Challenge-4

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September 4, 2023

Questions

Load the “CommQuest2023.csv” dataset using the `read_csv()` command and assign it to a variable named “comm_data.”

```
# Enter code here
library(tidyverse)
```

```
## ── Attaching core tidyverse packages ──────────────────────── tidyverse 2.0.0 ──
## ✔ dplyr     1.1.2     ✔ readr     2.1.4
## ✔ forcats   1.0.0     ✔ stringr   1.5.0
## ✔ ggplot2   3.4.3     ✔ tibble    3.2.1
## ✔ lubridate 1.9.2     ✔ tidyr     1.3.0
## ✔ purrr     1.0.1
## ── Conflicts ────────────────────────────────────────── tidyverse_conflicts() ──
## ✖ dplyr::filter() masks stats::filter()
## ✖ dplyr::lag()    masks stats::lag()
## ℹ Use  ]8;;http://conflicted.r-lib.org/ conflicted package ]8;;  to force all co
nflicts to become errors
```

```
comm_data <- read_csv("CommQuest2023_Larger.csv")
```

```
## Rows: 1000 Columns: 5
## ── Column specification ────────────────────────────────────────────────────────
## Delimiter: ","
## chr  (3): channel, sender, message
## dbl  (1): sentiment
## date (1): date
##
## ℹ Use `spec()` to retrieve the full column specification for this data.
## ℹ Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

Question-1: Communication Chronicles

Using the select command, create a new dataframe containing only the “date,” “channel,” and “message” columns from the “comm_data” dataset.

Solution:

```
# Enter code here

apple <- comm_data %>% select(date, channel, message)
apple
```

```
## # A tibble: 1,000 × 3
##    date       channel message
##    <date>     <chr>   <chr>
##  1 2023-08-11 Twitter Fun weekend!
##  2 2023-08-11 Email   Hello everyone!
##  3 2023-08-11 Slack   Hello everyone!
##  4 2023-08-18 Email   Fun weekend!
##  5 2023-08-14 Slack   Need assistance
##  6 2023-08-04 Email   Need assistance
##  7 2023-08-10 Twitter Hello everyone!
##  8 2023-08-04 Slack   Hello everyone!
##  9 2023-08-20 Email   Team meeting
## 10 2023-08-09 Slack   Hello everyone!
## # ℹ 990 more rows
```

Question-2: Channel Selection

Use the filter command to create a new dataframe that includes messages sent through the “Twitter” channel on August 2nd.

Solution:

```
# Enter code here
orange <- comm_data %>%
  filter (channel == "Twitter", date == "2023/08/02")
orange
```

```
## # A tibble: 15 × 5
##    date       channel sender        message         sentiment
##    <date>     <chr>   <chr>         <chr>               <dbl>
##  1 2023-08-02 Twitter alice@example Team meeting        0.210
##  2 2023-08-02 Twitter @erin_tweets  Exciting news!      0.750
##  3 2023-08-02 Twitter dave@example  Exciting news!      0.817
##  4 2023-08-02 Twitter @erin_tweets  Exciting news!      0.582
##  5 2023-08-02 Twitter @erin_tweets  Exciting news!     -0.525
##  6 2023-08-02 Twitter alice@example Team meeting        0.965
##  7 2023-08-02 Twitter dave@example  Great work!         0.516
##  8 2023-08-02 Twitter carol_slack   Hello everyone!     0.451
##  9 2023-08-02 Twitter carol_slack   Hello everyone!     0.174
## 10 2023-08-02 Twitter carol_slack   Need assistance     0.216
## 11 2023-08-02 Twitter @frank_chat   Need assistance    -0.115
## 12 2023-08-02 Twitter alice@example Need assistance     0.158
## 13 2023-08-02 Twitter carol_slack   Exciting news!     -0.693
## 14 2023-08-02 Twitter @bob_tweets   Need assistance    -0.282
## 15 2023-08-02 Twitter @erin_tweets  Need assistance     0.821
```

Question-3: Chronological Order

Utilizing the arrange command, arrange the “comm_data” dataframe in ascending order based on the “date” column.

Solution:

