FWER for all tables - split sample

2025-09-04

Family-Wise Error Rate for all tables

This script gathers all four scripts concerning the FWER correction on tables 1, 2, 3, and 4. It follows the project's regressions but executes them in three families each time: panel A for the whole sample, panel B for the subsample which did not have a gender reservation in 2005, and panel C for the subsample which did have a gender reservation in 2005.

Working directory to set up

Loading the required libraries

```
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   3.5.2     v tibble    3.3.0
## v lubridate 1.9.4     v tidyr     1.3.1
## v purrr     1.0.4
## -- 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(stargazer)
```

```
##
## Please cite as:
##
##  Hlavac, Marek (2022). stargazer: Well-Formatted Regression and Summary Statistics Tables.
##  R package version 5.2.3. https://CRAN.R-project.org/package=stargazer
```

```
library(knitr)
library(broom)
library(haven)
library(fixest)
library(modelsummary)
library(gt)
library(webshot2)
library(car)
```

```
## Loading required package: carData
##
## Attaching package: 'car'
##
## The following object is masked from 'package:dplyr':
```

```
##
##     recode
##
## The following object is masked from 'package:purrr':
##
##     some
```

```
library(multcomp)
```

```
## Loading required package: mvtnorm
## Loading required package: survival
## Loading required package: TH.data
## Loading required package: MASS
##
## Attaching package: 'MASS'
##
## The following object is masked from 'package:dplyr':
##
##     select
##
##
## Attaching package: 'TH.data'
##
## The following object is masked from 'package:MASS':
##
##     geyser
```

Table 1

Data and variables.

```
# Controls and dependent variables
gpcontrols <- c("GP_population", "GP_lit", "GP_sc", "GP_st", "GP_nbvillages",
                "RES00_gender", "RES00_obc", "RES00_sc", "RES00_st",
                "RES10_obc", "RES10_sc", "RES10_st", "RES05_obc", "RES05_sc", "RES05_st")
incum_dep_vars1 <- c("INC05_running", "INC05_voteshare",
                     "INCSPOUSE05_running", "INCSPOUSE05_voteshare",
                     "INCOTHER05_running", "INCOTHER05_voteshare")

# Loading and filtering the data
data <- read_dta("~/work/Electoral data cleaned.dta")
data_filtered <- data %>%
  filter(RES10_gender == 0 & SAMPLE_hhsurvey == 1 & GP_tag == 1 & INC05_can_run == 1) %>%
  mutate(
    FAMnotINC05_running = INCorFAM05_running - INC05_running,
    FAMnotINC05_voteshare = INCorFAM05_voteshare - INC05_voteshare,
    FAMnotINC05_won = INCorFAM05_won - INC05_won
  )
```

Functions concerning the regressions, the extraction and adjustment of the p-values, and collecting the results for each panel's models.

```
# Function for regression formulas
create_formula <- function(dep_var, model_type) {
  base_controls <- paste(gpcontrols, collapse = " + ")
  if (model_type == "any_treatment") {
```

```
    formula_str <- paste(dep_var, "~ INT_treatment + RES05_gender + INT_treatment:RES05_gender +",
                         base_controls, "+ factor(district)")
  } else if (model_type == "gender_general") {
    formula_str <- paste(dep_var, "~ INT_treatment_gender + INT_treatment_general + RES05_gender + INT_
                         base_controls, "+ factor(district)")
  }
  return(as.formula(formula_str))
}


# Function to extract p-values and apply fwer correction
get_adjusted_pvalues <- function(models, var_names) {
  all_pvalues <- c()
  for (model in models) {
    coef_table <- summary(model)$coefficients
    pvals <- coef_table[var_names, "Pr(>|t|)", drop = FALSE]
    all_pvalues <- c(all_pvalues, as.numeric(pvals))
  }
  adjusted_pvalues <- p.adjust(all_pvalues, method = "holm")
  return(data.frame(raw = all_pvalues, adjusted = adjusted_pvalues))
}


# Model estimation for each panel
models_list <- list()
control_means <- list()

# Panel A : mean effect, whole sample of observations
for (i in 1:length(incum_dep_vars1)) {
  dep_var <- incum_dep_vars1[i]
  control_mean <- data_filtered %>%
    filter(INT_treatment == 0 & RES05_gender == 0) %>%
    summarise(mean = mean(!!sym(dep_var), na.rm = TRUE)) %>%
    pull(mean) %>%
    round(2)
  control_means[[i]] <- control_mean
  formula <- create_formula(dep_var, "any_treatment")
  model <- lm(formula, data = data_filtered)
  models_list[[paste0("A_", i)]] <- model
}

# Panel B : RES05_gender == 0
data_panel_B <- data_filtered %>% filter(RES05_gender == 0)
for (i in 1:length(incum_dep_vars1)) {
  dep_var <- incum_dep_vars1[i]
  control_mean <- data_panel_B %>%
    filter(INT_treatment == 0) %>%
    summarise(mean = mean(!!sym(dep_var), na.rm = TRUE)) %>%
    pull(mean) %>%
    round(2)
  control_means[[i + length(incum_dep_vars1)]] <- control_mean
  formula <- create_formula(dep_var, "any_treatment")
  model <- lm(formula, data = data_panel_B)
```

```
  models_list[[paste0("B_", i)]] <- model
}

# Panel C : RES05_gender == 1
data_panel_C <- data_filtered %>% filter(RES05_gender == 1)
for (i in 1:length(incum_dep_vars1)) {
  dep_var <- incum_dep_vars1[i]
  control_mean <- data_panel_C %>%
    filter(INT_treatment == 0) %>%
    summarise(mean = mean(!!sym(dep_var), na.rm = TRUE)) %>%
    pull(mean) %>%
    round(2)
  control_means[[i + 2 * length(incum_dep_vars1)]] <- control_mean
  formula <- create_formula(dep_var, "any_treatment")
  model <- lm(formula, data = data_panel_C)
  models_list[[paste0("C_", i)]] <- model
}


# Variables for each panel
# Knowing that by construction, no variation of RES05_gender in B, C
panel_A_vars <- c("INT_treatment", "RES05_gender", "INT_treatment:RES05_gender")
panel_B_vars <- c("INT_treatment")  # RES05_gender constant = 0
panel_C_vars <- c("INT_treatment")  # RES05_gender constant = 1



# Extracting the models for each panel
panel_A_models <- models_list[1:6]
panel_B_models <- models_list[7:12]
panel_C_models <- models_list[13:18]

# Implementation of FWER correction
pvalues_panel_A <- get_adjusted_pvalues(panel_A_models, panel_A_vars)
pvalues_panel_B <- get_adjusted_pvalues(panel_B_models, panel_B_vars)
pvalues_panel_C <- get_adjusted_pvalues(panel_C_models, panel_C_vars)


# Function to extract the adjusted p-values
get_pvals_by_var <- function(pvalues_df, var_names, n_models) {
  pvals_list <- list()
  for (i in 1:length(var_names)) {
    var <- var_names[i]
    idx <- seq(i, nrow(pvalues_df), by = length(var_names))
    pvals_list[[var]] <- pvalues_df$adjusted[idx]
  }
  return(pvals_list)
}

pvals_A_by_var <- get_pvals_by_var(pvalues_panel_A, panel_A_vars, length(panel_A_models))
pvals_B_by_var <- get_pvals_by_var(pvalues_panel_B, panel_B_vars, length(panel_B_models))
pvals_C_by_var <- get_pvals_by_var(pvalues_panel_C, panel_C_vars, length(panel_C_models))
```

