branch             ESTABLISHED        NEW                H5
## 27 Branch             ESTABLISHED        NEW                H5
## 28 Branch             ESTABLISHED        NEW                H5
## 29 Branch             ESTABLISHED        NEW                H5
## 30 Branch             ESTABLISHED        NEW                H6
## 31 Branch             ESTABLISHED        NEW                H6
## 32 Branch             ESTABLISHED        NEW                H6
## 33 Branch             ESTABLISHED        NEW                H6
## 34 Branch             ESTABLISHED        NEW                H6
## 35 Branch             ESTABLISHED        NEW                H7
## 36 Branch             ESTABLISHED        NEW                H7
## 37 Branch             ESTABLISHED        NEW                H7
## 38 Branch             ESTABLISHED        NEW                H7
## 39 Branch             ESTABLISHED        NEW                Low
## 40 Branch             ESTABLISHED        NEW                Low
## 41 Branch             ESTABLISHED        NEW                Low
## 42 Branch             ESTABLISHED        NEW                Low
```

```
##  43 Branch             ESTABLISHED        NEW                Low
##  44 Branch             ESTABLISHED        NEW                Med
##  45 Branch             ESTABLISHED        NEW                Med
##  46 Branch             ESTABLISHED        NEW                Med
##  47 Branch             ESTABLISHED        NEW                Med
##  48 Branch             ESTABLISHED        NEW                Med
##  49 Branch             ESTABLISHED        NEW                SafetyNet
##  50 Branch             ESTABLISHED        NEW                SafetyNet
##  51 Branch             ESTABLISHED        NEW                SafetyNet
##  52 Branch             NHNS               EXISTING           H5
##  53 Branch             NHNS               EXISTING           H5
##  54 Branch             NHNS               EXISTING           H5
##  55 Branch             NHNS               EXISTING           H5
##  56 Branch             NHNS               EXISTING           H6
##  57 Branch             NHNS               EXISTING           H6
##  58 Branch             NHNS               EXISTING           H6
##  59 Branch             NHNS               EXISTING           H6
##  60 Branch             NHNS               EXISTING           H7
##  61 Branch             NHNS               EXISTING           H7
##  62 Branch             NHNS               EXISTING           H7
##  63 Branch             NHNS               EXISTING           H7
##  64 Branch             NHNS               EXISTING           Low
##  65 Branch             NHNS               EXISTING           Low
##  66 Branch             NHNS               EXISTING           Low
##  67 Branch             NHNS               EXISTING           Low
##  68 Branch             NHNS               EXISTING           Med
##  69 Branch             NHNS               EXISTING           Med
##  70 Branch             NHNS               EXISTING           Med
##  71 Branch             NHNS               EXISTING           SafetyNet
##  72 Branch             NHNS               EXISTING           SafetyNet
##  73 Branch             NHNS               EXISTING           SafetyNet
##  74 Branch             NHNS               EXISTING           SafetyNet
##  75 Branch             NHNS               NEW                H5
##  76 Branch             NHNS               NEW                H6
##  77 Branch             NHNS               NEW                H7
##  78 Branch             NHNS               NEW                Low
##  79 Branch             NHNS               NEW                Med
##  80 Branch             NHNS               NEW                SafetyNet
##  81 Royal Direct       ESTABLISHED        EXISTING           H5
##  82 Royal Direct       ESTABLISHED        EXISTING           H5
##  83 Royal Direct       ESTABLISHED        EXISTING           H5
##  84 Royal Direct       ESTABLISHED        EXISTING           H5
##  85 Royal Direct       ESTABLISHED        EXISTING           H6
##  86 Royal Direct       ESTABLISHED        EXISTING           H6
##  87 Royal Direct       ESTABLISHED        EXISTING           H6
##  88 Royal Direct       ESTABLISHED        EXISTING           H6
##  89 Royal Direct       ESTABLISHED        EXISTING           H7
##  90 Royal Direct       ESTABLISHED        EXISTING           H7
##  91 Royal Direct       ESTABLISHED        EXISTING           H7
##  92 Royal Direct       ESTABLISHED        EXISTING           H7
```

