visualizations_knit.rmd

2025-03-06

Topic Frequency Histogram

```
#Frequency By Topic test


# Load required libraries
library(readr)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

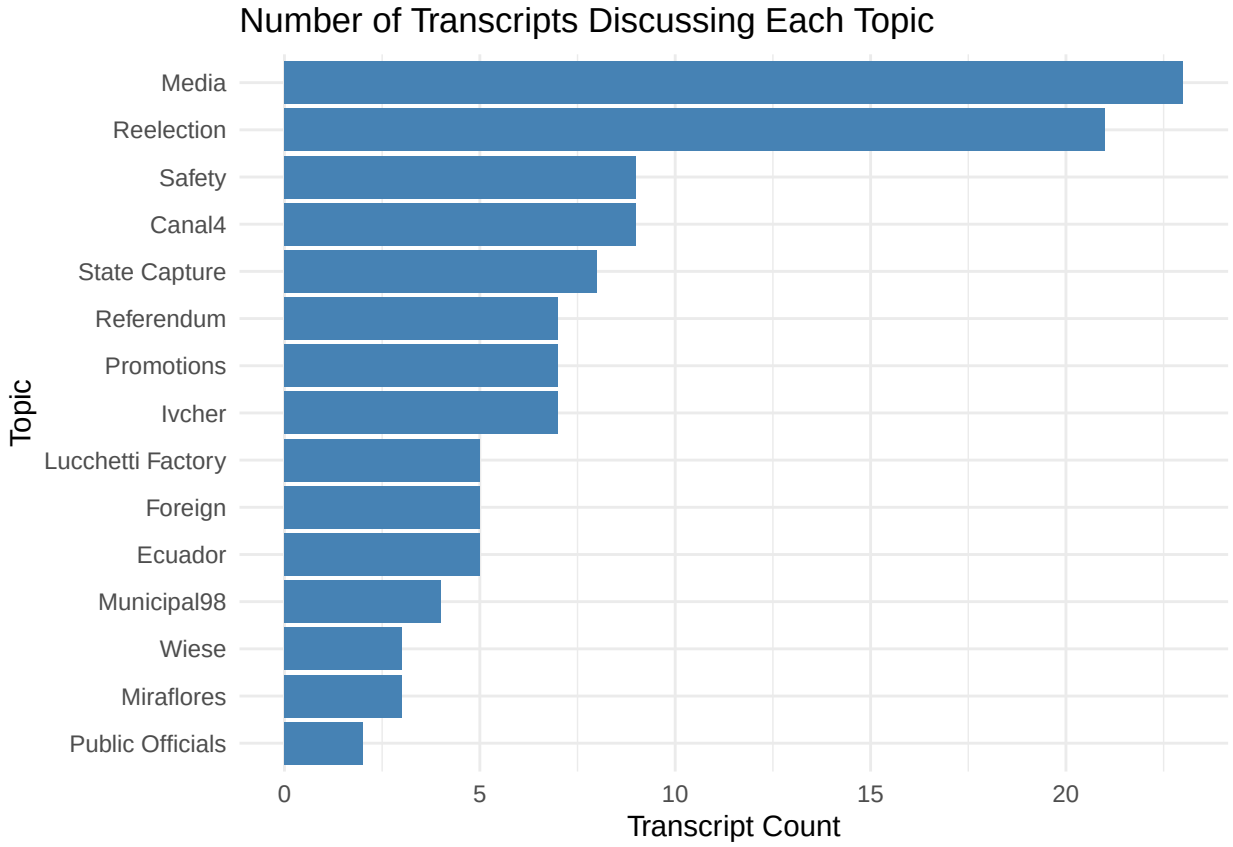
```
library(ggplot2)
library(tidyr)
library(stringr)

# Step 1: Read the inventory file
file <- "data/Copy of inventory - Transcript inventory.tsv"
inventory <- read_tsv(file)
```

```
## Rows: 104 Columns: 22
```

```
## -- Column specification --------------------------------------------------------
## Delimiter: "\t"
## chr (21): date, speakers, original_n, in_book, in_online_archive, type, topi...
## dbl  (1): n
##
## 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.
```

```
# Step 2: Identify topic columns
topic_columns <- inventory %>%
  select(starts_with("topic_")) %>%
  colnames()

# Step 3: Count how many transcripts mention each topic (non-NA values)
topic_counts <- inventory %>%
  select(all_of(topic_columns)) %>%
  summarise(across(everything(), ~ sum(!is.na(.)))) %>%
```

```
  pivot_longer(cols = everything(), names_to = "Topic", values_to = "Transcript_Count")

# Step 4: Clean up topic names for readability
topic_counts <- topic_counts %>%
  mutate(Topic = str_replace_all(Topic, "topic_", ""),
         Topic = str_replace_all(Topic, "_", " "),
         Topic = str_to_title(Topic)) %>%
  arrange(desc(Transcript_Count))

# Step 5: Plot histogram
ggplot(topic_counts, aes(x = reorder(Topic, Transcript_Count), y = Transcript_Count)) +
  geom_bar(stat = "identity", fill = "steelblue") +
  coord_flip() +
  labs(title = "Number of Transcripts Discussing Each Topic",
       x = "Topic",
       y = "Transcript Count") +
  theme_minimal()
```



Word Count Proportion (excluding 'desconoocido')

```
install.packages("readr")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

```r
install.packages("dplyr")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

```r
install.packages("ggplot2")
```

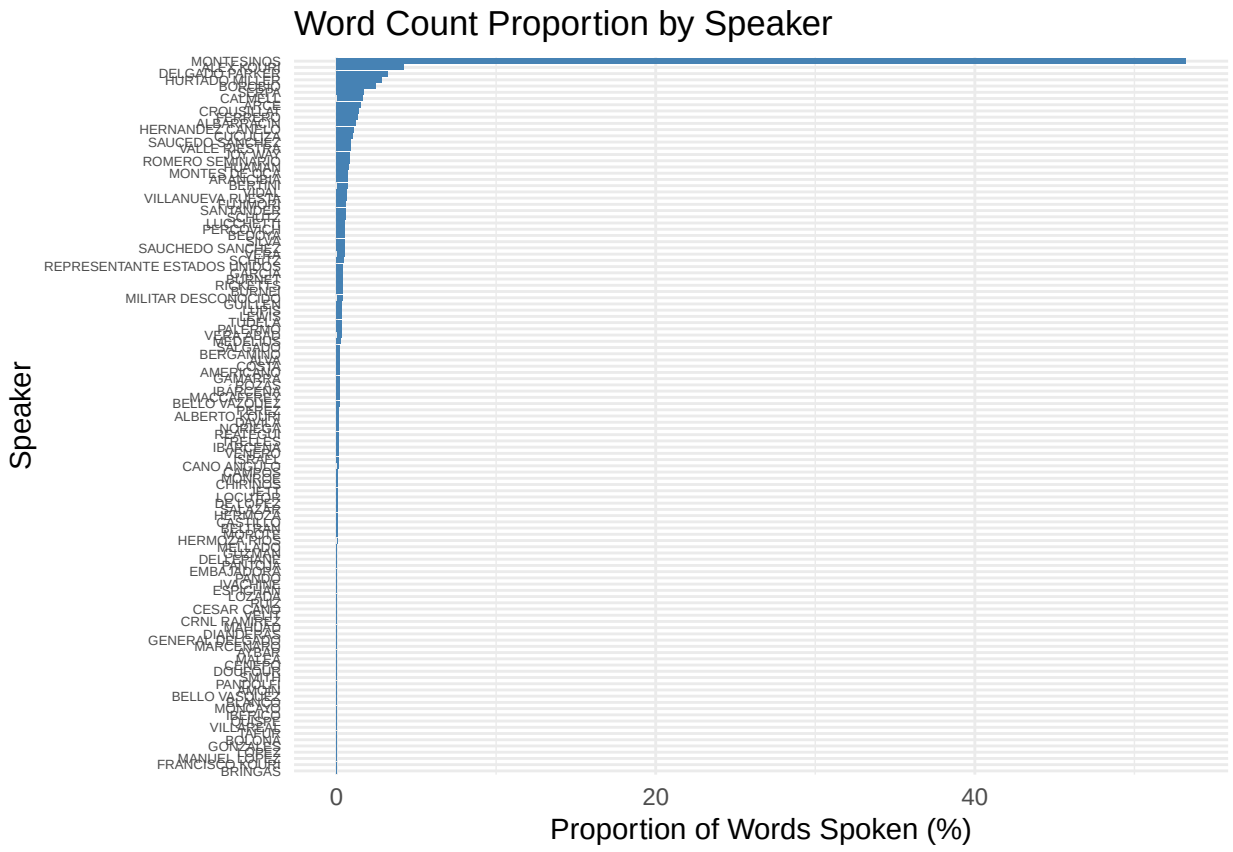
```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

```r
library(readr)
library(dplyr)
library(ggplot2)

# Read in File
file_path <- "data/count_results_all.tsv"
word_data <- read_tsv(file_path)
```

