Musterlösung mit Funktionen

Übungsaufgabe vom 22.05.2025

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Einleitung

In dieser erweiterten Musterlösungen wende ich **Funktionen** an, um den Code zu vereinfachen und Fehler durch Wiederholungen zu vermeiden. Die Annotation habe ich automatisert durch ChatGPT erstellen lassen.

Loading packages and data

```
if(!require("pacman")) {install.packages("pacman");library(pacman)}
p_load(here, rio, scales, tidyverse)

ces <- import(here("data", "ces_usa.csv"))
```

Preparing the data

```
# Define a function to rename factor levels
fct_rename <- function(x) {
  x = case_when(
    x == 1 ~ "very liberal",
    x == 2 ~ "liberal",
    x == 3 ~ "somewhat liberal",
    x == 4 ~ "middle of the road",
    x == 5 ~ "somewhat conservative",
    x == 6 ~ "conservative",
    x == 7 ~ "very conservative"
  )
}
```

```r
# Define the desired order of factor levels
ordered_levels <- c("very liberal", "liberal", "somewhat liberal",
                    "middle of the road", "somewhat conservative",
                    "conservative", "very conservative")

# Apply data transformations using dplyr and forcats
ces <- ces %>%

  # Create new columns 'ideo_ego' and 'ideo_scotus' with data from
  # 'CC22_340a' and 'CC22_340g' respectively
  mutate(ideo_ego = CC22_340a, ideo_scotus = CC22_340g) %>%

  # Apply the fct_rename function to columns starting with 'ideo_' and add
  # '_fac' at the end of the original column name
  mutate(across(starts_with("ideo_"), fct_rename, .names = "{.col}_fac")) %>%

  # Reorder levels in columns that end with '_fac'
  # based on 'ordered_levels' defined above
  mutate(across(ends_with("_fac"), \(x) fct_relevel(x, ordered_levels))) %>%

  # Filter out rows where either 'ideo_ego_fac' or 'ideo_scotus_fac' is NA
  filter(!is.na(ideo_ego_fac), !is.na(ideo_scotus_fac)) %>%

  # Group by 'ideo_ego_fac' and 'ideo_scotus_fac'
  #and summarize the number of observations in each group
  group_by(ideo_ego_fac, ideo_scotus_fac) %>%
  summarize(group_obs = n()) %>%

  # Calculate frequency and percentage based on
  # the number of observations in each group
  mutate(freq = group_obs / sum(group_obs),
         pct = round((freq * 100), 2))
```

Creating the plot

```r
# Create a ggplot with specified aesthetics
ggplot(data = ces, aes(x = ideo_ego_fac, y = pct, fill = ideo_scotus_fac)) +

  # Add a column chart layer
  geom_col() +

  # Use viridis color scale with reversed direction
  scale_fill_viridis_d(direction = -1) +

  # Set y-axis breaks at intervals of 10
```

```r
scale_y_continuous(breaks = seq(0, 100, by = 10)) +

# Flip the coordinates to create a horizontal bar chart
coord_flip() +

# Customize plot labels
labs(fill = NULL,  # Remove fill legend title
     x = "Ideological self-placement",  # X-axis label
     y = "Perceived position Supreme Court") +  # Y-axis label

# Use a minimal theme
theme_minimal() +

# Customize additional theme elements
theme(legend.position = "top",  # Move legend to the top
      axis.title = element_text(face = "bold"),  # Bold axis titles
      legend.text = element_text(size = 6),  # Set legend text size
      legend.key.size = unit(.3, 'cm'),  # Set legend key size
      plot.title = element_text(size = 10, face = "bold")) +

# Reverse the order of items in the legend
guides(fill = guide_legend(reverse = TRUE))
```

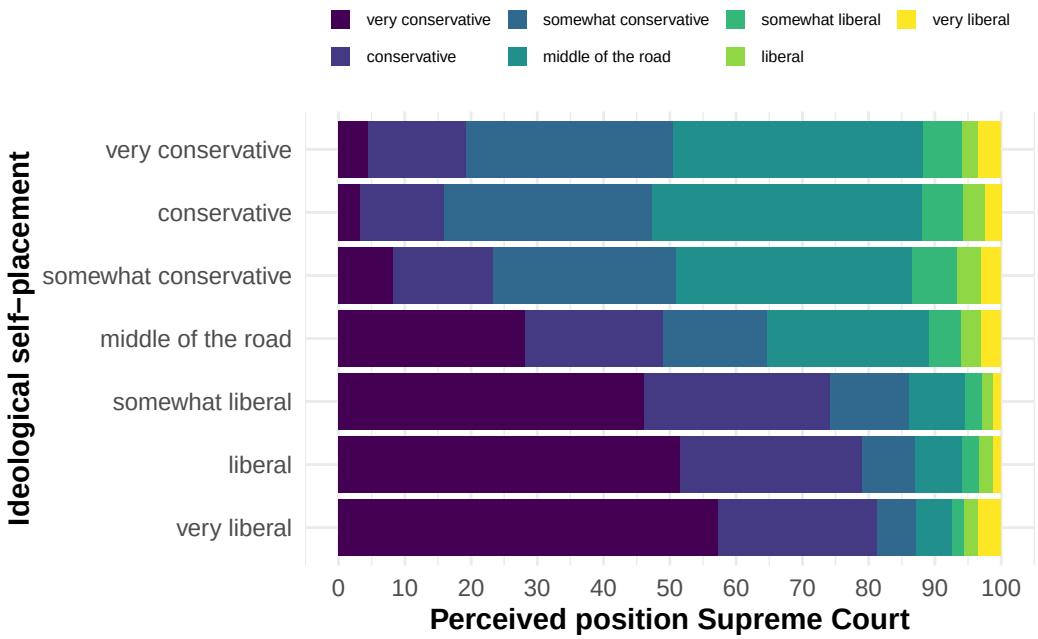

Figure 1: Die Sicht der US-Bürger:innen auf den Supreme Court.