Explore the 2021 Canadian Federal Election

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```
#### Preamble ####
# Purpose: Read in data from the 2021 Canadian Federal Election and make
# a graph of the number of ridings won by each party.
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```

```
#### Workspace setup ####
# install.packages("tidyverse")
# install.packages("janitor")
# install.packages("tinytex")
library(tidyverse)
```

```
── Attaching core tidyverse packages ──────────────────────── tidyverse 2.0.0 ──
✔ dplyr     1.1.4     ✔ readr     2.1.4
✔ forcats   1.0.0     ✔ stringr   1.5.1
✔ ggplot2   3.4.4     ✔ tibble    3.2.1
✔ lubridate 1.9.3     ✔ tidyr     1.3.0
✔ purrr     1.0.2
── Conflicts ────────────────────────────────────────── tidyverse_conflicts() ──
✖ dplyr::filter() masks stats::filter()
✖ dplyr::lag()    masks stats::lag()
ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to
become errors
```

```
library(janitor)
```

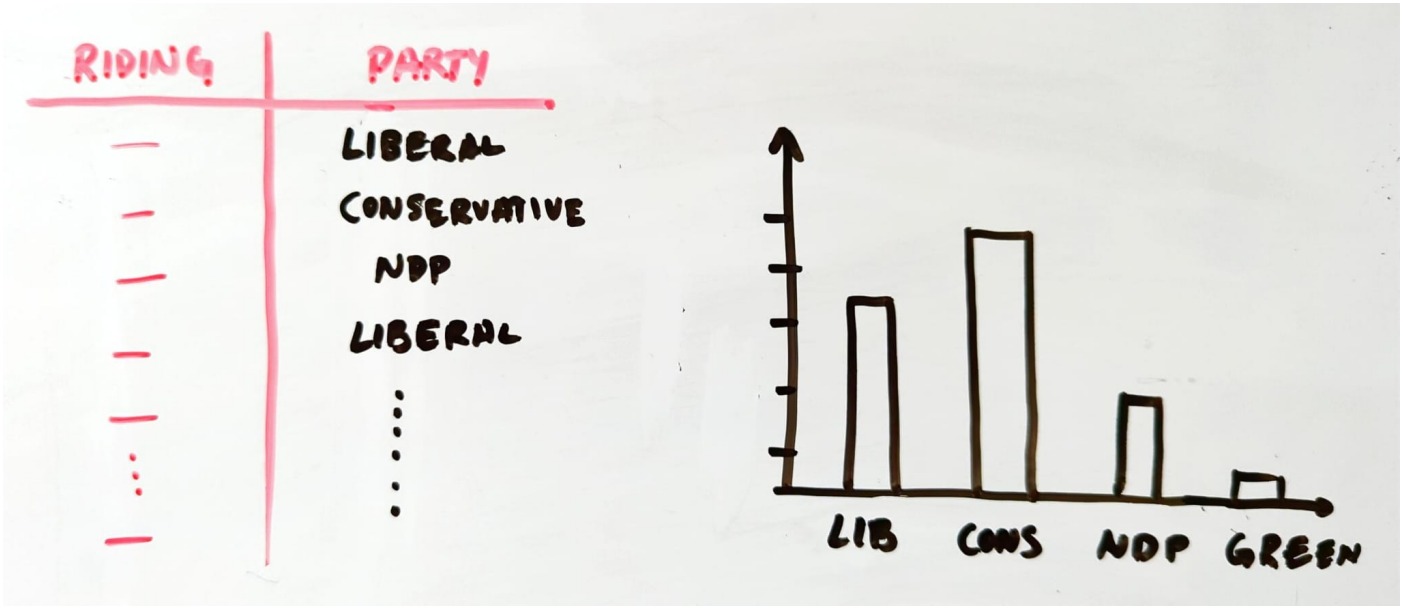
```
Attaching package: 'janitor'

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

    chisq.test, fisher.test
```

```
library(tinytex)
```

Plan



Representation of Graph and Dataset

Simulate

```
# Simulating data for the 2021 Canadian Federal Election
simulated_data <-
  tibble(
    # Use 1 through to 338 to represent each division
    "Riding" = 1:338,
    # Randomly pick an option, with replacement, 338 times
    "Party" = sample(
      x = c("Liberal", "Conservative", "Bloc Québécois", "New Democratic", "Green", "Othe
      size = 338,
      replace = TRUE
    )
  )

simulated_data
```

```
# A tibble: 338 × 2
   Riding Party
    <int> <chr>
 1      1 New Democratic
 2      2 Other
 3      3 Bloc Québécois
 4      4 Other
 5      5 Liberal
 6      6 Liberal
 7      7 Other
 8      8 Green
 9      9 Green
```

```
10     10 New Democratic
# ℹ 328 more rows
```