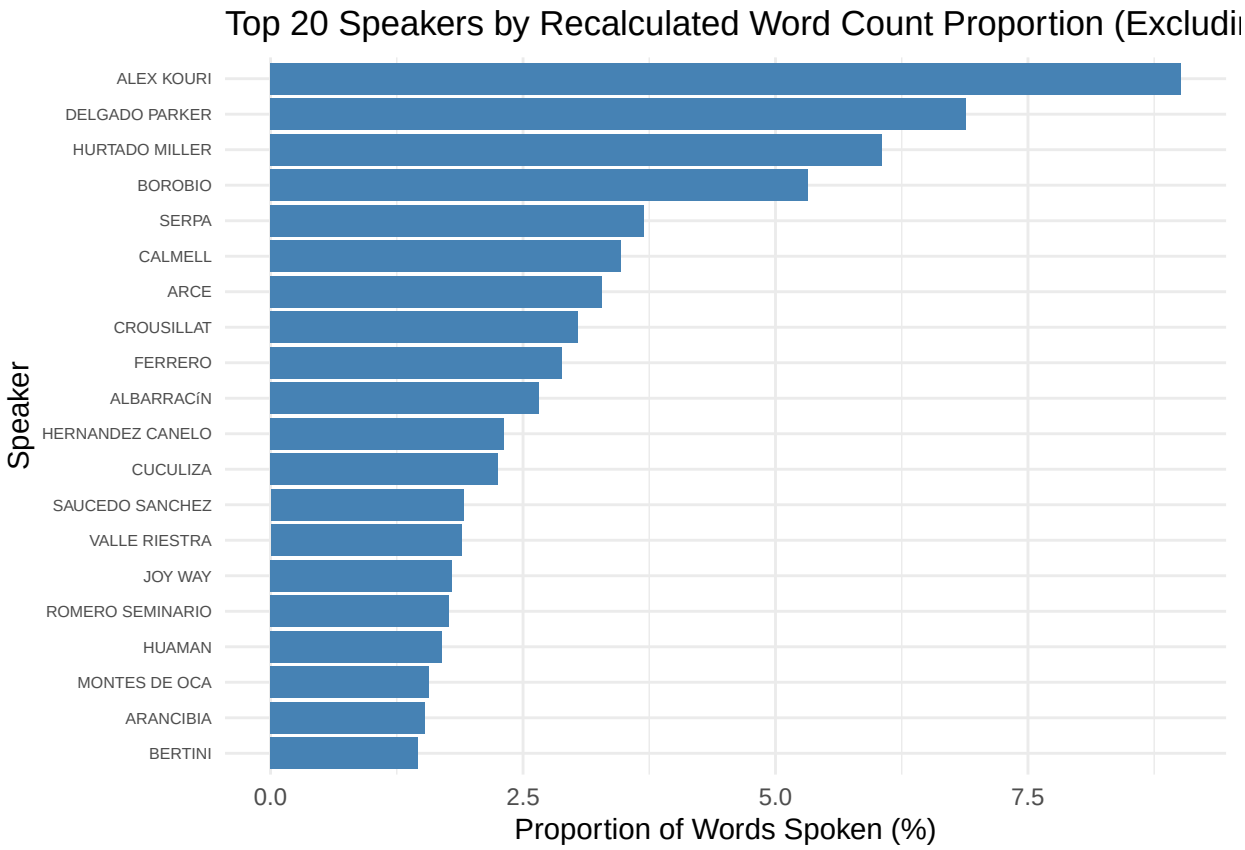
```
## Rows: 116 Columns: 3
```

```
## -- Column specification --------------------------------------------------------
## Delimiter: "\t"
## chr (2): Speaker, Proportion of Word Count
## dbl (1): Total Word Count
##
## 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.
```

```r
# Exclude 'DESCONOCIDO'
word_data <- word_data %>% filter(Speaker != "DESCONOCIDO")

# Compute proportions (Exluding the use of existing Propoetion Column)
word_data <- word_data %>%
  mutate(Proportion = (`Total Word Count` / sum(`Total Word Count`)) * 100)

# Plot bar chart
ggplot(word_data, aes(x = reorder(Speaker, Proportion), y = Proportion)) +
  geom_bar(stat = "identity", fill = "steelblue") +
  coord_flip() +  # Flip coordinates for better readability
  labs(title = "Word Count Proportion by Speaker",
       x = "Speaker",
       y = "Proportion of Words Spoken (%)") +
  theme_minimal()+
  theme(axis.text.y = element_text(size = 5))
```




```r
# Filter out 'MONTESINOS' and 'DESCONOCIDO'
filtered_data <- word_data %>%
  filter(!(Speaker %in% c("MONTESINOS", "DESCONOCIDO")))

# Recalculate proportions based on filtered total word counts
filtered_data <- filtered_data %>%
  mutate(Proportion = (`Total Word Count` / sum(`Total Word Count`)) * 100)

# Select top 20 speakers by recalculated proportion
top20_data <- filtered_data %>%
  arrange(desc(Proportion)) %>%
  slice_head(n = 20)

# Plot bar chart
ggplot(top20_data, aes(x = reorder(Speaker, Proportion), y = Proportion)) +
  geom_bar(stat = "identity", fill = "steelblue") +
  coord_flip() +
  labs(title = "Top 20 Speakers by Recalculated Word Count Proportion (Excluding MONTESINOS & DESCONOCI
       x = "Speaker",
       y = "Proportion of Words Spoken (%)") +
  theme_minimal() +
  theme(axis.text.y = element_text(size = 6))
```



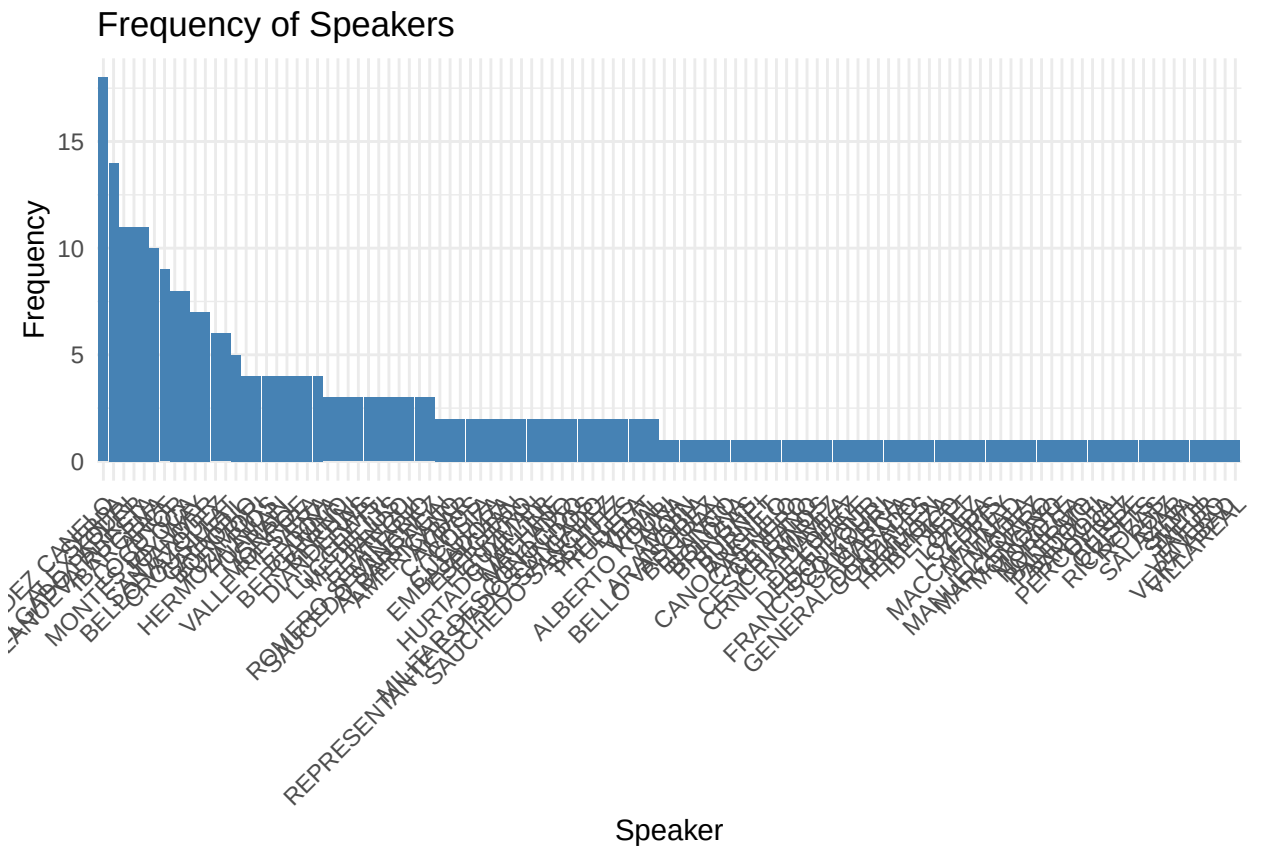
Speaker Frequency

```
# Load necessary libraries
library(ggplot2)
library(dplyr)
library(readr)

# Load the dataset
file<-"output/speaker_frequency_results(all).csv"
df <- read_csv(file)
```

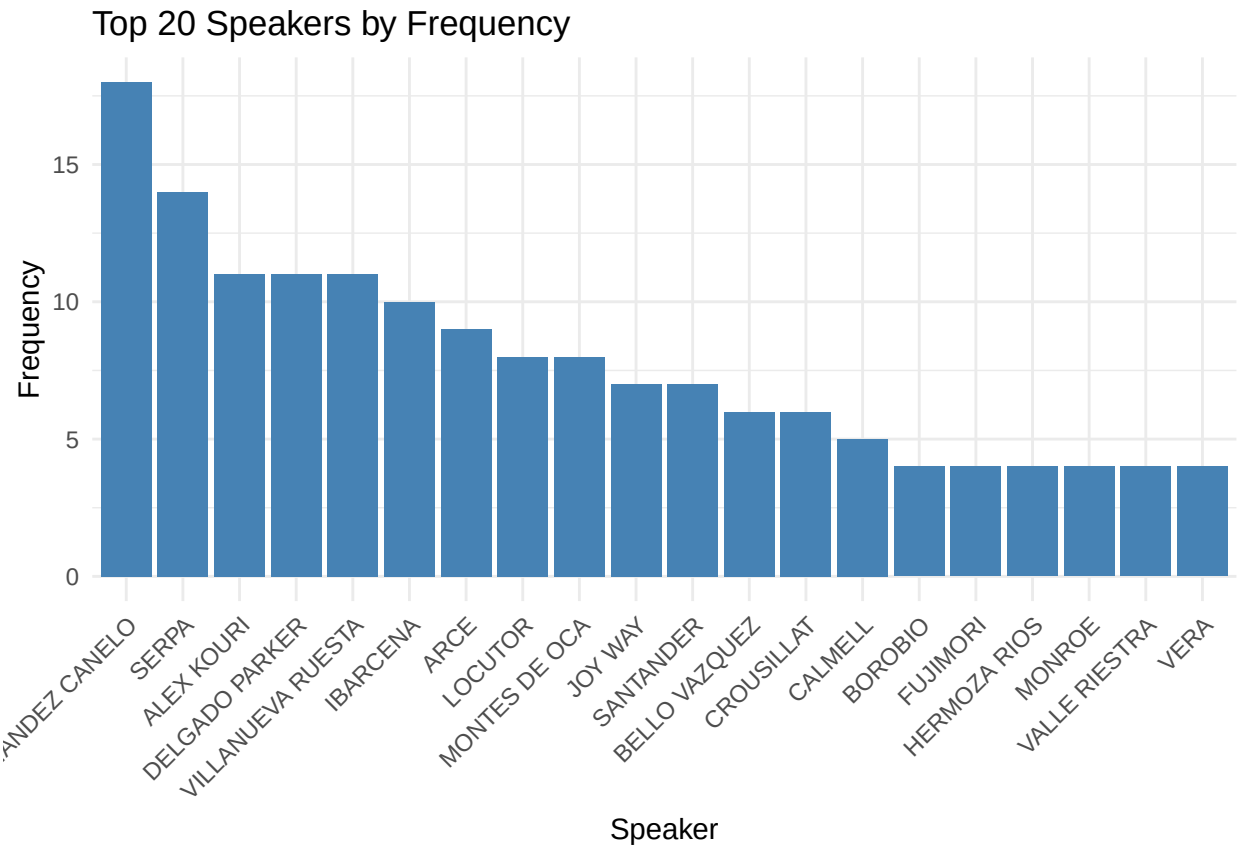
```
## Rows: 114 Columns: 2
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): Speaker
## dbl (1): Frequency
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
# Filter out 'Montesinos' and 'Desconocido'
df_filtered <- df %>%
  filter(!(Speaker %in% c("MONTESINOS", "DESCONOCIDO")))

# Create the bar graph
ggplot(df_filtered, aes(x = reorder(Speaker, -Frequency), y = Frequency)) +
```

```
  geom_bar(stat = "identity", fill = "steelblue") +
  theme_minimal() +
  labs(title = "Frequency of Speakers",
       x = "Speaker",
       y = "Frequency") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```