Function to display the results.

```r
# Function to display the results
print_panel_results <- function(models, var_names, pvalues_by_var, panel_name) {
  cat("\n\n========================================================================\n")
  cat(panel_name, "\n")
  cat("========================================================================\n\n")
  for (i in 1:length(models)) {
    model <- models[[i]]
    coef_table <- summary(model)$coefficients
    dep_var_name <- col_names[i]
    cat("--- ", dep_var_name, " ---\n")
    cat("Variable          | Coeff (Std. Error) | p-value | FWER-adj p\n")
    cat("------------------|--------------------|---------|------------\n")
    for (var in var_names) {
      if (var %in% rownames(coef_table)) {
        coef_val <- round(coef_table[var, "Estimate"], 4)
        se_val <- round(coef_table[var, "Std. Error"], 4)
        pval_raw <- round(coef_table[var, "Pr(>|t|)"], 4)
        pval_adj <- round(pvalues_by_var[[var]][i], 4)
        cat(sprintf("%-18s | %4.3f (%4.3f)       | %5.4f   | %6.4f\n",
                    var, coef_val, se_val, pval_raw, pval_adj))
      }
    }
    cat("\n")
  }
}

# names to display
col_names <- c("Incumbent Runs", "Incumbent Vote Share",
               "Incumbent Spouse Runs", "Incumbent Spouse Vote Share",
               "Other Family Member Runs", "Other Family Member Vote Share")

# Displaying the results (print)
print_panel_results(panel_A_models, panel_A_vars, pvals_A_by_var, "PANEL A: Average Effects")
```

```
##
##
## ========================================================================
## PANEL A: Average Effects
## ========================================================================
##
## ---  Incumbent Runs  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | -0.262 (0.094)       | 0.0062   | 0.0934
## RES05_gender       | -0.376 (0.107)       | 0.0006   | 0.0093
## INT_treatment:RES05_gender | 0.356 (0.141)       | 0.0124   | 0.1368
##
## ---  Incumbent Vote Share  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | -6.265 (2.353)       | 0.0087   | 0.1136
## RES05_gender       | -10.223 (2.652)       | 0.0002   | 0.0031
## INT_treatment:RES05_gender | 9.127 (3.522)       | 0.0107   | 0.1281
##
```

```
## ---  Incumbent Spouse Runs  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 0.057 (0.074)       | 0.4447   | 1.0000
## RES05_gender       | 0.364 (0.084)       | 0.0000   | 0.0005
## INT_treatment:RES05_gender | -0.274 (0.111)       | 0.0144   | 0.1442
##
## ---  Incumbent Spouse Vote Share  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 1.044 (1.884)       | 0.5805   | 1.0000
## RES05_gender       | 5.761 (2.124)       | 0.0076   | 0.1063
## INT_treatment:RES05_gender | -4.683 (2.820)       | 0.0993   | 0.7391
##
## ---  Other Family Member Runs  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 0.112 (0.066)       | 0.0924   | 0.7391
## RES05_gender       | -0.148 (0.075)       | 0.0497   | 0.4470
## INT_treatment:RES05_gender | 0.030 (0.099)       | 0.7615   | 1.0000
##
## ---  Other Family Member Vote Share  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 1.826 (1.506)       | 0.2273   | 1.0000
## RES05_gender       | -2.047 (1.697)       | 0.2299   | 1.0000
## INT_treatment:RES05_gender | 1.777 (2.254)       | 0.4320   | 1.0000
```

```
print_panel_results(panel_B_models, panel_B_vars, pvals_B_by_var, "PANEL B: No Quota in 2005")
```

```
##
##
## ========================================================================
## PANEL B: No Quota in 2005
## ========================================================================
##
## ---  Incumbent Runs  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | -0.280 (0.102)       | 0.0078   | 0.0401
##
## ---  Incumbent Vote Share  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | -7.214 (2.582)       | 0.0067   | 0.0401
##
## ---  Incumbent Spouse Runs  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 0.070 (0.054)       | 0.2005   | 0.4971
##
## ---  Incumbent Spouse Vote Share  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 0.650 (1.181)       | 0.5836   | 0.5836
```

```
##
## ---  Other Family Member Runs  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 0.106 (0.068)       | 0.1232   | 0.4929
##
## ---  Other Family Member Vote Share  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 1.377 (0.983)       | 0.1657   | 0.4971
```

```
print_panel_results(panel_C_models, panel_C_vars, pvals_C_by_var, "PANEL C: Quota in 2005")
```

```
##
##
## ========================================================================
## PANEL C: Quota in 2005
## ========================================================================
##
## ---  Incumbent Runs  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 0.100 (0.108)       | 0.3581   | 0.7162
##
## ---  Incumbent Vote Share  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 1.800 (2.386)       | 0.4551   | 0.7162
##
## ---  Incumbent Spouse Runs  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | -0.257 (0.120)       | 0.0382   | 0.2074
##
## ---  Incumbent Spouse Vote Share  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | -4.781 (3.348)       | 0.1609   | 0.6435
##
## ---  Other Family Member Runs  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 0.161 (0.074)       | 0.0346   | 0.2074
##
## ---  Other Family Member Vote Share  ---
## Variable          | Coeff (Std. Error) | p-value | FWER-adj p
## ------------------|--------------------|---------|------------
## INT_treatment      | 3.435 (2.458)       | 0.1698   | 0.6435
```