```
##  93 Royal Direct       ESTABLISHED        EXISTING           Low
##  94 Royal Direct       ESTABLISHED        EXISTING           Low
##  95 Royal Direct       ESTABLISHED        EXISTING           Low
##  96 Royal Direct       ESTABLISHED        EXISTING           Low
##  97 Royal Direct       ESTABLISHED        EXISTING           Med
##  98 Royal Direct       ESTABLISHED        EXISTING           Med
##  99 Royal Direct       ESTABLISHED        EXISTING           Med
## 100 Royal Direct       ESTABLISHED        EXISTING           Med
## 101 Royal Direct       ESTABLISHED        EXISTING           SafetyNet
## 102 Royal Direct       ESTABLISHED        EXISTING           SafetyNet
## 103 Royal Direct       ESTABLISHED        EXISTING           SafetyNet
## 104 Royal Direct       ESTABLISHED        EXISTING           SafetyNet
## 105 Royal Direct       ESTABLISHED        NEW                H5
## 106 Royal Direct       ESTABLISHED        NEW                H5
## 107 Royal Direct       ESTABLISHED        NEW                H5
## 108 Royal Direct       ESTABLISHED        NEW                H5
## 109 Royal Direct       ESTABLISHED        NEW                H5
## 110 Royal Direct       ESTABLISHED        NEW                H6
## 111 Royal Direct       ESTABLISHED        NEW                H6
## 112 Royal Direct       ESTABLISHED        NEW                H6
## 113 Royal Direct       ESTABLISHED        NEW                H6
## 114 Royal Direct       ESTABLISHED        NEW                H7
## 115 Royal Direct       ESTABLISHED        NEW                H7
## 116 Royal Direct       ESTABLISHED        NEW                H7
## 117 Royal Direct       ESTABLISHED        NEW                H7
## 118 Royal Direct       ESTABLISHED        NEW                Low
## 119 Royal Direct       ESTABLISHED        NEW                Low
## 120 Royal Direct       ESTABLISHED        NEW                Low
## 121 Royal Direct       ESTABLISHED        NEW                Low
## 122 Royal Direct       ESTABLISHED        NEW                Med
## 123 Royal Direct       ESTABLISHED        NEW                Med
## 124 Royal Direct       ESTABLISHED        NEW                Med
## 125 Royal Direct       ESTABLISHED        NEW                Med
## 126 Royal Direct       NHNS               EXISTING           H5
## 127 Royal Direct       NHNS               EXISTING           H5
## 128 Royal Direct       NHNS               EXISTING           H5
## 129 Royal Direct       NHNS               EXISTING           H6
## 130 Royal Direct       NHNS               EXISTING           H6
## 131 Royal Direct       NHNS               EXISTING           H6
## 132 Royal Direct       NHNS               EXISTING           H6
## 133 Royal Direct       NHNS               EXISTING           H7
## 134 Royal Direct       NHNS               EXISTING           H7
## 135 Royal Direct       NHNS               EXISTING           H7
## 136 Royal Direct       NHNS               EXISTING           H7
## 137 Royal Direct       NHNS               EXISTING           Low
## 138 Royal Direct       NHNS               EXISTING           Low
## 139 Royal Direct       NHNS               EXISTING           Low
## 140 Royal Direct       NHNS               EXISTING           Med
## 141 Royal Direct       NHNS               EXISTING           Med
## 142 Royal Direct       NHNS               EXISTING           Med
```

```
## 143 Royal Direct       NHNS                EXISTING            SafetyNet
## 144 Royal Direct       NHNS                EXISTING            SafetyNet
## 145 Royal Direct       NHNS                EXISTING            SafetyNet
## 146 Royal Direct       NHNS                EXISTING            SafetyNet
## 147 Royal Direct       NHNS                NEW                 H5
## 148 Royal Direct       NHNS                NEW                 H6
## 149 Royal Direct       NHNS                NEW                 H7
## 150 Royal Direct       NHNS                NEW                 Low
## 151 Royal Direct       NHNS                NEW                 Med
## # ℹ 2 more variables: SEGMENTATION_VAR_5 <chr>, average_ULR <dbl>
```

###Analyzing After and Before 18###