```
# Enter code here
comm_data %>% arrange(date)
```

```
## # A tibble: 1,000 × 5
##    date       channel sender        message          sentiment
##    <date>     <chr>   <chr>         <chr>                <dbl>
##  1 2023-08-01 Twitter alice@example Need assistance      0.677
##  2 2023-08-01 Twitter @bob_tweets   Need assistance      0.148
##  3 2023-08-01 Twitter @frank_chat   Need assistance      0.599
##  4 2023-08-01 Twitter @frank_chat   Exciting news!      -0.823
##  5 2023-08-01 Slack   @frank_chat   Team meeting        -0.202
##  6 2023-08-01 Slack   @bob_tweets   Exciting news!       0.146
##  7 2023-08-01 Slack   @erin_tweets  Great work!          0.244
##  8 2023-08-01 Twitter @frank_chat   Team meeting        -0.526
##  9 2023-08-01 Twitter @frank_chat   Exciting news!      -0.399
## 10 2023-08-01 Slack   @frank_chat   Need assistance      0.602
## # ℹ 990 more rows
```

Question-4: Distinct Discovery

Apply the distinct command to find the unique senders in the “comm_data” dataframe.

Solution:

```
# Enter code here
comm_data %>% distinct(sender)
```

```
## # A tibble: 6 × 1
##   sender
##   <chr>
## 1 dave@example
## 2 @bob_tweets
## 3 @frank_chat
## 4 @erin_tweets
## 5 alice@example
## 6 carol_slack
```

Question-5: Sender Stats

Employ the count and group_by commands to generate a summary table that shows the count of messages sent by each sender in the “comm_data” dataframe.

Solution:

```
# Enter code here
comm_data %>%
  group_by(sender) %>%
  summarise(count=n())
```

```
## # A tibble: 6 × 2
##   sender        count
##   <chr>         <int>
## 1 @bob_tweets     179
## 2 @erin_tweets    171
## 3 @frank_chat     174
## 4 alice@example   180
## 5 carol_slack     141
## 6 dave@example    155
```

Question-6: Channel Chatter Insights

Using the group_by and count commands, create a summary table that displays the count of messages sent through each communication channel in the “comm_data” dataframe.

Solution:

```
# Enter code here
comm_data %>%
  group_by(channel) %>%
  summarise(count =n())
```

```
## # A tibble: 3 × 2
##   channel count
##   <chr>   <int>
## 1 Email     331
## 2 Slack     320
## 3 Twitter   349
```

Question-7: Positive Pioneers

Utilize the filter, select, and arrange commands to identify the top three senders with the highest average positive sentiment scores. Display their usernames and corresponding sentiment averages.

Solution:

```
# Enter code here
comm_data %>%
  select(sender, sentiment) %>%
  group_by(sender) %>%
  summarise (mean_positive_sentiment = mean(sentiment)) %>%
  arrange(desc(mean_positive_sentiment)) %>%
  slice(1:3)
```

```
## # A tibble: 3 × 2
##   sender        mean_positive_sentiment
##   <chr>                           <dbl>
## 1 carol_slack                   0.118
## 2 alice@example                 0.0570
## 3 dave@example                  0.00687
```

Question-8: Message Mood Over Time

With the group_by, summarise, and arrange commands, calculate the average sentiment score for each day in the “comm_data” dataframe.

Solution:

```
# Enter code here
comm_data %>%
  group_by(date) %>%
  summarise(average_sentiment=mean(sentiment)) %>%
  arrange(date)
```

```
## # A tibble: 20 × 2
##    date       average_sentiment
##    <date>                 <dbl>
##  1 2023-08-01           -0.0616
##  2 2023-08-02            0.136
##  3 2023-08-03            0.107
##  4 2023-08-04           -0.0510
##  5 2023-08-05            0.193
##  6 2023-08-06           -0.0144
##  7 2023-08-07            0.0364
##  8 2023-08-08            0.0666
##  9 2023-08-09            0.0997
## 10 2023-08-10           -0.0254
## 11 2023-08-11           -0.0340
## 12 2023-08-12            0.0668
## 13 2023-08-13           -0.0604
## 14 2023-08-14           -0.0692
## 15 2023-08-15            0.0617
## 16 2023-08-16           -0.0220
## 17 2023-08-17           -0.0191
## 18 2023-08-18           -0.0760
## 19 2023-08-19            0.0551
## 20 2023-08-20            0.0608
```

Question-9: Selective Sentiments

Use the filter and select commands to extract messages with a negative sentiment score (less than 0) and create a new dataframe.

Solution:

```
# Enter code here
banana <- comm_data %>%
  filter (sentiment <= 0) %>%
  select (message, sentiment)
banana
```