Function to generate the .tex script.

```
#### Output in .tex file ####

# output path
output_path <- "~/work/FWER_table1.tex"
```

```r
# Referencing the variable's names
var_labels <- c(
  "INT_treatment" = "Treatment",
  "RES05_gender" = "Reserved for Women (2005)",
  "INT_treatment:RES05_gender" = "Treatment × Reserved for Women (2005)"
)

# List of dependent variables, in the order of the models
dep_var_labels <- c(
  "Incumbent Runs",
  "Incumbent Vote Share",
  "Incumbent Spouse Runs",
  "Incumbent Spouse Vote Share",
  "Other Family Member Runs",
  "Other Family Member Vote Share"
)

# Extract models' results, with the right labels
extract_panel_results <- function(models, var_names, pvals_by_var, var_labels) {
  panel_results <- list()
  for (i in 1:length(models)) {
    model <- models[[i]]
    coef_table <- summary(model)$coefficients

    # extract coeffs, std errors, p-values
    coefs <- data.frame(
      Variable = rownames(coef_table),
      Coeff = coef_table[, "Estimate"],
      SE = coef_table[, "Std. Error"],
      P = coef_table[, "Pr(>|t|)"]
    )

    # add adjusted p-values
    for (var in var_names) {
      if (var %in% rownames(coef_table)) {
        idx <- which(var_names == var)
        coefs$FWER[coefs$Variable == var] <- pvals_by_var[[var]][i]
      }
    }

    # filter
    coefs <- coefs[coefs$Variable %in% var_names, ]

    # replace variables' names by labels (for compilation purposes)
    coefs$Variable <- var_labels[coefs$Variable]

    panel_results[[i]] <- coefs
  }
  return(panel_results)
}


# Function to write the results in a .tex
```

```
write_panel_to_tex <- function(file_path, panel_name, panel_results) {
  file <- file(file_path, open = "at")

  cat("\\begin{table}[htbp]\n", file = file)
  cat("\\centering\n", file = file)
  cat("\\caption{", panel_name, "}\n", file = file)
  cat("\\label{tab:", gsub(" ", "_", tolower(panel_name)), "}\n", file = file)
  cat("\\begin{tabular}{lccc}\n", file = file)
  cat("\\toprule\n", file = file)
  cat("\\multicolumn{4}{c}{", panel_name, "} \\\\\n", file = file)
  cat("\\midrule\n", file = file)

  for (i in 1:length(panel_results)) {
    result <- panel_results[[i]]
    dep_var_label <- dep_var_labels[i]

    # add a line with the name of the dpdt variable
    cat("\\multicolumn{4}{l}{\\textbf{", dep_var_label, "}} \\\\\n", file = file)
    cat("\\cmidrule(lr){1-4}\n", file = file)
    cat("Variable & Coefficient (Std. Error) & p-value & FWER-adj p \\\\\n", file = file)
    cat("\\midrule\n", file = file)

    for (j in 1:nrow(result)) {
      var_name <- result$Variable[j]
      coef_val <- round(result$Coeff[j], 4)
      se_val <- round(result$SE[j], 4)
      p_val <- round(result$P[j], 4)
      fwer_p <- round(result$FWER[j], 4)

      cat(var_name, " & ", coef_val, " (", se_val, ") & ", p_val, " & ", fwer_p, " \\\\\n", file = file)
    }
  }

  cat("\\bottomrule\n", file = file)
  cat("\\end{tabular}\n", file = file)
  cat("\\end{table}\n\n", file = file)

  close(file)
}

# Initiation of the .tex script
file <- file(output_path, open = "wt")
cat(
  c(
    "\\documentclass{article}",
    "\\usepackage{booktabs}",
    "\\usepackage[utf8]{inputenc}",
    "\\usepackage{amsmath}",
    "\\begin{document}\n"
  ),
  file = file,
  sep = "\n"
)
```

```
close(file)

# Extract results for each panel
panel_A_results <- extract_panel_results(panel_A_models, panel_A_vars, pvals_A_by_var, var_labels)
panel_B_results <- extract_panel_results(panel_B_models, panel_B_vars, pvals_B_by_var, var_labels)
panel_C_results <- extract_panel_results(panel_C_models, panel_C_vars, pvals_C_by_var, var_labels)

# Write each panel in the .tex
write_panel_to_tex(output_path, "PANEL A: Average Effects", panel_A_results)
write_panel_to_tex(output_path, "PANEL B: No Quota in 2005", panel_B_results)
write_panel_to_tex(output_path, "PANEL C: Quota in 2005", panel_C_results)

file <- file(output_path, open = "at")
cat("\\end{document}", file = file)
close(file)
```