```
# Keep only the top 20 speakers based on frequency
df_top20 <- df_filtered %>%
  arrange(desc(Frequency)) %>%
  slice_head(n = 20)

# Plot top 20
ggplot(df_top20, aes(x = reorder(Speaker, -Frequency), y = Frequency)) +
  geom_bar(stat = "identity", fill = "steelblue") +
  theme_minimal() +
  labs(title = "Top 20 Speakers by Frequency",
       x = "Speaker",
       y = "Frequency") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```



Word Count Per Topic

```
# Install & Library necessary packages
install.packages("tidyr")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

```
install.packages("tidyverse")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

```
install.packages("dplyr")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

```
install.packages("ggplot2")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

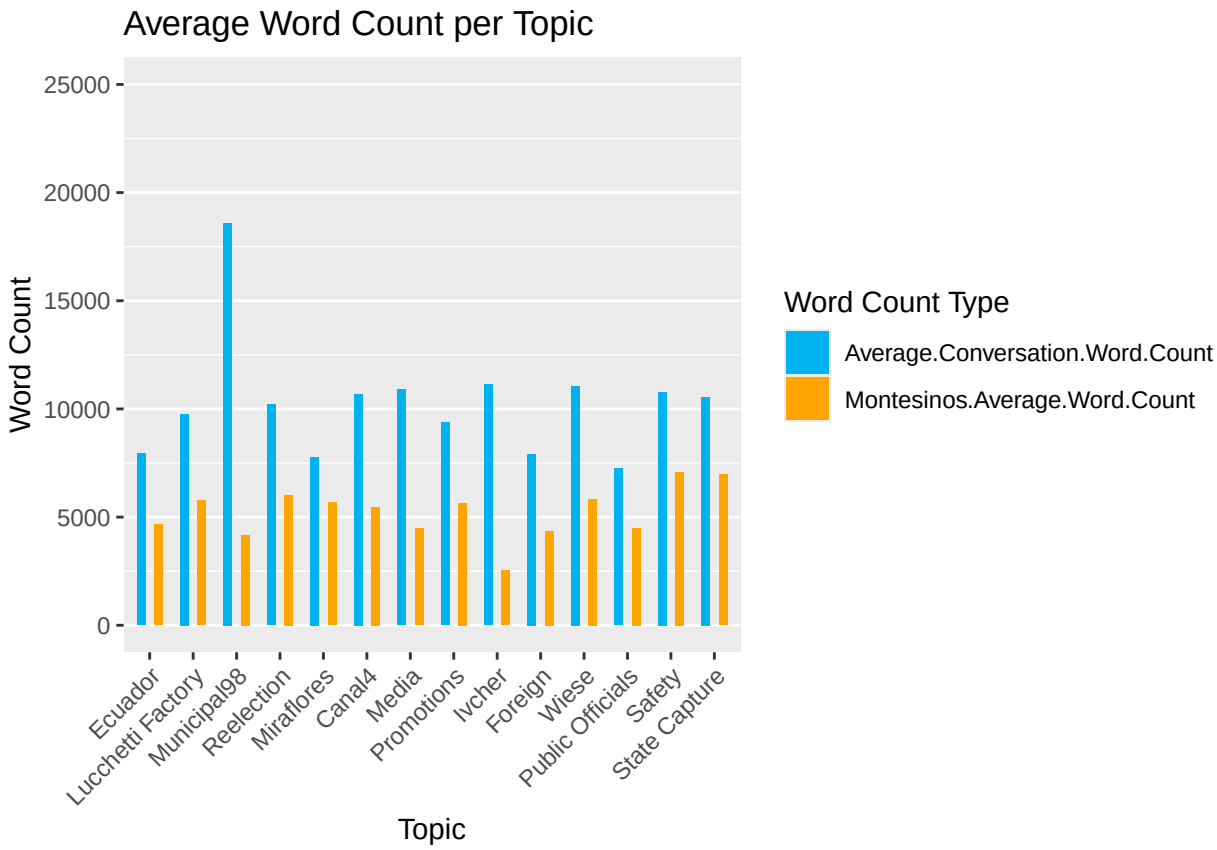
```
library(ggplot2)
library(dplyr)
library(tidyr)
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
```

```
## v forcats   1.0.0     v purrr     1.0.4
## v lubridate 1.9.4     v tibble    3.2.1
```

```
## -- Conflicts ----------------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```r
# Read in 'topic_vmt_avg_count.csv' file
file<-"output/topic_vmt_avg_count.csv"
df <- read.csv(file)

# Remove 'topic_' prefix from 'Topic' column
df$Topic <- gsub("topic_", "", df$Topic)

# Replace underscores with spaces in 'Topic' column
df$Topic <- gsub("_", " ", df$Topic)

# Capitalize first letter of each item in 'Topic' column
df$Topic <- str_to_title(df$Topic)

# Convert 'Topic' to factor to maintain order
df$Topic <- factor(df$Topic, levels = df$Topic)

# Reshape data using pivot_longer()
df_long <- df %>%
  pivot_longer(cols = c(Average.Conversation.Word.Count, Montesinos.Average.Word.Count),
               names_to = "Word_Count_Type",
               values_to = "Word_Count")

# Create a grouped bar plot with y-axis limit set to 25,000 and removed x-axis lines
ggplot(df_long, aes(x = Topic, y = Word_Count, fill = Word_Count_Type)) +
  geom_bar(stat = "identity", position = position_dodge(width = 0.8), width = 0.4) +
  labs(title = "Average Word Count per Topic",
       x = "Topic",
       y = "Word Count",
       fill = "Word Count Type") +
  scale_fill_manual(values = c("Average.Conversation.Word.Count" = "deepskyblue2",
                               "Montesinos.Average.Word.Count" = "orange")) +
  scale_y_continuous(limits = c(0, 25000)) +
  theme(
    axis.text.x = element_text(angle = 45, hjust = 1),
    panel.grid.major.x = element_blank(),
    panel.grid.minor.x = element_blank()
  )
```



Histograms

Average Length of Conversations

```
# Define the path to the finalized_data folder
data_path <- "data/modified_data/finalized_data"

# Get a list of CSV and TSV files from finalized_data without setting it as the working directory
csv_files <- list.files(path = data_path, pattern = "\\.csv$", full.names = TRUE)
tsv_files <- list.files(path = data_path, pattern = "\\.tsv$", full.names = TRUE)

# Combine file lists
all_files <- c(csv_files, tsv_files)

# Load necessary libraries
#install.packages("readr")
#install.packages("stringr")
#install.packages("ggplot2")
library(ggplot2)
library(readr)  # For reading CSV & TSV files
library(stringr)  # For text processing

# Initialize total word count and file count
total_word_count <- 0
file_count <- 0
```

```r
# Function to count words in the 'speech' column safely
count_words <- function(text) {
  if (is.null(text) || all(is.na(text))) {
    return(0)  # Return 0 if text is NULL or all NA
  }
  text <- na.omit(text)  # Remove NA values
  sum(str_count(text, "\\S+"))  # Count words in non-NA text
}

# Loop through each file
for (file in all_files) {
  # Read the file and handle errors
  df <- tryCatch({
    if (grepl("\\.csv$", file)) {
      read_csv(file, show_col_types = FALSE)  # Read CSV
    } else if (grepl("\\.tsv$", file)) {
      read_tsv(file, show_col_types = FALSE)  # Read TSV
    }
  }, error = function(e) {
    cat("Error reading file:", file, "\n")
    return(NULL)
  })

  # Check if file was successfully read and 'speech' column exists
  if (!is.null(df) && "speech" %in% colnames(df)) {
    # Calculate total words in 'speech' column
    file_word_count <- count_words(df$speech)

    # Debugging: Print word count for each file
    cat("File:", basename(file), "- Word Count:", file_word_count, "\n")

    # Update total word count and file count
    total_word_count <- total_word_count + file_word_count
    file_count <- file_count + 1
  } else {
    cat("Skipping file (missing 'speech' column):", basename(file), "\n")
  }
}
```

```
## File: 1.csv - Word Count: 10375
## File: 100.csv - Word Count: 3040
## File: 101.csv - Word Count: 2496
## File: 102.csv - Word Count: 8694
## File: 103.csv - Word Count: 9206
## File: 104.csv - Word Count: 9289
## File: 13.csv - Word Count: 3447
## File: 19.csv - Word Count: 5693
## File: 2.csv - Word Count: 7120
## File: 24.csv - Word Count: 6405
## File: 25.csv - Word Count: 15867
## File: 3.csv - Word Count: 7006
## File: 37.csv - Word Count: 3317
## File: 38.csv - Word Count: 8263
## File: 39.csv - Word Count: 5594
```

```
## File: 4.csv - Word Count: 175
## File: 41.csv - Word Count: 4818
## File: 47.csv - Word Count: 15941
## File: 55.csv - Word Count: 9759
## File: 6.csv - Word Count: 13035
## File: 63.csv - Word Count: 9793
## File: 64.csv - Word Count: 4544
## File: 67.csv - Word Count: 11435
## File: 69.csv - Word Count: 8547
## File: 74.csv - Word Count: 11721
## File: 75.csv - Word Count: 5565
## File: 79.csv - Word Count: 1309
## File: 8.csv - Word Count: 4895
## File: 80.csv - Word Count: 12492
## File: 81.csv - Word Count: 4633
## File: 84.csv - Word Count: 3688
## File: 87.csv - Word Count: 3911
## File: 88.csv - Word Count: 5321
## File: 89.csv - Word Count: 515
## File: 90.csv - Word Count: 10433
## File: 91.csv - Word Count: 2693
## File: 94.csv - Word Count: 6655
## File: 95.csv - Word Count: 1809
## File: 96.csv - Word Count: 4625
## File: 97.csv - Word Count: 10615
## File: 98.csv - Word Count: 5824
## File: 99.csv - Word Count: 3609
## File: 10.tsv - Word Count: 15704
## File: 11.tsv - Word Count: 9600
## File: 12.tsv - Word Count: 1298
## File: 14.tsv - Word Count: 955
## File: 15.tsv - Word Count: 12607
## File: 16.tsv - Word Count: 13624
## File: 17.tsv - Word Count: 11547
## File: 20.tsv - Word Count: 16825
## File: 21.tsv - Word Count: 17199
## File: 22.tsv - Word Count: 2219
## File: 23.tsv - Word Count: 7675
## File: 26.tsv - Word Count: 11370
## File: 27.tsv - Word Count: 17701
## File: 28.tsv - Word Count: 10296
## File: 29.tsv - Word Count: 7865
## File: 30.tsv - Word Count: 6109
## File: 31.tsv - Word Count: 6473
## File: 32.tsv - Word Count: 11795
## File: 33.tsv - Word Count: 20880
## File: 34.tsv - Word Count: 29157
## File: 35.tsv - Word Count: 18275
## File: 36.tsv - Word Count: 11582
## File: 40.tsv - Word Count: 17333
## File: 42.tsv - Word Count: 3673
## File: 43.tsv - Word Count: 1948
## File: 44.tsv - Word Count: 8323
## File: 45.tsv - Word Count: 4270
```

```
## File: 46.tsv - Word Count: 8012
## File: 48.tsv - Word Count: 3903
## File: 49.tsv - Word Count: 12028
## File: 5.tsv - Word Count: 9392
## File: 50.tsv - Word Count: 18049
## File: 51.tsv - Word Count: 5050
## File: 52.tsv - Word Count: 17176
## File: 53.tsv - Word Count: 9266
## File: 54.tsv - Word Count: 28813
## File: 56.tsv - Word Count: 10738
## File: 57.tsv - Word Count: 14216
## File: 58.tsv - Word Count: 4774
## File: 59.tsv - Word Count: 8638
## File: 60.tsv - Word Count: 12628
## File: 61.tsv - Word Count: 3378
## File: 62.tsv - Word Count: 12784
## File: 65.tsv - Word Count: 2824
## File: 66.tsv - Word Count: 7629
## File: 68.tsv - Word Count: 9854
## File: 7.tsv - Word Count: 11146
## File: 70.tsv - Word Count: 19659
## File: 71.tsv - Word Count: 11440
## File: 72.tsv - Word Count: 4484
## File: 73.tsv - Word Count: 3875
## File: 76.tsv - Word Count: 9166
## File: 77.tsv - Word Count: 11649
## File: 78.tsv - Word Count: 10546
## File: 82.tsv - Word Count: 13670
## File: 83.tsv - Word Count: 4086
## File: 85.tsv - Word Count: 1853
## File: 86.tsv - Word Count: 5690
## File: 9.tsv - Word Count: 16843
```

```
# Calculate the average word count per file
average_word_count <- ifelse(file_count > 0, total_word_count / file_count, NA)

# Print result
cat("Total Word Count:", total_word_count, "\n")
```

```
## Total Word Count: 903734
```

```
cat("Number of Files Processed:", file_count, "\n")
```

```
## Number of Files Processed: 101
```