```
## # A tibble: 487 × 2
##    message         sentiment
##    <chr>               <dbl>
##  1 Hello everyone!    -0.143
##  2 Need assistance    -0.108
##  3 Hello everyone!    -0.741
##  4 Hello everyone!    -0.188
##  5 Hello everyone!    -0.933
##  6 Need assistance    -0.879
##  7 Great work!        -0.752
##  8 Team meeting       -0.787
##  9 Fun weekend!       -0.539
## 10 Exciting news!     -0.142
## # ℹ 477 more rows
```

Question-10: Enhancing Engagement

Apply the mutate command to add a new column to the “comm_data” dataframe, representing a sentiment label: “Positive,” “Neutral,” or “Negative,” based on the sentiment score.

Solution:

```
# Enter code here
comm_data %>%
  mutate (sentiment_label=case_when(
   sentiment > 0 ~  "Positive",
   sentiment == 0 ~ "Neutral",
   sentiment < 0 ~ "Negative"))
```

```
## # A tibble: 1,000 × 6
##    date       channel sender        message         sentiment sentiment_label
##    <date>     <chr>   <chr>         <chr>               <dbl> <chr>
##  1 2023-08-11 Twitter dave@example  Fun weekend!        0.824 Positive
##  2 2023-08-11 Email   @bob_tweets   Hello everyone!     0.662 Positive
##  3 2023-08-11 Slack   @frank_chat   Hello everyone!    -0.143 Negative
##  4 2023-08-18 Email   @frank_chat   Fun weekend!        0.380 Positive
##  5 2023-08-14 Slack   @frank_chat   Need assistance     0.188 Positive
##  6 2023-08-04 Email   @erin_tweets  Need assistance    -0.108 Negative
##  7 2023-08-10 Twitter @frank_chat   Hello everyone!    -0.741 Negative
##  8 2023-08-04 Slack   alice@example Hello everyone!    -0.188 Negative
##  9 2023-08-20 Email   dave@example  Team meeting        0.618 Positive
## 10 2023-08-09 Slack   @erin_tweets  Hello everyone!    -0.933 Negative
## # ℹ 990 more rows
```

Question-11: Message Impact

Create a new dataframe using the mutate and arrange commands that calculates the product of the sentiment score and the length of each message. Arrange the results in descending order.

Solution:

```
# Enter code here
laptop <- comm_data %>%
  mutate(product = sentiment*nchar(message)) %>%
  arrange(desc(product))
laptop
```

```
## # A tibble: 1,000 × 6
##    date       channel sender       message          sentiment product
##    <date>     <chr>   <chr>        <chr>                <dbl>   <dbl>
##  1 2023-08-16 Email   @frank_chat  Hello everyone!      0.998    15.0
##  2 2023-08-14 Slack   @erin_tweets Hello everyone!      0.988    14.8
##  3 2023-08-18 Email   dave@example Hello everyone!      0.978    14.7
##  4 2023-08-17 Email   dave@example Hello everyone!      0.977    14.7
##  5 2023-08-07 Slack   carol_slack  Hello everyone!      0.973    14.6
##  6 2023-08-06 Slack   dave@example Hello everyone!      0.968    14.5
##  7 2023-08-08 Slack   @frank_chat  Need assistance      0.964    14.5
##  8 2023-08-09 Email   @erin_tweets Need assistance      0.953    14.3
##  9 2023-08-17 Twitter @frank_chat  Hello everyone!      0.952    14.3
## 10 2023-08-12 Email   carol_slack  Need assistance      0.938    14.1
## # ℹ 990 more rows
```

Question-12: Daily Message Challenge

Use the group_by, summarise, and arrange commands to find the day with the highest total number of characters sent across all messages in the "comm_data" dataframe.

Solution:

```
# Enter code here
comm_data %>%
  group_by(date) %>%
  summarise(total_characters = sum(nchar(message))) %>%
  arrange(desc(total_characters)) %>%
  slice(1)
```

```
## # A tibble: 1 × 2
##   date       total_characters
##   <date>                <int>
## 1 2023-08-10              875
```

Question-13: Untidy data

Can you list at least two reasons why the dataset illustrated in slide 10 is non-tidy? How can it be made Tidy?

Solution: The dataset illustrated in slide 10 is non-tidy because there are multiple variables present in one column.

1. The “Percent” column includes the population count. This makes the dataset non-tidy because the percent variable should only include percentages. This can be improved by removing population count fromt the “Percent” column. The removal will not affect the content of the dataset since the population count is already included in the “Estimate” column.

2. The “Subject” column has both population and population sub-groups. This can be improved by creating two separate columns for population and population sub-groups.