Table 2

Data and variables.

```
# Define control variables
gpcontrols <- c("GP_population", "GP_lit", "GP_sc", "GP_st", "GP_nbvillages",
                "RES00_gender", "RES00_obc", "RES00_sc", "RES00_st",
                "RES10_obc", "RES10_sc", "RES10_st", "RES05_obc", "RES05_sc", "RES05_st")

# Load data
data <- read_dta("~/work/Electoral data cleaned.dta")

# Filter data
data_filtered <- data %>%
  filter(RES10_gender == 0, SAMPLE_hhsurvey == 1, GP_tag == 1, INC05_can_run == 1) %>%
  mutate(
    FAMnotINC05_running = INCFAM05_running - INC05_running,
    FAMnotINC05_voteshare = INCFAM05_voteshare - INC05_voteshare,
    FAMnotINC05_won = INCFAM05_won - INC05_won
  )

# Generating performance indices
data_filtered <- data_filtered %>%
  mutate(
    index_empl_svy_0 = rowMeans(cbind(`std_HH_NREGA`, `std_HH_NREGA_unmet_demand_m`, `std_HH_NREGA_unme
    index_empl_svy_1 = rowMeans(cbind(`std_HH_NREGA_unmet_demand`, `std_HH_NREGA_unmet_demand_m`, `std_
                                      `std_HH_NREGA_waiting_time_m`, `std_HH_NREGA_waiting_time_f`, `st
                                      `std_HH_NREGA_work_m`, `std_HH_NREGA_work_f`), na.rm = TRUE),
    index_empl_svy_2 = rowMeans(cbind(`std_HH_NREGA`, `std_HH_NREGA_work_m`, `std_HH_NREGA_work_f`), na
    index_empl_svy_3 = rowMeans(cbind(`std_HH_NREGA_unmet_demand_m`, `std_HH_NREGA_unmet_demand_f`), na
  )

# Dependent variables
incum_dep_vars1 <- c("INC05_running", "INC05_voteshare", "INC05_won",
                     "INCSPOUSE05_running", "INCSPOUSE05_voteshare", "INCSPOUSE05_won",
                     "INCOTHER05_running", "INCOTHER05_voteshare", "INCOTHER05_won")
indices <- c("index_empl_svy_0", "index_empl_svy_1", "index_empl_svy_2", "index_empl_svy_3")
```