Acquire

```
# Download and Read the data
#### Read in the data ####
raw_elections_data <-
  read_csv(
    file =
      "table_tableau11.csv",
    show_col_types = FALSE,
  )
```

```
#### Basic cleaning ####
raw_elections_data <-
  read_csv(
    file = "canada_voting.csv",
    show_col_types = FALSE
  )
# Make the names easier to type by adjusting the name of the variable
cleaned_elections_data <-
  clean_names(raw_elections_data)

# First six rows of cleaned data
head(cleaned_elections_data)
```

```
# A tibble: 6 × 13
  province              electoral_district_n…¹ electoral_district_n…² population
  <chr>                 <chr>                                  <dbl>      <dbl>
1 Newfoundland and Lab… Avalon                                 10001      86494
2 Newfoundland and Lab… Bonavista--Burin--Tri…                 10002      74116
3 Newfoundland and Lab… Coast of Bays--Centra…                 10003      77680
4 Newfoundland and Lab… Labrador                               10004      27197
5 Newfoundland and Lab… Long Range Mountains                   10005      86553
6 Newfoundland and Lab… St. John's East/St. J…                 10006      85697
# ℹ abbreviated names: ¹electoral_district_name_nom_de_circonscription,
#   ²electoral_district_number_numero_de_circonscription
# ℹ 9 more variables: electors_electeurs <dbl>,
#   polling_stations_bureaux_de_scrutin <dbl>,
#   valid_ballots_bulletins_valides <dbl>,
#   percentage_of_valid_ballots_pourcentage_des_bulletins_valides <dbl>,
#   rejected_ballots_bulletins_rejetes <dbl>, …
```

```
# Renaming the variables of interest to English
cleaned_elections_data <- cleaned_elections_data |>
  select(
    electoral_district_name_nom_de_circonscription,
```

```
    elected_candidate_candidat_elu
  )

cleaned_elections_data <-
  cleaned_elections_data |>
  rename(
    riding = electoral_district_name_nom_de_circonscription,
    elected_candidate = elected_candidate_candidat_elu
  )

head(cleaned_elections_data)
```

```
# A tibble: 6 × 2
  riding                              elected_candidate
  <chr>                               <chr>
1 Avalon                              McDonald, Ken Liberal/Libéral
2 Bonavista--Burin--Trinity           Rogers, Churence Liberal/Libéral
3 Coast of Bays--Central--Notre Dame Small, Clifford Conservative/Conservateur
4 Labrador                            Jones, Yvonne Liberal/Libéral
5 Long Range Mountains                Hutchings, Gudie Liberal/Libéral
6 St. John's East/St. John's-Est      Thompson, Joanne Liberal/Libéral
```

```
# Seperate the Party Name and Clean the data from elected candidates
cleaned_elections_data <- cleaned_elections_data |>
  separate(
    col = elected_candidate,
    into = c("Other", "party"),
    sep = "/"
  ) |>
  select(-Other)

head(cleaned_elections_data)
```

```
# A tibble: 6 × 2
  riding                              party
  <chr>                               <chr>
1 Avalon                              Libéral
2 Bonavista--Burin--Trinity           Libéral
3 Coast of Bays--Central--Notre Dame Conservateur
4 Labrador                            Libéral
5 Long Range Mountains                Libéral
6 St. John's East/St. John's-Est      Libéral
```

```
# Renaming Party Names from French to English
cleaned_elections_data <- cleaned_elections_data |>
  mutate(
    party = recode(
      party,
      "Libéral" = "Liberal",
```

```
      "Conservateur" = "Conservative",
      "Bloc Québécois" = "Bloc Québécois",
      "NPD–Nouveau Parti démocratique" = "New Democratic",
      "Parti Vert" = "Green",
      "Autre" = "Other"
    )
  )

write_csv (
  x = cleaned_elections_data,
  file = "cleaned_elections_data.csv"
)

head(cleaned_elections_data)
```

```
# A tibble: 6 × 2
  riding                              party
  <chr>                               <chr>
1 Avalon                              Liberal
2 Bonavista--Burin--Trinity           Liberal
3 Coast of Bays--Central--Notre Dame Conservative
4 Labrador                            Liberal
5 Long Range Mountains                Liberal
6 St. John's East/St. John's-Est      Liberal
```