```
After18 <- data %>%
  filter(MOB > 18) %>%
  group_by(SEGMENTATION_VAR_2, SEGMENTATION_VAR_3, SEGMENTATION_VAR_4,
SEGMENTATION_VAR_5) %>%
  summarise(
    average_ULR = mean(ULR, na.rm = TRUE),
    average_net_income = mean(Net_income, na.rm = TRUE),
    average_resilience_rate = case_when(
      (mean(Net_income, na.rm = TRUE) != 0 & mean(Net_Credit_Loss, na.rm =
TRUE) == 0) ~ Inf,
      (mean(Net_income, na.rm = TRUE) == 0 & mean(Net_Credit_Loss, na.rm =
TRUE) == 0) ~ NA_real_,
      TRUE ~ mean(Net_income, na.rm = TRUE) / mean(Net_Credit_Loss, na.rm =
TRUE),
    ),

    .groups = "drop"
  )

Before19 <- data %>%
  filter(MOB < 19) %>%
  group_by(SEGMENTATION_VAR_2, SEGMENTATION_VAR_3, SEGMENTATION_VAR_4,
SEGMENTATION_VAR_5) %>%
  summarise(
    average_ULR = mean(ULR, na.rm = TRUE),
    average_net_income = mean(Net_income, na.rm = TRUE),
    average_resilience_rate = case_when(
      (mean(Net_income, na.rm = TRUE) != 0 & mean(Net_Credit_Loss, na.rm =
TRUE) == 0) ~ Inf,
      (mean(Net_income, na.rm = TRUE) == 0 & mean(Net_Credit_Loss, na.rm =
TRUE) == 0) ~ NA_real_,
      TRUE ~ mean(Net_income, na.rm = TRUE) / mean(Net_Credit_Loss, na.rm =
TRUE),
    ),

    .groups = "drop"
  )
```

Group by ULR After and Before 18

```
ULR18 <- data %>%
  filter(MOB > 18) %>%
  group_by(SEGMENTATION_VAR_1, SEGMENTATION_VAR_2, SEGMENTATION_VAR_3,
SEGMENTATION_VAR_4, SEGMENTATION_VAR_5) %>%
  summarise(
    average_ULR = mean(ULR, na.rm = TRUE),
    .groups = "drop"
  ) %>%
  print(n = Inf)

## # A tibble: 133 × 6
##    SEGMENTATION_VAR_1 SEGMENTATION_VAR_2 SEGMENTATION_VAR_3
SEGMENTATION_VAR_4
##    <chr>              <chr>              <chr>              <chr>
##  1 Branch             ESTABLISHED        EXISTING           H5
##  2 Branch             ESTABLISHED        EXISTING           H5
##  3 Branch             ESTABLISHED        EXISTING           H5
##  4 Branch             ESTABLISHED        EXISTING           H5
##  5 Branch             ESTABLISHED        EXISTING           H6
##  6 Branch             ESTABLISHED        EXISTING           H6
##  7 Branch             ESTABLISHED        EXISTING           H6
##  8 Branch             ESTABLISHED        EXISTING           H6
##  9 Branch             ESTABLISHED        EXISTING           H7
## 10 Branch             ESTABLISHED        EXISTING           H7
## 11 Branch             ESTABLISHED        EXISTING           H7
## 12 Branch             ESTABLISHED        EXISTING           H7
## 13 Branch             ESTABLISHED        EXISTING           Low
## 14 Branch             ESTABLISHED        EXISTING           Low
## 15 Branch             ESTABLISHED        EXISTING           Low
## 16 Branch             ESTABLISHED        EXISTING           Low
## 17 Branch             ESTABLISHED        EXISTING           Med
## 18 Branch             ESTABLISHED        EXISTING           Med
## 19 Branch             ESTABLISHED        EXISTING           Med
## 20 Branch             ESTABLISHED        EXISTING           Med
## 21 Branch             ESTABLISHED        EXISTING           SafetyNet
## 22 Branch             ESTABLISHED        EXISTING           SafetyNet
## 23 Branch             ESTABLISHED        EXISTING           SafetyNet
## 24 Branch             ESTABLISHED        NEW                H5
## 25 Branch             ESTABLISHED        NEW                H5
## 26 Branch             ESTABLISHED        NEW                H5
## 27 Branch             ESTABLISHED        NEW                H5
## 28 Branch             ESTABLISHED        NEW                H5
## 29 Branch             ESTABLISHED        NEW                H6
## 30 Branch             ESTABLISHED        NEW                H6
## 31 Branch             ESTABLISHED        NEW                H6
## 32 Branch             ESTABLISHED        NEW                H6
## 33 Branch             ESTABLISHED        NEW                H6
## 34 Branch             ESTABLISHED        NEW                H7
## 35 Branch             ESTABLISHED        NEW                H7
```