Functions regarding the regressions, the extraction and adjustment of the p-values, and collecting the results of each panel's models.

```
# Estimation of the models
models_list <- list()
control_means <- numeric(length(incum_dep_vars1) * length(indices) * 3)  # 3 panels now

i <- 0

# Estimation of the models
models_list <- list()
control_means <- numeric(length(incum_dep_vars1) * length(indices) * 3)  # 3 panels now
i <- 0

# Panel A and B: Loop over gender (0 and 1)
for (x in 0:1) {
  for (dep_var in incum_dep_vars1) {
    for (index in indices) {
      i <- i + 1

      # control mean
      control_mean <- data_filtered %>%
        filter(INT_treatment == 0 & RES05_gender == x) %>%
        summarise(mean = mean(!!sym(dep_var), na.rm = TRUE)) %>%
        pull(mean) %>%
        round(2)

      control_means[i] <- control_mean

      # interaction variables
      data_filtered <- data_filtered %>%
        mutate(
          TEMP_index = get(index),
          TEMP_X_res_index = RES05_gender * get(index),
          TEMP_X_anytr_index = INT_treatment * get(index)
        )

      # model estimation
      all_vars <- c(dep_var, "INT_treatment", "TEMP_index", "TEMP_X_anytr_index", gpcontrols, "district
      if (all(all_vars %in% names(data_filtered))) {
        formula <- as.formula(paste(dep_var, "~ INT_treatment + TEMP_index + TEMP_X_anytr_index +",
                                    paste(gpcontrols, collapse = " + "), "+ factor(district)"))
        model <- tryCatch({
          lm(formula, data = data_filtered %>% filter(RES05_gender == x))
        }, error = function(e) {
          message("Error in model fitting: ", e$message)
          NULL
        })

        models_list[[i]] <- model
      }
    }
  }
}
```

```r
# Panel C: All cases (no filter on RES05_gender)
for (dep_var in incum_dep_vars1) {
  for (index in indices) {
    i <- i + 1

    # control mean
    control_mean <- data_filtered %>%
      filter(INT_treatment == 0) %>%
      summarise(mean = mean(!!sym(dep_var), na.rm = TRUE)) %>%
      pull(mean) %>%
      round(2)

    control_means[i] <- control_mean

    # interaction variables
    data_filtered <- data_filtered %>%
      mutate(
        TEMP_index = get(index),
        TEMP_X_anytr_index = INT_treatment * get(index)
      )

    # model estimation
    all_vars <- c(dep_var, "INT_treatment", "TEMP_index", "TEMP_X_anytr_index", gpcontrols, "district")
    if (all(all_vars %in% names(data_filtered))) {
      formula <- as.formula(paste(dep_var, "~ INT_treatment + TEMP_index + TEMP_X_anytr_index +",
                                  paste(gpcontrols, collapse = " + "), "+ factor(district)"))
      model <- tryCatch({
        lm(formula, data = data_filtered)
      }, error = function(e) {
        message("Error in model fitting: ", e$message)
        NULL
      })

      models_list[[i]] <- model
    }
  }
}

outregvar2 <- c("INT_treatment", "TEMP_index", "TEMP_X_anytr_index")

# Panel A models
selected_models_A <- c(1, 5, 13, 17, 25, 29)
panel_A_models_selected <- models_list[selected_models_A]

# Panel B models
selected_models_B <- c(37, 41, 49, 53, 61, 65)
panel_B_models_selected <- models_list[selected_models_B]

# Panel C models (new)
selected_models_C <- c(73, 77, 85, 89, 97, 101)
panel_C_models_selected <- models_list[selected_models_C]

# Function to extract p-values and apply FWER correction
```

```r
get_adjusted_pvalues_selected <- function(models, var_names) {
  all_pvalues <- c()
  for (model in models) {
    if (!is.null(model)) {
      coef_table <- summary(model)$coefficients
      pvals <- coef_table[var_names, "Pr(>|t|)", drop = FALSE]
      all_pvalues <- c(all_pvalues, as.numeric(pvals))
    }
  }
  adjusted_pvalues <- p.adjust(all_pvalues, method = "holm")
  return(data.frame(raw = all_pvalues, adjusted = adjusted_pvalues))
}

# Implement FWER correction
pvalues_panel_A_selected <- get_adjusted_pvalues_selected(panel_A_models_selected, outregvar2)
pvalues_panel_B_selected <- get_adjusted_pvalues_selected(panel_B_models_selected, outregvar2)
pvalues_panel_C_selected <- get_adjusted_pvalues_selected(panel_C_models_selected, outregvar2)

# Function to extract adjusted p-values for each variable, for each model
get_pvals_by_var_selected <- function(pvalues_df, var_names, n_models) {
  pvals_list <- list()
  for (i in 1:length(var_names)) {
    var <- var_names[i]
    idx <- seq(i, nrow(pvalues_df), by = length(var_names))
    pvals_list[[var]] <- pvalues_df$adjusted[idx]
  }
  return(pvals_list)
}

# Extract adjusted p-values for the relevant models
pvals_A_by_var_selected <- get_pvals_by_var_selected(pvalues_panel_A_selected, outregvar2, length(panel
pvals_B_by_var_selected <- get_pvals_by_var_selected(pvalues_panel_B_selected, outregvar2, length(panel
pvals_C_by_var_selected <- get_pvals_by_var_selected(pvalues_panel_C_selected, outregvar2, length(panel
```

