

INF3104 Exercise 1

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```
# Load necessary packages
```

```
library(tidyverse)
```

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

```
## v dplyr      1.1.4      v readr      2.1.5
```

```
## v forcats    1.0.0      v stringr    1.5.1
```

```
## v ggplot2     3.4.4      v tibble     3.2.1
```

```
## v lubridate  1.9.3      v tidyr      1.3.0
```

```
## v purrr      1.0.2
```

```
## -- 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
```

```
library(janitor)
```

```
##
```

```
## Attaching package: 'janitor'
```

```
##
```

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

```
##
```

```
##      chisq.test, fisher.test
```

1)

```
# Number of ridings and party names
```

```
ridings <- 338
```

```
parties <- c("Liberal", "Conservative", "Bloc Québécois", "New Democratic", "Green", "Others")
```

```
# Simulate the election results
```

```
set.seed(154)
```

```
simulated_election_data <- tibble(
```

```
  riding_number = 1:ridings,
```

```
  elected_party = sample(parties, ridings, replace = TRUE)
```

```
)
```

```
# Display the first few rows of the simulated data
```

```
head(simulated_election_data)
```

```
## # A tibble: 6 x 2
```

```
##   riding_number elected_party
```

```
##           <int> <chr>
```

```
## 1             1 New Democratic
```

```
## 2          2 Conservative
## 3          3 New Democratic
## 4          4 Others
## 5          5 Liberal
## 6          6 Bloc Québécois
```

2)

```
# Load data
data <- read.csv("table_tableau11.csv")

# Display the first few rows of the data
head(data)
```

```
##                               Province
## 1 Newfoundland and Labrador/Terre-Neuve-et-Labrador
## 2 Newfoundland and Labrador/Terre-Neuve-et-Labrador
## 3 Newfoundland and Labrador/Terre-Neuve-et-Labrador
## 4 Newfoundland and Labrador/Terre-Neuve-et-Labrador
## 5 Newfoundland and Labrador/Terre-Neuve-et-Labrador
## 6 Newfoundland and Labrador/Terre-Neuve-et-Labrador
## Electoral.District.Name.Nom.de.circonscription
## 1                               Avalon
## 2                Bonavista--Burin--Trinity
## 3            Coast of Bays--Central--Notre Dame
## 4                               Labrador
## 5                Long Range Mountains
## 6            St. John's East/St. John's-Est
## Electoral.District.Number.Numéro.de.circonscription Population
## 1                               10001           86494
## 2                               10002           74116
## 3                               10003           77680
## 4                               10004           27197
## 5                               10005           86553
## 6                               10006           85697
## Electors.Électeurs Polling.Stations.Bureaux.de.scrutin
## 1                70903                230
## 2                59605                273
## 3                63631                244
## 4                20239                 87
## 5                70208                263
## 6                66963                179
## Valid.Ballots.Bulletins.valides
## 1                37144
## 2                29991
## 3                31834
## 4                9653
## 5                36447
## 6                38171
## Percentage.of.Valid.Ballots..Pourcentage.des.bulletins.valides
## 1                99.3
## 2                98.4
## 3                97.9
## 4                99.0
```

```

## 5 98.8
## 6 99.2
## Rejected.Ballots.Bulletins.rejetés
## 1 273
## 2 482
## 3 695
## 4 94
## 5 461
## 6 296
## Percentage.of.Rejected.Ballots..Pourcentage.des.bulletins.rejetés
## 1 0.7
## 2 1.6
## 3 2.1
## 4 1.0
## 5 1.2
## 6 0.8
## Total.Ballots.Cast.Total.des.bulletins.déposés
## 1 37417
## 2 30473
## 3 32529
## 4 9747
## 5 36908
## 6 38467
## Percentage.of.Voter.Turnout.Pourcentage.de.la.participation.électorale
## 1 52.8
## 2 51.1
## 3 51.1
## 4 48.2
## 5 52.6
## 6 57.4
## Elected.Candidate.Candidat.élu
## 1 McDonald, Ken Liberal/Libéral
## 2 Rogers, Churence Liberal/Libéral
## 3 Small, Clifford Conservative/Conservateur
## 4 Jones, Yvonne Liberal/Libéral
## 5 Hutchings, Gudie Liberal/Libéral
## 6 Thompson, Joanne Liberal/Libéral

```

3)

```

# Clean the column names and select the relevant columns
cleaned_elections_data <- data %>%
  clean_names() %>%
  select(electoral_district_name_nom_de_circonscription, elected_candidate_candidat_elu)

# Simplify the column names
cleaned_elections_data <- cleaned_elections_data %>%
  rename(riding = electoral_district_name_nom_de_circonscription,
         elected_candidate = elected_candidate_candidat_elu)

# Separate the elected candidate data
cleaned_elections_data <- cleaned_elections_data %>%
  separate(
    col = elected_candidate,

```

```

    into = c("party", "party_french"),
    sep = "/", extra = "merge") %>%
select(riding, party_french)

# Recode the French party names to English
cleaned_elections_data <- cleaned_elections_data %>%
  mutate(party = case_when(
    party_french == "Libéral" ~ "Liberal",
    party_french == "Conservateur" ~ "Conservative",
    party_french == "Bloc Québécois" ~ "Bloc Québécois",
    party_french == "NPD-Nouveau Parti démocratique" ~ "New Democratic",
    party_french == "Parti Vert" ~ "Green Party",
    TRUE ~ "Others"
  ))

# Display the cleaned data
head(cleaned_elections_data)

##           riding party_french party
## 1         Avalon   Libéral   Liberal
## 2 Bonavista--Burin--Trinity   Libéral   Liberal
## 3 Coast of Bays--Central--Notre Dame Conservateur Conservative
## 4         Labrador   Libéral   Liberal
## 5      Long Range Mountains   Libéral   Liberal
## 6   St. John's East/St. John's-Est   Libéral   Liberal

# Display the parties
unique(cleaned_elections_data$party_french)

## [1] "Libéral"           "Conservateur"
## [3] "Bloc Québécois"    "NPD-Nouveau Parti démocratique"
## [5] "Parti Vert"

unique(cleaned_elections_data$party)

## [1] "Liberal"           "Conservative"      "Bloc Québécois" "New Democratic"
## [5] "Green Party"

4)

# Count the number of seats won by each party
party_seat_counts <- cleaned_elections_data %>% count(party)

# Create a bar plot of the number of seats won by each party
ggplot(party_seat_counts, aes(x = fct_reorder(party, n), y = n, fill = party)) +
  geom_bar(stat = "identity") +
  labs(
    title = "Seats Won by Each Party in the 2021 Canadian Federal Election",
    x = "Party",
    y = "Number of Seats") +
  scale_fill_manual(values = c(
    "Liberal" = "deeppink",
    "Conservative" = "darkslategray3",
    "Bloc Québécois" = "mediumpurple1",
    "New Democratic" = "lightgoldenrod1",
    "Green Party" = "olivedrab2")) +

```

```
theme_minimal() +  
theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