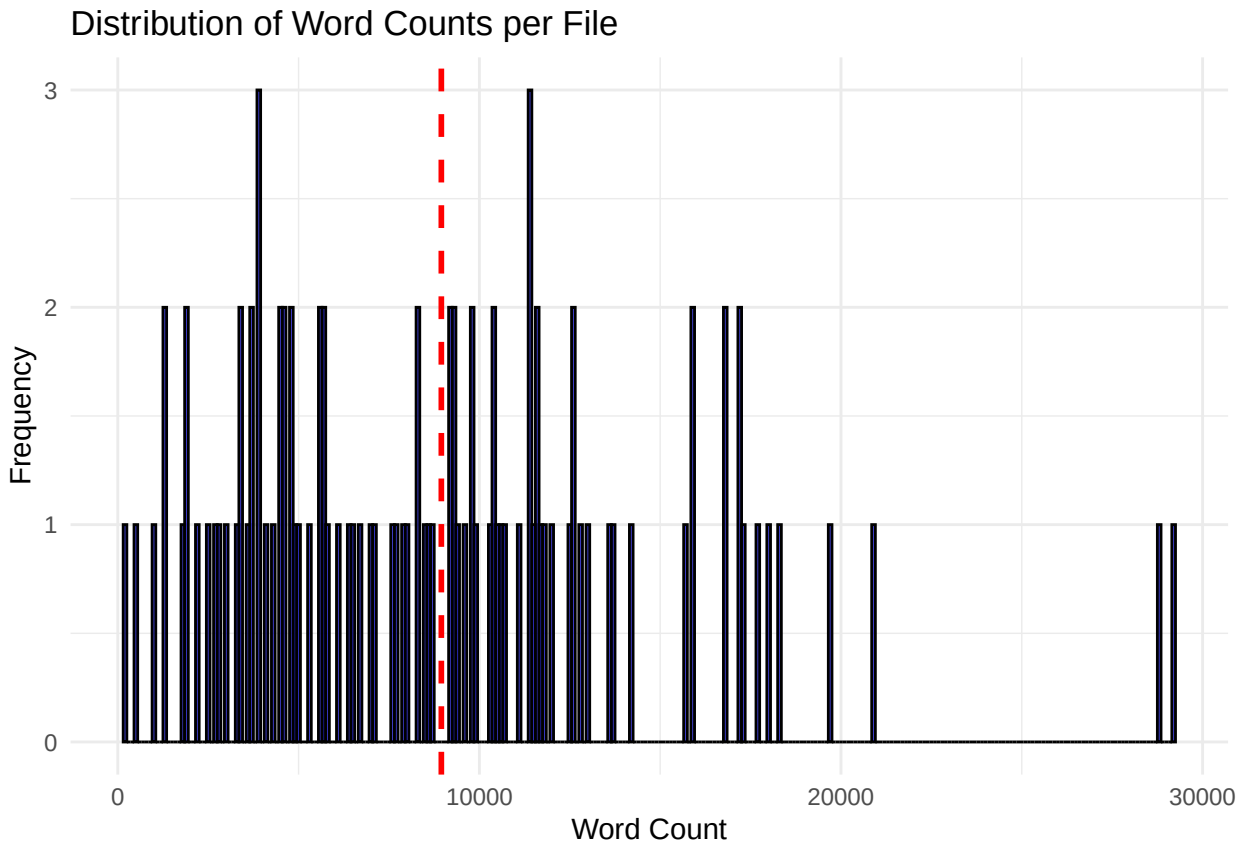
```
cat("Average Word Count per File:", average_word_count, "\n")
```

```
## Average Word Count per File: 8947.861
```

```
# Initialize a data frame to store file names and word counts
word_counts <- data.frame(File = character(), Word_Count = numeric(), stringsAsFactors = FALSE)

# Loop through each file again to store word counts
for (file in all_files) {
  df <- tryCatch({
    if (grepl("\\.csv$", file)) {
      read_csv(file, show_col_types = FALSE)
```

```
    } else if (grepl("\\.tsv$", file)) {
      read_tsv(file, show_col_types = FALSE)
    }
  }, error = function(e) {
    cat("Error reading file:", file, "\n")
    return(NULL)
  })

  if (!is.null(df) && "speech" %in% colnames(df)) {
    file_word_count <- count_words(df$speech)

    # Store results in the data frame
    word_counts <- rbind(word_counts, data.frame(File = basename(file), Word_Count = file_word_count))
  }
}

# Calculate average word count
average_word_count <- mean(word_counts$Word_Count, na.rm = TRUE)

# Create histogram
ggplot(word_counts, aes(x = Word_Count)) +
  geom_histogram(binwidth = 100, fill = "blue", alpha = 0.7, color = "black") +
  geom_vline(aes(xintercept = average_word_count), color = "red", linetype = "dashed", size = 1) +
  labs(title = "Distribution of Word Counts per File",
       x = "Word Count",
       y = "Frequency") +
  theme_minimal()
```

```
## Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use `linewidth` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```



Average Conversation Length by Topic

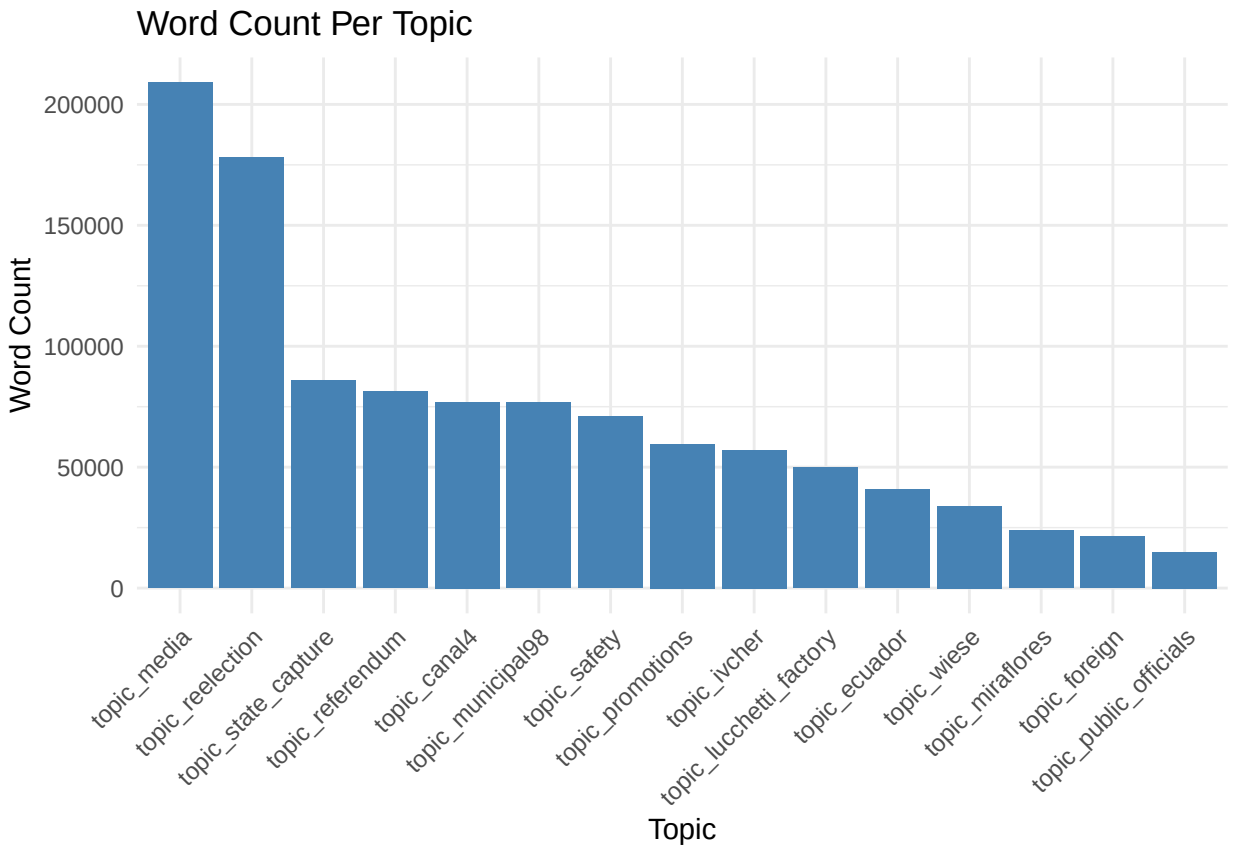
```
# Load required libraries
library(dplyr)
library(readr)
library(stringr)
library(ggplot2)