Function to display the results.

```r
# Function to print results (with both p-values)
print_selected_results <- function(models, var_names, pvalues_by_var, panel_name, control_means, indices
  cat("\n\n================================================================================\n")
  cat(panel_name, "\n")
  cat("================================================================================\n\n")

  for (i in 1:length(selected_models)) {
    model_index <- selected_models[i]
    model <- models[[model_index]]
    if (!is.null(model)) {
      coef_table <- summary(model)$coefficients
      dep_var_name <- incum_dep_vars1[(model_index-1) %% length(incum_dep_vars1) + 1]
      index_name <- indices[(model_index-1) %/% length(incum_dep_vars1) + 1]

      cat("--- Model ", selected_models[i], ": ", "" , " (Index: ", index_name, ") ---\n", sep = "")
      cat("Variable                    | Coeff (Std. Error) | p-value | FWER-adj p\n")
      cat("----------------------------|--------------------|---------|------------\n")
```

```
      for (var in var_names) {
        if (var %in% rownames(coef_table)) {
          coef_val <- round(coef_table[var, "Estimate"], 4)
          se_val <- round(coef_table[var, "Std. Error"], 4)
          pval_raw <- round(coef_table[var, "Pr(>|t|)"], 4)
          pval_adj <- round(pvalues_by_var[[var]][i], 4)

          stars <- ifelse(pval_adj < 0.01, "***",
                          ifelse(pval_adj < 0.05, "**",
                                 ifelse(pval_adj < 0.1, "*", "")))

          cat(sprintf("%-28s | %4.3f (%4.3f)       | %5.4f   | %6.4f%s\n",
                      var, coef_val, se_val, pval_raw, pval_adj, stars))
        }
      }
      cat("Mean in Control not WR in 2005: ", control_means[model_index], "\n")
      cat("Observations: ", nobs(model), "\n")
    }
  }
}

# Print results for Panel A
print_selected_results(models_list, outregvar2, pvals_A_by_var_selected,
                       "SELECTED MODELS: GP without Gender Quota in 2005",
                       control_means, indices, incum_dep_vars1, selected_models_A)
```

```
##
##
## ======================================================================
## SELECTED MODELS: GP without Gender Quota in 2005
## ======================================================================
##
## --- Model 1:  (Index: index_empl_svy_0) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|-----------
## INT_treatment                | -0.266 (0.101)       | 0.0104   | 0.1769
## TEMP_index                   | -0.089 (0.069)       | 0.2042   | 1.0000
## TEMP_X_anytr_index           | 0.235 (0.114)       | 0.0418   | 0.6263
## Mean in Control not WR in 2005:  0.46
## Observations:  92
## --- Model 5:  (Index: index_empl_svy_0) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|-----------
## INT_treatment                | -6.761 (2.515)       | 0.0090   | 0.1622
## TEMP_index                   | -3.031 (1.713)       | 0.0813   | 1.0000
## TEMP_X_anytr_index           | 7.048 (2.821)       | 0.0148   | 0.2374
## Mean in Control not WR in 2005:  10.1
## Observations:  90
## --- Model 13:  (Index: index_empl_svy_1) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|-----------
## INT_treatment                | 0.066 (0.055)       | 0.2310   | 1.0000
## TEMP_index                   | 0.014 (0.037)       | 0.7131   | 1.0000
## TEMP_X_anytr_index           | -0.055 (0.061)       | 0.3722   | 1.0000
```

```
## Mean in Control not WR in 2005:  0.04
## Observations:  92
## --- Model 17:  (Index: index_empl_svy_1) ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | 0.597 (1.200)      | 0.6203  | 1.0000
## TEMP_index                  | -0.162 (0.817)     | 0.8432  | 1.0000
## TEMP_X_anytr_index          | -0.437 (1.345)     | 0.7461  | 1.0000
## Mean in Control not WR in 2005:  0.73
## Observations:  90
## --- Model 25:  (Index: index_empl_svy_2) ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | 0.104 (0.069)      | 0.1384  | 1.0000
## TEMP_index                  | -0.016 (0.047)     | 0.7348  | 1.0000
## TEMP_X_anytr_index          | -0.018 (0.078)     | 0.8165  | 1.0000
## Mean in Control not WR in 2005:  0.08
## Observations:  92
## --- Model 29:  (Index: index_empl_svy_3) ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | 1.441 (0.995)      | 0.1519  | 1.0000
## TEMP_index                  | -0.507 (0.677)     | 0.4567  | 1.0000
## TEMP_X_anytr_index          | 1.053 (1.115)      | 0.3483  | 1.0000
## Mean in Control not WR in 2005:  0.86
## Observations:  90
```

```r
# Print results for Panel B
print_selected_results(models_list, outregvar2, pvals_B_by_var_selected,
                       "SELECTED MODELS: GP with Gender Quota in 2005",
                       control_means, indices, incum_dep_vars1, selected_models_B)