```
##  36 Branch             ESTABLISHED        NEW                H7
##  37 Branch             ESTABLISHED        NEW                Low
##  38 Branch             ESTABLISHED        NEW                Low
##  39 Branch             ESTABLISHED        NEW                Low
##  40 Branch             ESTABLISHED        NEW                Low
##  41 Branch             ESTABLISHED        NEW                Low
##  42 Branch             ESTABLISHED        NEW                Med
##  43 Branch             ESTABLISHED        NEW                Med
##  44 Branch             ESTABLISHED        NEW                Med
##  45 Branch             ESTABLISHED        NEW                Med
##  46 Branch             ESTABLISHED        NEW                Med
##  47 Branch             ESTABLISHED        NEW                SafetyNet
##  48 Branch             NHNS               EXISTING           H5
##  49 Branch             NHNS               EXISTING           H5
##  50 Branch             NHNS               EXISTING           H5
##  51 Branch             NHNS               EXISTING           H6
##  52 Branch             NHNS               EXISTING           H6
##  53 Branch             NHNS               EXISTING           H6
##  54 Branch             NHNS               EXISTING           H6
##  55 Branch             NHNS               EXISTING           H7
##  56 Branch             NHNS               EXISTING           H7
##  57 Branch             NHNS               EXISTING           H7
##  58 Branch             NHNS               EXISTING           H7
##  59 Branch             NHNS               EXISTING           Low
##  60 Branch             NHNS               EXISTING           Low
##  61 Branch             NHNS               EXISTING           Low
##  62 Branch             NHNS               EXISTING           Low
##  63 Branch             NHNS               EXISTING           Med
##  64 Branch             NHNS               EXISTING           Med
##  65 Branch             NHNS               EXISTING           Med
##  66 Branch             NHNS               EXISTING           SafetyNet
##  67 Branch             NHNS               EXISTING           SafetyNet
##  68 Branch             NHNS               EXISTING           SafetyNet
##  69 Branch             NHNS               EXISTING           SafetyNet
##  70 Branch             NHNS               NEW                H5
##  71 Branch             NHNS               NEW                H6
##  72 Branch             NHNS               NEW                H7
##  73 Branch             NHNS               NEW                Low
##  74 Branch             NHNS               NEW                Med
##  75 Branch             NHNS               NEW                SafetyNet
##  76 Royal Direct       ESTABLISHED        EXISTING           H5
##  77 Royal Direct       ESTABLISHED        EXISTING           H5
##  78 Royal Direct       ESTABLISHED        EXISTING           H5
##  79 Royal Direct       ESTABLISHED        EXISTING           H6
##  80 Royal Direct       ESTABLISHED        EXISTING           H6
##  81 Royal Direct       ESTABLISHED        EXISTING           H6
##  82 Royal Direct       ESTABLISHED        EXISTING           H6
##  83 Royal Direct       ESTABLISHED        EXISTING           H7
##  84 Royal Direct       ESTABLISHED        EXISTING           H7
##  85 Royal Direct       ESTABLISHED        EXISTING           H7
```