# Define file paths
inventory_file <- "data/Copy of inventory - Transcript inventory.tsv"
directory_path <- "data/modified_data/finalized_data"

# Read the inventory data
inventory_data <- read_tsv(inventory_file, col_types = cols())

# List of topic columns
topic_columns <- c("topic_referendum", "topic_ecuador", "topic_lucchetti_factory", "topic_municipal98",
                   "topic_reelection", "topic_miraflores", "topic_canal4", "topic_media", "topic_promot
                   "topic_ivcher", "topic_foreign", "topic_wiese", "topic_public_officials", "topic_saf

# Initialize word count storage
topic_word_count <- setNames(rep(0, length(topic_columns)), topic_columns)

# Function to count words in a transcript file (from the 'speech' column)
count_words_in_transcript <- function(file_path) {
  if (!file.exists(file_path)) return(0)
```

```r
  # Read the transcript file
  transcript_data <- read_tsv(file_path, col_types = cols(), na = c("", "NA"))

  # Check if the 'speech' column exists
  if (!"speech" %in% colnames(transcript_data)) return(0)

  # Extract valid speeches (ignore missing values)
  valid_speeches <- transcript_data %>%
    filter(!is.na(speech)) %>%
    pull(speech)

  # Calculate total word count from the 'speech' column
  total_words <- sum(str_count(valid_speeches, "\\S+"))
  return(total_words)
}

# Iterate over transcript files and compute word counts
for (i in 1:nrow(inventory_data)) {
  transcript_id <- inventory_data$n[i]

  # Construct file path (assuming files are named as "n.tsv")
  file_path <- file.path(directory_path, paste0(transcript_id, ".tsv"))

  # Compute word count for the transcript
  transcript_word_count <- count_words_in_transcript(file_path)

  # Assign word count to relevant topics
  for (topic in topic_columns) {
    if (!is.na(inventory_data[[topic]][i]) && inventory_data[[topic]][i] == "x") {
      topic_word_count[topic] <- topic_word_count[topic] + transcript_word_count
    }
  }
}

# Convert results to a data frame
word_count_df <- data.frame(
  Topic = names(topic_word_count),
  Word_Count = unlist(topic_word_count),
  stringsAsFactors = FALSE
)

# Save results to CSV
output_file <- "word_count_by_topic.csv"
write_csv(word_count_df, output_file)

# Print summary
print(word_count_df)
```

```
##                                         Topic Word_Count
## topic_referendum               topic_referendum      81395
## topic_ecuador                     topic_ecuador      40898
## topic_lucchetti_factory topic_lucchetti_factory      49722
## topic_municipal98             topic_municipal98      76887
```

```
## topic_reelection              topic_reelection     178073
## topic_miraflores              topic_miraflores      23871
## topic_canal4                      topic_canal4      76911
## topic_media                        topic_media     208956
## topic_promotions              topic_promotions      59562
## topic_ivcher                      topic_ivcher      57069
## topic_foreign                    topic_foreign      21316
## topic_wiese                       topic_wiese      33971
## topic_public_officials  topic_public_officials      14904
## topic_safety                      topic_safety      71067
## topic_state_capture        topic_state_capture      85990
```

```r
# Histogram of Word Count Per Topic
ggplot(word_count_df, aes(x = reorder(Topic, -Word_Count), y = Word_Count)) +
  geom_bar(stat = "identity", fill = "steelblue") +
  labs(title = "Word Count Per Topic", x = "Topic", y = "Word Count") +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```



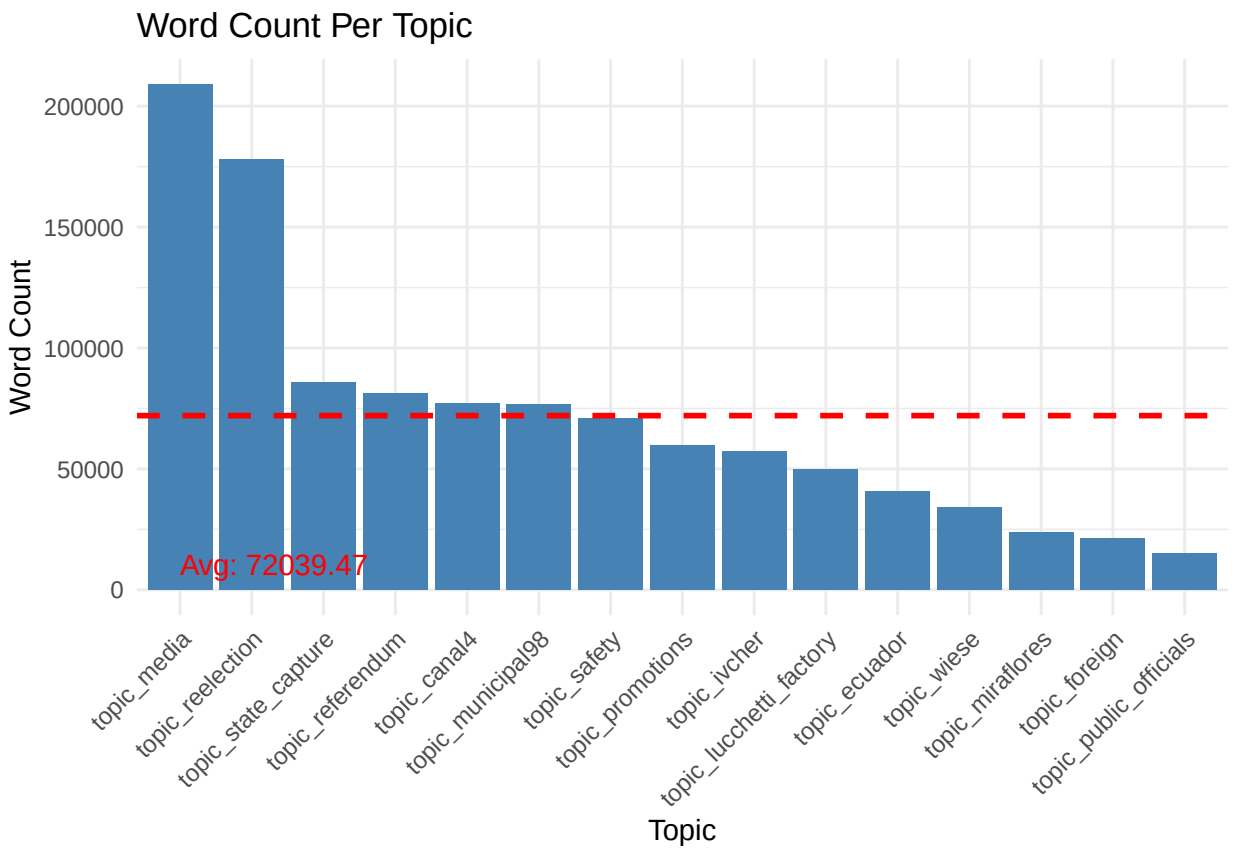

```r
# Calculate the average word count across all transcripts
average_word_count_all <- sum(word_count_df$Word_Count) / nrow(inventory_data)

# Print average word count
print(paste("Average Word Count Across All Transcripts:", round(average_word_count_all, 2)))
```

```
## [1] "Average Word Count Across All Transcripts: 10390.31"
```

```r
# Calculate the average word count across all topics
average_word_count_topics <- sum(word_count_df$Word_Count) / length(topic_columns)

# Print average word count per topic
print(paste("Average Word Count Across All Topics:", round(average_word_count_topics, 2)))
```

```
## [1] "Average Word Count Across All Topics: 72039.47"
```

```r
ggplot(word_count_df, aes(x = reorder(Topic, -Word_Count), y = Word_Count)) +
  geom_bar(stat = "identity", fill = "steelblue") +
  geom_hline(yintercept = average_word_count_topics, linetype = "dashed", color = "red", size = 1) +
  labs(title = "Word Count Per Topic", x = "Topic", y = "Word Count") +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
  annotate("text", x = 1, y = average_word_count_all + 100, label = paste("Avg:", round(average_word_cou
```




```r
print(paste("Total Word Count Across All Transcripts:", sum(word_count_df$Word_Count)))
```

```
## [1] "Total Word Count Across All Transcripts: 1080592"
```

Bar Plot

```r
# Define the path to the finalized_data folder (relative to current working directory)
finalized_data_path <- "data/modified_data/finalized_data"

# Load necessary libraries
install.packages("readr")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

```
install.packages("stringr")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

```
install.packages("dplyr")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