```

```
##
##
## ========================================================================
## SELECTED MODELS: GP with Gender Quota in 2005
## ========================================================================
##
## --- Model 37:  (Index: NA) ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | 0.150 (0.113)      | 0.1912  | 1.0000
## TEMP_index                  | -0.033 (0.121)     | 0.7839  | 1.0000
## TEMP_X_anytr_index          | -0.133 (0.143)     | 0.3583  | 1.0000
## Mean in Control not WR in 2005:  0.15
## Observations:  60
## --- Model 41:  (Index: NA) ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | 2.479 (2.535)      | 0.3342  | 1.0000
## TEMP_index                  | -0.181 (2.714)     | 0.9470  | 1.0000
## TEMP_X_anytr_index          | -2.542 (3.227)     | 0.4356  | 1.0000
## Mean in Control not WR in 2005:  2.5
## Observations:  59
## --- Model 49:  (Index: NA) ---
```

```
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | -0.268 (0.130)       | 0.0468   | 0.8416
## TEMP_index                   | 0.066 (0.140)       | 0.6405   | 1.0000
## TEMP_X_anytr_index           | -0.090 (0.166)       | 0.5889   | 1.0000
## Mean in Control not WR in 2005:  0.33
## Observations:  60
## --- Model 53:  (Index: NA) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | -5.815 (3.577)       | 0.1120   | 1.0000
## TEMP_index                   | 4.566 (3.829)       | 0.2403   | 1.0000
## TEMP_X_anytr_index           | -5.115 (4.553)       | 0.2681   | 1.0000
## Mean in Control not WR in 2005:  6.15
## Observations:  59
## --- Model 61:  (Index: NA) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.123 (0.073)       | 0.1007   | 1.0000
## TEMP_index                   | -0.005 (0.078)       | 0.9467   | 1.0000
## TEMP_X_anytr_index           | 0.165 (0.093)       | 0.0823   | 1.0000
## Mean in Control not WR in 2005:  0
## Observations:  60
## --- Model 65:  (Index: NA) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 2.493 (2.615)       | 0.3463   | 1.0000
## TEMP_index                   | 1.320 (2.800)       | 0.6400   | 1.0000
## TEMP_X_anytr_index           | 1.288 (3.329)       | 0.7010   | 1.0000
## Mean in Control not WR in 2005:  0
## Observations:  59
```

```r
# Print results for Panel C
print_selected_results(models_list, outregvar2, pvals_C_by_var_selected,
                       "SELECTED MODELS: All cases (regardless of Gender Quota in 2005)",
                       control_means, indices, incum_dep_vars1, selected_models_C)
```

```
##
##
## ========================================================================
## SELECTED MODELS: All cases (regardless of Gender Quota in 2005)
## ========================================================================
##
## --- Model 73:  (Index: NA) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | -0.159 (0.073)       | 0.0313   | 0.5633
## TEMP_index                   | -0.013 (0.059)       | 0.8266   | 1.0000
## TEMP_X_anytr_index           | 0.039 (0.086)       | 0.6497   | 1.0000
## Mean in Control not WR in 2005:  0.35
## Observations:  152
## --- Model 77:  (Index: NA) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | -3.696 (1.826)       | 0.0450   | 0.7466
```

```
## TEMP_index                   | -0.713 (1.474)       | 0.6296   | 1.0000
## TEMP_X_anytr_index           | 1.302 (2.160)       | 0.5476   | 1.0000
## Mean in Control not WR in 2005:  7.47
## Observations:  149
## --- Model 85:  (Index: NA) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | -0.006 (0.059)       | 0.9195   | 1.0000
## TEMP_index                   | -0.009 (0.047)       | 0.8562   | 1.0000
## TEMP_X_anytr_index           | 0.013 (0.069)       | 0.8502   | 1.0000
## Mean in Control not WR in 2005:  0.14
## Observations:  152
## --- Model 89:  (Index: NA) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | -0.147 (1.424)       | 0.9182   | 1.0000
## TEMP_index                   | 0.139 (1.150)       | 0.9042   | 1.0000
## TEMP_X_anytr_index           | -0.392 (1.685)       | 0.8165   | 1.0000
## Mean in Control not WR in 2005:  2.6
## Observations:  149
## --- Model 97:  (Index: NA) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.091 (0.050)       | 0.0685   | 1.0000
## TEMP_index                   | 0.014 (0.040)       | 0.7338   | 1.0000
## TEMP_X_anytr_index           | 0.034 (0.059)       | 0.5643   | 1.0000
## Mean in Control not WR in 2005:  0.05
## Observations:  152
## --- Model 101:  (Index: NA) ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 2.254 (1.108)       | 0.0439   | 0.7466
## TEMP_index                   | 0.227 (0.894)       | 0.8001   | 1.0000
## TEMP_X_anytr_index           | 0.888 (1.310)       | 0.4993   | 1.0000
## Mean in Control not WR in 2005:  0.57
## Observations:  149
```