```
##  86 Royal Direct       ESTABLISHED        EXISTING           Low
##  87 Royal Direct       ESTABLISHED        EXISTING           Low
##  88 Royal Direct       ESTABLISHED        EXISTING           Low
##  89 Royal Direct       ESTABLISHED        EXISTING           Low
##  90 Royal Direct       ESTABLISHED        EXISTING           Med
##  91 Royal Direct       ESTABLISHED        EXISTING           Med
##  92 Royal Direct       ESTABLISHED        EXISTING           Med
##  93 Royal Direct       ESTABLISHED        EXISTING           SafetyNet
##  94 Royal Direct       ESTABLISHED        EXISTING           SafetyNet
##  95 Royal Direct       ESTABLISHED        EXISTING           SafetyNet
##  96 Royal Direct       ESTABLISHED        NEW                H5
##  97 Royal Direct       ESTABLISHED        NEW                H5
##  98 Royal Direct       ESTABLISHED        NEW                H5
##  99 Royal Direct       ESTABLISHED        NEW                H5
## 100 Royal Direct       ESTABLISHED        NEW                H5
## 101 Royal Direct       ESTABLISHED        NEW                H6
## 102 Royal Direct       ESTABLISHED        NEW                H6
## 103 Royal Direct       ESTABLISHED        NEW                H7
## 104 Royal Direct       ESTABLISHED        NEW                H7
## 105 Royal Direct       ESTABLISHED        NEW                H7
## 106 Royal Direct       ESTABLISHED        NEW                Low
## 107 Royal Direct       ESTABLISHED        NEW                Low
## 108 Royal Direct       ESTABLISHED        NEW                Low
## 109 Royal Direct       ESTABLISHED        NEW                Med
## 110 Royal Direct       ESTABLISHED        NEW                Med
## 111 Royal Direct       ESTABLISHED        NEW                Med
## 112 Royal Direct       ESTABLISHED        NEW                Med
## 113 Royal Direct       NHNS               EXISTING           H5
## 114 Royal Direct       NHNS               EXISTING           H5
## 115 Royal Direct       NHNS               EXISTING           H5
## 116 Royal Direct       NHNS               EXISTING           H6
## 117 Royal Direct       NHNS               EXISTING           H6
## 118 Royal Direct       NHNS               EXISTING           H6
## 119 Royal Direct       NHNS               EXISTING           H7
## 120 Royal Direct       NHNS               EXISTING           H7
## 121 Royal Direct       NHNS               EXISTING           H7
## 122 Royal Direct       NHNS               EXISTING           Low
## 123 Royal Direct       NHNS               EXISTING           Low
## 124 Royal Direct       NHNS               EXISTING           Med
## 125 Royal Direct       NHNS               EXISTING           Med
## 126 Royal Direct       NHNS               EXISTING           SafetyNet
## 127 Royal Direct       NHNS               EXISTING           SafetyNet
## 128 Royal Direct       NHNS               EXISTING           SafetyNet
## 129 Royal Direct       NHNS               NEW                H5
## 130 Royal Direct       NHNS               NEW                H6
## 131 Royal Direct       NHNS               NEW                H7
## 132 Royal Direct       NHNS               NEW                Low
## 133 Royal Direct       NHNS               NEW                Med
## # ℹ 2 more variables: SEGMENTATION_VAR_5 <chr>, average_ULR <dbl>
```

```r
ULRbefore19 <- data %>%
  filter(MOB < 19) %>%
  group_by(SEGMENTATION_VAR_1, SEGMENTATION_VAR_2, SEGMENTATION_VAR_3,
SEGMENTATION_VAR_4, SEGMENTATION_VAR_5) %>%
  summarise(
    average_ULR = mean(ULR, na.rm = TRUE),
    .groups = "drop"
  )
```