```
install.packages("ggplot2")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

```
library(readr)   # For reading CSV & TSV files
library(stringr) # For text processing
library(dplyr)   # For data manipulation
library(ggplot2) # For visualization

# Get a list of CSV and TSV files in the finalized_data directory
csv_files <- list.files(path = finalized_data_path, pattern = "\\.csv$", full.names = TRUE)
tsv_files <- list.files(path = finalized_data_path, pattern = "\\.tsv$", full.names = TRUE)

# Combine file lists
all_files <- c(csv_files, tsv_files)

# Function to count words in the 'speech' column safely
count_words <- function(text) {
  if (is.null(text) || all(is.na(text))) {
    return(0)  # Return 0 if text is NULL or all NA
  }
  text <- na.omit(text)  # Remove NA values
  sum(str_count(text, "\\S+"))  # Count words in non-NA text
}

# Initialize an empty list to store data frames
all_speaker_data <- list()

# Loop through each file and accumulate results
for (file in all_files) {
  df <- tryCatch({
    if (grepl("\\.csv$", file)) {
      read_csv(file, show_col_types = FALSE)
    } else if (grepl("\\.tsv$", file)) {
      read_tsv(file, show_col_types = FALSE)
    }
  }, error = function(e) {
    cat("Error reading file:", file, "\n")
    return(NULL)
  })

  # Proceed only if the file was successfully read and contains required columns
```

```r
  if (!is.null(df) && all(c("speech", "speaker_std") %in% colnames(df))) {

    # Process data to count words per speaker
    df <- df %>%
      filter(!is.na(speech) & !is.na(speaker_std)) %>%
      group_by(speaker_std) %>%
      summarise(
        Total_Words = sum(count_words(speech)),
        Appearances = n(),
        .groups = "drop"
      )

    # Store the processed data in a list
    all_speaker_data[[basename(file)]] <- df  # Use basename(file) for readability
  } else {
    cat("Skipping file (missing required columns):", basename(file), "\n")
  }
}

# Combine all accumulated data into a single data frame
if (length(all_speaker_data) > 0) {
  speaker_word_counts <- bind_rows(all_speaker_data) %>%
    group_by(Speaker = speaker_std) %>%
    summarise(
      Total_Words = sum(Total_Words),
      Appearances = sum(Appearances),
      .groups = "drop"
    ) %>%
    mutate(Average_Words_Per_Appearance = Total_Words / Appearances)
} else {
  speaker_word_counts <- data.frame()
  cat("No valid data found in any files.\n")
}

# Print summary
cat("Total Unique Speakers:", nrow(speaker_word_counts), "\n")
```

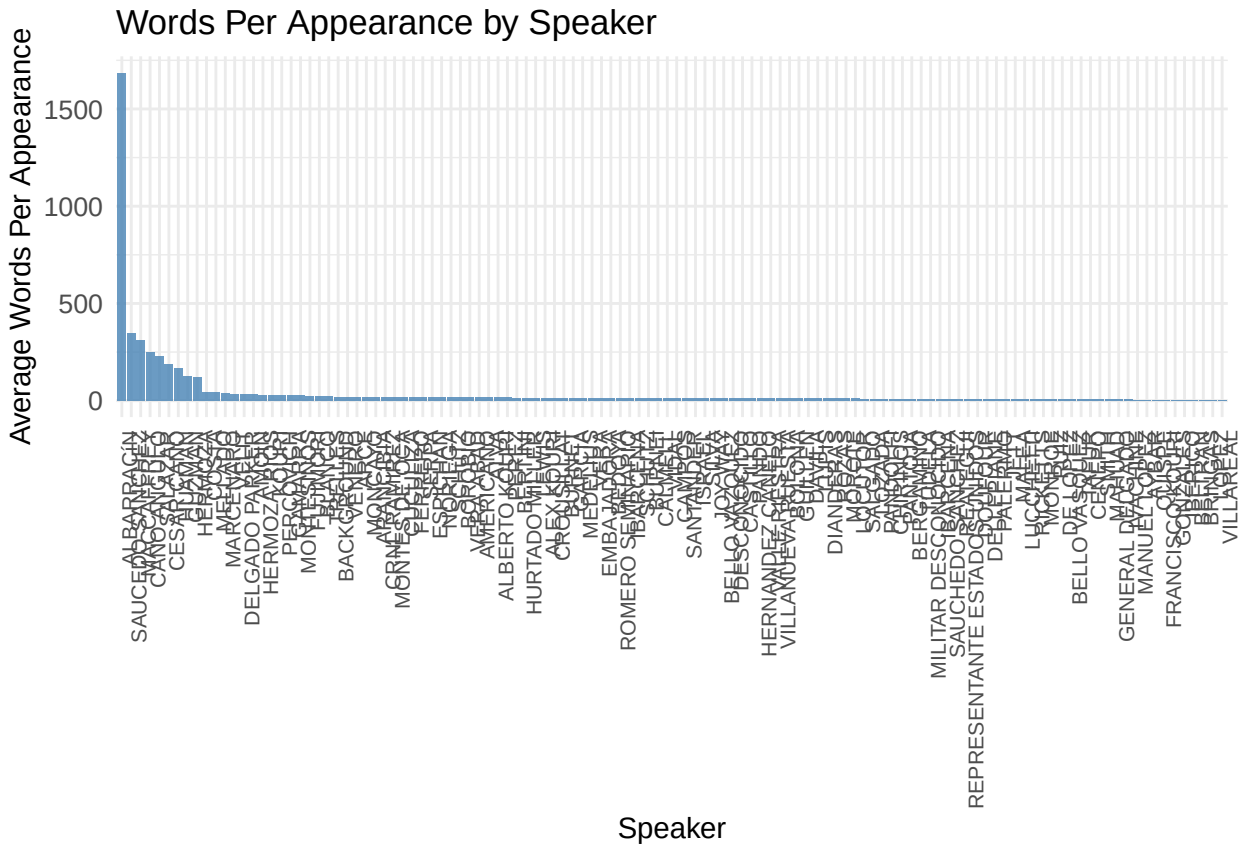
```
## Total Unique Speakers: 118
```

```r
# Display the final aggregated results
print(speaker_word_counts)
```

```
## # A tibble: 118 x 4
##    Speaker       Total_Words Appearances Average_Words_Per_Appearance
##    <chr>               <int>       <int>                        <dbl>
##  1 ALBARRACíN          10118           6                       1686.
##  2 ALBERTO KOURI        1406          88                         16.0
##  3 ALEX KOURI           9550         634                         15.1
##  4 ALVA                 1892         117                         16.2
##  5 AMERICANO            1708         105                         16.3
##  6 AMOIN                  32           1                         32
##  7 ARANCIBIA            5826         297                         19.6
##  8 ARCE                12493         618                         20.2
##  9 AYBAR                  74          15                          4.93
```

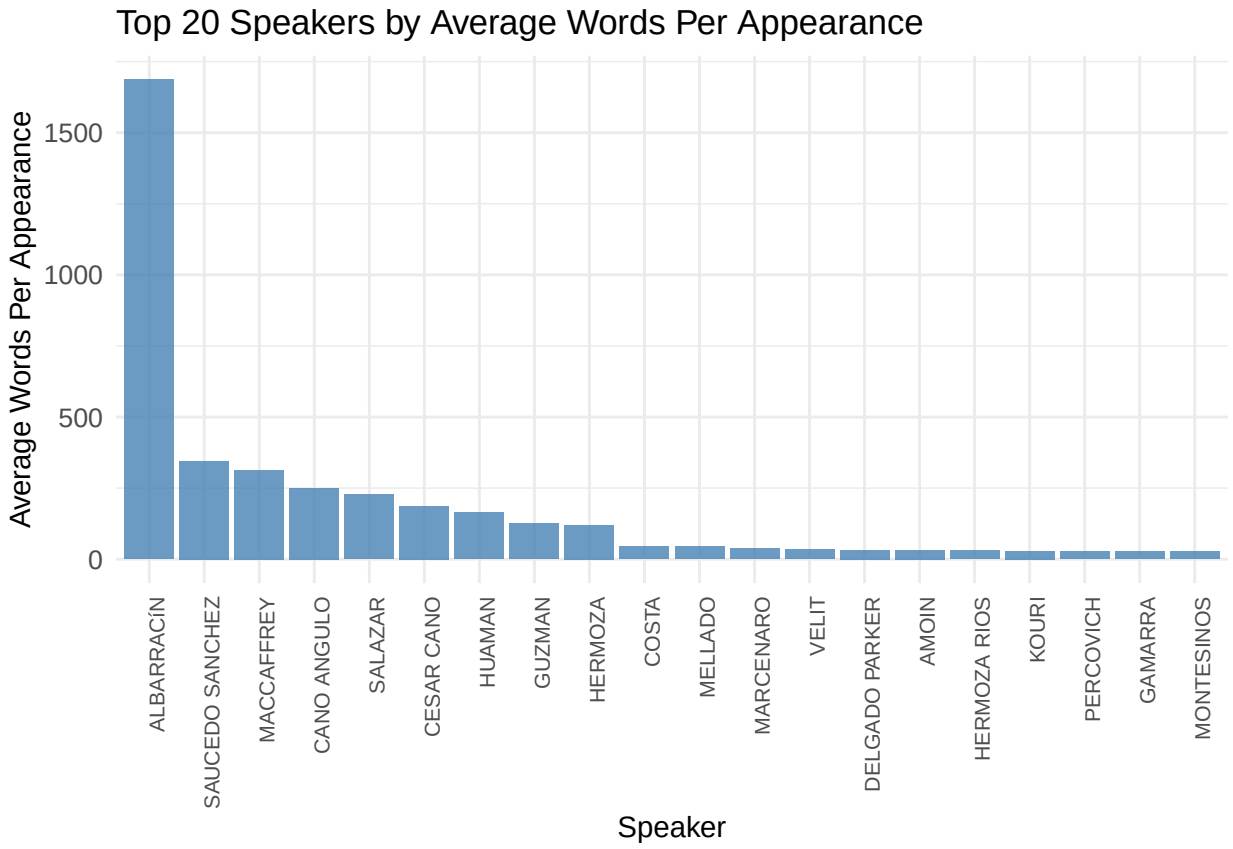
```
## 10 BACKGROUND          31521        1546                        20.4
## # i 108 more rows
```

```
# Sort data by Average Words Per Appearance (Descending)
speaker_word_counts <- speaker_word_counts %>%
  arrange(desc(Average_Words_Per_Appearance))

# Create the bar plot with all speakers on the x-axis
ggplot(speaker_word_counts, aes(x = reorder(Speaker, -Average_Words_Per_Appearance), y = Average_Words_
  geom_bar(stat = "identity", fill = "steelblue", alpha = 0.8) +
  labs(title = "Words Per Appearance by Speaker",
       x = "Speaker",
       y = "Average Words Per Appearance") +
  theme_minimal() +
  theme(
    axis.text.x = element_text(angle = 90, hjust = 1, size = 8),  # Rotate x-axis labels for readabilit
    axis.text.y = element_text(size = 10)  # Keep y-axis labels readable
  )
```




```
# Create the bar plot showing only the top 20 speakers by average words per appearance
top20_speakers <- speaker_word_counts %>%
  slice_max(Average_Words_Per_Appearance, n = 20)

ggplot(top20_speakers, aes(x = reorder(Speaker, -Average_Words_Per_Appearance), y = Average_Words_Per_Ap
  geom_bar(stat = "identity", fill = "steelblue", alpha = 0.8) +
  labs(title = "Top 20 Speakers by Average Words Per Appearance",
       x = "Speaker",
       y = "Average Words Per Appearance") +
```

```
  theme_minimal() +
  theme(
    axis.text.x = element_text(angle = 90, hjust = 1, size = 8),  # Rotate x-axis labels for readabilit
    axis.text.y = element_text(size = 10)  # Keep y-axis labels readable
  )
```