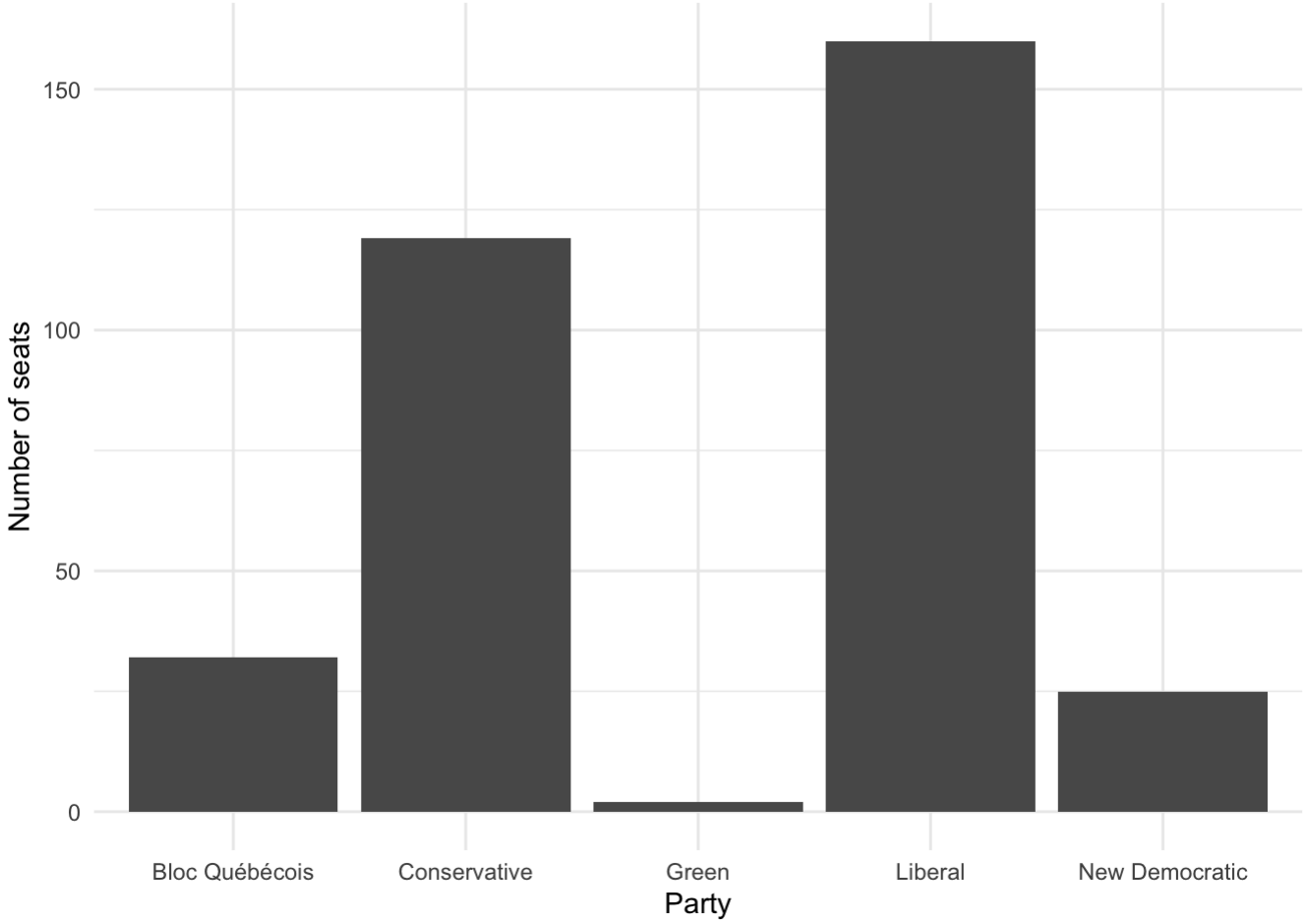
Explore

```
# Reading the data from CSV file
cleaned_elections_data <-
  read_csv(
    file = "cleaned_elections_data.csv",
    show_col_types = FALSE
  )
```

```
# Creating the table from the planning stage
cleaned_elections_data |>
  count(party)
```

```
# A tibble: 5 × 2
  party              n
  <chr>          <int>
1 Bloc Québécois    32
2 Conservative     119
3 Green              2
4 Liberal          160
5 New Democratic    25
```

```
# Building the graph of interest using ggplot2, from the planning stage
cleaned_elections_data |>
  ggplot(aes(x = party)) +
  geom_bar() +
  theme_minimal() +
  labs(x = "Party", y = "Number of seats")
```



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Canada is a parliamentary democracy with 338 seats in the House of Commons, which is the lower house and that from which government is formed. There are two major parties—"Liberal" and "Conservative"—three minor parties—"Bloc Québécois", "New Democratic", and "Green"—and many smaller parties and independents. We are interested in the number of seats that each party won in the 2021 Federal Election.

We downloaded the results, on riding specific basis, from the Election Canada data. We cleaned and tidied the dataset using the statistical programming language R [@citeR] including the `tidyverse` [@tidyverse] and `janitor` [@janitor]. We then created a graph of the number of seats that each political party won.

We found out that Liberal won 160 seats Conservative won 119 seats Bloc Québécois won 32 seats, New Democratic won 25 seats and Green won 2 seats making a total of 338 seats.

The distribution is skewed towards the major two parties Conservative and Liberal as they often form the majority goverment because of their strong presence pronvicial and country wise. It is interesting to see that Liberals and Conservative riding distribution is quite close, and will be an intersting next elections for federal government. Followed by Bloc Québécois who has strong presenece in French Speaking Province and New Democratic which are strongly increasing their presenece. It should be noted that dataset consists of everyone who voted, it is worth noting that in Canada there are pronvinces where voting is difficult to conduct and not all people vote for the federal elections.