Average Conversation Length by Topic

```
# Load required packages
library(readr)
library(dplyr)
library(tidyr)
library(ggplot2)
library(vistime)
library(lubridate)
library(stringr)  # For counting speakers

# Read the TSV file
file_path <- "data/Copy of inventory - Transcript inventory.tsv"
data <- read_tsv(file_path)
```

```
## Rows: 104 Columns: 22
## -- Column specification --------------------------------------------------------
## Delimiter: "\t"
## chr (21): date, speakers, original_n, in_book, in_online_archive, type, topi...
## dbl  (1): n
```

```
##
## 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.
```

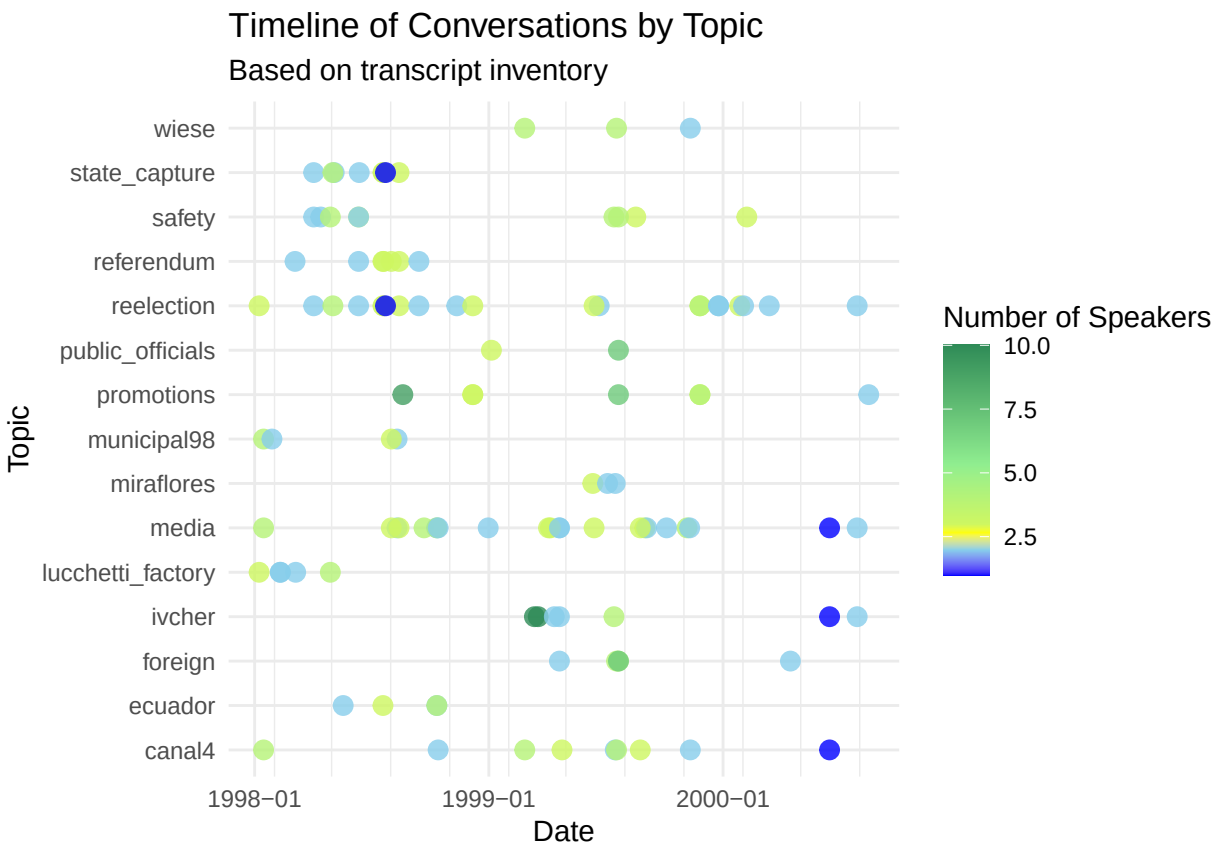
```
# Convert 'date' column to Date format and filter out dates before 1990
data <- data %>%
  mutate(date = mdy(date)) %>%
  filter(!is.na(date) & date >= as.Date("1990-01-01"))
```

```
## Warning: There was 1 warning in `mutate()`.
## i In argument: `date = mdy(date)`.
## Caused by warning:
## !  1 failed to parse.
```

```
# Count number of speakers
data <- data %>%
  mutate(num_speakers = ifelse(is.na(speakers), 0, str_count(speakers, ",") + 1))

# Select topic columns and reshape into long format
topic_columns <- names(data)[grepl("^topic_", names(data))]

long_data <- data %>%
  select(n, date, speakers, num_speakers, all_of(topic_columns)) %>%
  pivot_longer(cols = all_of(topic_columns), names_to = "topic", values_to = "present") %>%
  filter(!is.na(present)) %>%
  mutate(topic = gsub("topic_", "", topic))  # Remove "topic_" prefix for clarity

# Define a custom gradient with multiple breakpoints
ggplot(long_data, aes(x = date, y = topic, color = num_speakers)) +
  geom_point(size = 3, alpha = 0.8) +
  scale_color_gradientn(colors = c("blue", "skyblue", "yellow", "lightgreen", "seagreen"),
                        values = scales::rescale(c(min(long_data$num_speakers, na.rm = TRUE),
                                                   quantile(long_data$num_speakers, 0.25, na.rm = TRUE)
                                                   median(long_data$num_speakers, na.rm = TRUE),
                                                   quantile(long_data$num_speakers, 0.75, na.rm = TRUE)
                                                   max(long_data$num_speakers, na.rm = TRUE)))) +
  scale_x_date(date_breaks = "1 year", date_minor_breaks = "3 months", date_labels = "%Y-%m") +
  labs(title = "Timeline of Conversations by Topic",
       subtitle = "Based on transcript inventory",
       x = "Date",
       y = "Topic",
       color = "Number of Speakers") +
  theme_minimal()
```

```
## Warning in regularize.values(x, y, ties, missing(ties), na.rm = na.rm):
## collapsing to unique 'x' values
```

```
## Warning in regularize.values(x, y, ties, missing(ties), na.rm = na.rm):
## collapsing to unique 'x' values
## Warning in regularize.values(x, y, ties, missing(ties), na.rm = na.rm):
## collapsing to unique 'x' values
```



Summary Table

```
# Create a summary table counting occurrences of each unique value in "Type_Merged"
file <- "data/Copy of Master - transcript notes - Actors.tsv"
df <- read_tsv(file)
```

```
## New names:
## Rows: 93 Columns: 9
## -- Column specification
## -------------------------------------------------------- Delimiter: "\t" chr
## (8): ...1, Position, Type, Montesinos' inner circle, speaker_std, comple... lgl
## (1): ...7
## 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.
## * `` -> `...1`
## * `` -> `...7`
## * `` -> `...9`
```

```
#Verify column names
colnames(df)
```

```
## [1] "...1"                      "Position"
## [3] "Type"                      "Montesinos' inner circle"
## [5] "speaker_std"               "completed_bio"
## [7] "...7"                      "notes"
## [9] "...9"
```

```r
# Ensure column names are clean
colnames(df) <- gsub(" ", "_", colnames(df))   # Replace spaces with underscores
colnames(df) <- gsub("'", "", colnames(df))    # Remove apostrophes

# Fix NA values: Ensure we replace only when necessary
df$Type_Merged <- ifelse(!is.na(df$Montesinos_inner_circle) & df$Montesinos_inner_circle == "X",
                         "Inner Circle",
                         ifelse(!is.na(df$Type), df$Type, NA))

# Verify the result
head(df[, c("Type", "Montesinos_inner_circle", "Type_Merged")])
```

```
## # A tibble: 6 x 3
##   Type           Montesinos_inner_circle Type_Merged
##   <chr>          <chr>                   <chr>
## 1 Security       <NA>                    Security
## 2 <NA>           <NA>                    <NA>
## 3 Congress       X                       Inner Circle
## 4 Businessperson <NA>                    Businessperson
## 5 Congress       X                       Inner Circle
## 6 Government     X                       Inner Circle
```

```r
# Define output file path
output_file<-"data/transcript_notes_cleaned.tsv"

# Write the cleaned dataset to a new CSV file
write_csv(df, output_file)

# Confirm the file was saved
message("Cleaned dataset saved as: ", output_file)
```

```
## Cleaned dataset saved as: data/transcript_notes_cleaned.tsv
```

```r
type_summary <- df %>%
  group_by(Type_Merged) %>%
  summarise(Count = n(), .groups = "drop") %>%
  arrange(desc(Count))

# Print summary table
print(type_summary)
```

```
## # A tibble: 14 x 2
##    Type_Merged                 Count
##    <chr>                       <int>
##  1 Inner Circle                   33
##  2 <NA>                           16
##  3 Military or Police             11
##  4 Media                           8
##  5 Government                      6
##  6 Congress                        4
##  7 Foreign                         4
##  8 Businessperson                  3
##  9 Security                        2
## 10 Security rival                  2
## 11 Ally                            1
```

```
## 12 Front man                          1
## 13 Government, Judiciary              1
## 14 Military or Police, Government     1
```

Histograms (Vists by type & Inner Circle V Outer Circle)

```
# Load required libraries
install.packages("tidyverse")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
## (as 'lib' is unspecified)
```

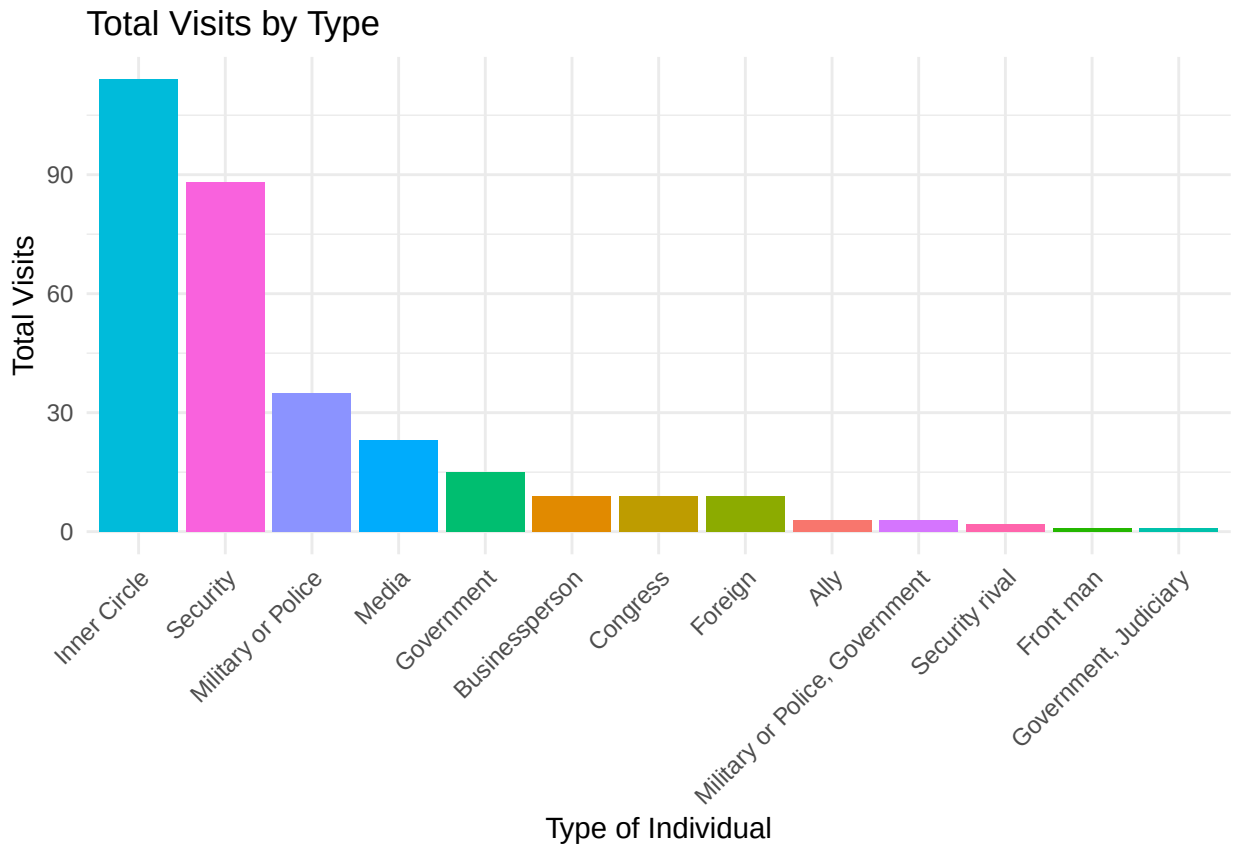
```
library(tidyverse)

# Set the directory where transcript files are stored
transcript_dir <- "data/modified_data/finalized_data"

# Get list of all CSV and TSV files
transcript_files <- list.files(path = transcript_dir, pattern = "\\.(csv|tsv)$", full.names = TRUE)

# Function to detect delimiter and read file correctly
read_transcript_file <- function(file_path) {
  if (grepl("\\.csv$", file_path)) {
    return(read_csv(file_path, col_types = cols()))
  } else if (grepl("\\.tsv$", file_path)) {
    return(read_tsv(file_path, col_types = cols()))
  } else {
    return(NULL)  # In case of an unexpected format
  }
}

# Initialize an empty dataframe to store speaker visits
speaker_visits <- tibble(speaker_std = character(), file_name = character())

# Loop through each transcript file and extract unique speaker_std values
for (file in transcript_files) {
  # Read file using the appropriate function
  df <- read_transcript_file(file)

  # Check if 'speaker_std' column exists in the file
  if (!is.null(df) && "speaker_std" %in% colnames(df)) {
    # Store unique speakers per file
    unique_speakers <- df %>%
      select(speaker_std) %>%
      distinct() %>%
      mutate(file_name = basename(file))

    # Append to the master visits dataframe
    speaker_visits <- bind_rows(speaker_visits, unique_speakers)
  }
}

# Count unique appearances per speaker (number of transcript files they appear in)
speaker_counts <- speaker_visits %>%
```

```
  group_by(speaker_std) %>%
  summarize(visits = n(), .groups = "drop")

# Load the master actors dataset
actors_file <- "data/transcript_notes_cleaned.tsv"
actors_data <- read_csv(actors_file, col_types = cols())

# Clean column names to match modifications
colnames(actors_data) <- colnames(actors_data) %>% str_replace_all(" ", "_") %>% str_replace_all("'", "

# Merge visits data with actor classifications
merged_data <- speaker_counts %>%
  left_join(actors_data %>% select(speaker_std, Type_Merged), by = "speaker_std")

# Count total visits by actor classification
visit_summary <- merged_data %>%
  group_by(Type_Merged) %>%
  summarize(total_visits = sum(visits, na.rm = TRUE), unique_speakers = n(), .groups = "drop")

# Display results
print(visit_summary)
```

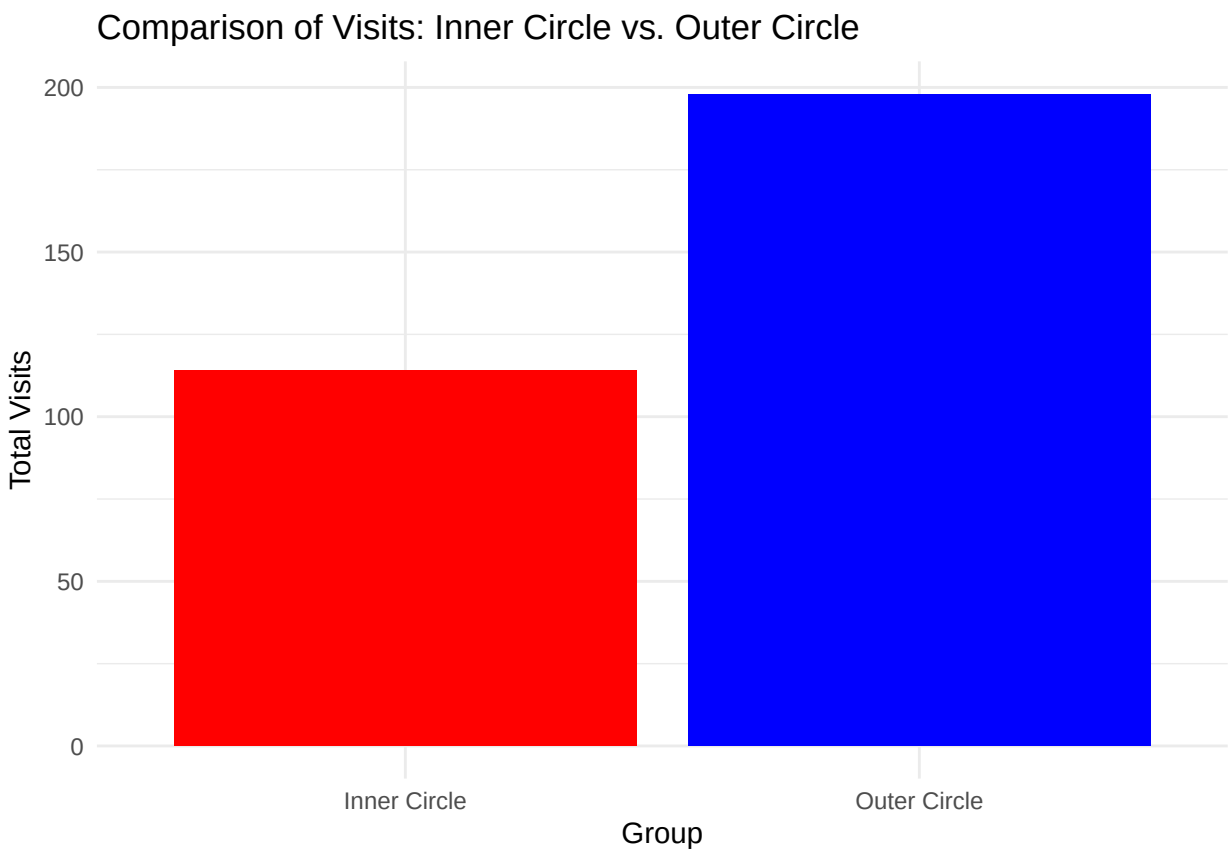
```
## # A tibble: 14 x 3
##    Type_Merged                    total_visits unique_speakers
##    <chr>                                 <int>           <int>
##  1 Ally                                      3               1
##  2 Businessperson                            9               3
##  3 Congress                                  9               4
##  4 Foreign                                   9               4
##  5 Front man                                 1               1
##  6 Government                               15               4
##  7 Government, Judiciary                     1               1
##  8 Inner Circle                            114              29
##  9 Media                                    23               5
## 10 Military or Police                       35              10
## 11 Military or Police, Government            3               1
## 12 Security                                 88               1
## 13 Security rival                            2               1
## 14 <NA>                                    234              54
```

```
# Optionally, save to CSV
write_csv(visit_summary, "data/visit_summary_by_type.csv")

# Load the summarized visit data
visit_summary <- read_csv("data/visit_summary_by_type.csv", col_types = cols())
visit_summary <- visit_summary %>% filter(!is.na(Type_Merged))

# Create a bar plot to visualize the total visits for each type
ggplot(visit_summary, aes(x = reorder(Type_Merged, -total_visits), y = total_visits, fill = Type_Merged
  geom_bar(stat = "identity", show.legend = FALSE) +  # Bar plot with total_visits as height
  labs(title = "Total Visits by Type",
       x = "Type of Individual",
       y = "Total Visits") +
  theme_minimal() +
```

```
  theme(axis.text.x = element_text(angle = 45, hjust = 1))  # Rotate x-axis labels for readability
```




```
# Create a new column categorizing Inner Circle vs. Outer Circle
visit_summary <- visit_summary %>%
  filter(!is.na(Type_Merged)) %>%
  mutate(circle_group = ifelse(Type_Merged == "Inner Circle", "Inner Circle", "Outer Circle"))

# Summarize total visits for each category
circle_summary <- visit_summary %>%
  group_by(circle_group) %>%
  summarize(total_visits = sum(total_visits, na.rm = TRUE), .groups = "drop")

# Create a bar plot to compare Inner Circle vs. Outer Circle
ggplot(circle_summary, aes(x = circle_group, y = total_visits, fill = circle_group)) +
  geom_bar(stat = "identity", show.legend = FALSE) +
  labs(title = "Comparison of Visits: Inner Circle vs. Outer Circle",
       x = "Group",
       y = "Total Visits") +
  theme_minimal() +
  scale_fill_manual(values = c("Inner Circle" = "red", "Outer Circle" = "blue"))  # Custom colors
```


Comparison of Visits: Inner Circle vs. Outer Circle
Total Visits
200
150
100
50
0
Inner Circle
Outer Circle
Group