Function to create the .tex script.

```
#### .tex output ####

# output path
output_path <- "~/work/FWER_table2.tex"

# new variables' labels (to avoid compilation issues)
var_labels <- c(
  "INT_treatment" = "Treatment",
  "TEMP_index" = "Performance Index",
  "TEMP_X_anytr_index" = "Treatment$\\times$Performance Index"
)

# Function to extract results from a model
extract_panel_results <- function(models, var_names, pvals_by_var, dep_vars, selected_models, control_m
  panel_results <- list()
  for (i in 1:length(selected_models)) {
```

```
    model_index <- selected_models[i]
    model <- models[[model_index]]
    if (!is.null(model)) {
      coef_table <- summary(model)$coefficients
      dep_var_name <- dep_vars[(model_index - 1) %% length(dep_vars) + 1]

      # extract coeffs for variables
      coefs <- data.frame(
        Variable = rownames(coef_table),
        Coeff = coef_table[, "Estimate"],
        SE = coef_table[, "Std. Error"],
        P = coef_table[, "Pr(>|t|)"]
      )

      # add adjusted p-values
      for (var in var_names) {
        if (var %in% rownames(coef_table)) {
          idx <- which(var_names == var)
          coefs$FWER[coefs$Variable == var] <- pvals_by_var[[var]][i]
        }
      }

      # filter for interest variables
      coefs <- coefs[coefs$Variable %in% var_names, ]

      # replace with labels
      coefs$Variable <- var_labels[match(coefs$Variable, names(var_labels))]

      # name of variable without underscore
      dep_var_label <- gsub("_", " ", dep_var_name)

      panel_results[[i]] <- list(
        dep_var = dep_var_label,
        coefs = coefs,
        control_mean = control_means[model_index],
        observations = nobs(model)
      )
    }
  }
  return(panel_results)
}

# Extracting results for each panel
panel_A_results <- extract_panel_results(
  models_list, outregvar2, pvals_A_by_var_selected,
  incum_dep_vars1, selected_models_A, control_means
)

panel_B_results <- extract_panel_results(
  models_list, outregvar2, pvals_B_by_var_selected,
  incum_dep_vars1, selected_models_B, control_means
)
```

```r
panel_C_results <- extract_panel_results(
  models_list, outregvar2, pvals_C_by_var_selected,
  incum_dep_vars1, selected_models_C, control_means
)


# write parameters of the tex file
file <- file(output_path, open = "wt")
cat(
  c(
    "\\documentclass[a4paper, 12pt]{article}",
    "\\usepackage[margin=2cm]{geometry}",
    "\\usepackage{booktabs}",
    "\\usepackage[utf8]{inputenc}",
    "\\usepackage{amsmath}",
    "\\usepackage{pdflscape}",
    "\\usepackage{graphicx}",
    "\\usepackage{longtable}",
    "\\begin{document}"
  ),
  file = file, sep = "\n"
)
close(file)

# Function to write a panel in the tex
write_panel_to_tex <- function(file_path, panel_name, panel_results) {
  file <- file(file_path, open = "at")

  cat("\\begin{landscape}\n", file = file)
  cat("\\begin{longtable}{lccc}\n", file = file)
  cat("\\caption{" , panel_name, "} \\\\\n", file = file)
  cat("\\label{tab:", gsub("[^a-zA-Z0-9]", "", tolower(panel_name)), "} \\\\\n", file = file)
  cat("\\toprule\n", file = file)
  cat("\\multicolumn{4}{c}{", panel_name, "} \\\\\n", file = file)
  cat("\\midrule\n", file = file)
  cat("\\endfirsthead\n", file = file)
  cat("\\toprule\n", file = file)
  cat("\\multicolumn{4}{c}{", panel_name, "} \\\\\n", file = file)
  cat("\\midrule\n", file = file)
  cat("\\endhead\n", file = file)

  for (result in panel_results) {
    cat("\\multicolumn{4}{l}{--- ", result$dep_var, " ---} \\\\\n", file = file)
    cat("\\midrule\n", file = file)
    cat("Variable & Coeff (Std. Error) & p-value & FWER-adj p \\\\\n", file = file)

    for (i in 1:nrow(result$coefs)) {
      var_name <- result$coefs$Variable[i]
      coef_val <- round(result$coefs$Coeff[i], 4)
      se_val <- round(result$coefs$SE[i], 4)
      p_val <- round(result$coefs$P[i], 4)
      fwer_p <- round(result$coefs$FWER[i], 4)
```

```
      # stars if wanted
      stars <- ifelse(fwer_p < 0.01, "$^{***}$",
                      ifelse(fwer_p < 0.05, "$^{**}$",
                             ifelse(fwer_p < 0.1, "$^{*}$", "")))

      cat(var_name, " & ", coef_val, " (", se_val, ")", stars, " & ", p_val, " & ", fwer_p, " \\\\\n", i
    }
    cat("\\midrule\n", file = file)
    cat("Control Mean: ", result$control_mean, " & & & \\\\\n", file = file)
    cat("Observations: ", result$observations, " & & & \\\\\n", file = file)
  }
  cat("\\bottomrule\n", file = file)
  cat("\\end{longtable}\n", file = file)
  cat("\\end{landscape}\n\n", file = file)

  close(file)
}

# Write each panel
write_panel_to_tex(output_path, "Panel A: GP without Gender Quota in 2005", panel_A_results)
write_panel_to_tex(output_path, "Panel B: GP with Gender Quota in 2005", panel_B_results)
write_panel_to_tex(output_path, "Panel C: All cases (regardless of Gender Quota in 2005)", panel_C_resul

# close file
file <- file(output_path, open = "at")
cat("\\end{document}", file = file)
close(file)
```

Table 3

Data and variables.

```
# Define controls
gpcontrols <- c("GP_population", "GP_lit", "GP_sc", "GP_st", "GP_nbvillages",
                "RES00_gender", "RES00_obc", "RES00_sc", "RES00_st",
                "RES10_obc", "RES10_sc", "RES10_st", "RES05_obc", "RES05_sc", "RES05_st")

# Load data
data <- read_dta("~/work/Electoral data cleaned.dta")

# Filter data
data_filtered <- data %>%
  filter(RES10_gender == 0, GP_tag == 1) %>%
  mutate(X_anytr_genderres05 = INT_treatment * RES05_gender)  # Ajout de l'interaction

# Dependent variables
dep_vars <- c("ELEC10_nbcands", "CHAL_nbchal", "CHAL_prop_female",
              "CHAL_voteshare_female", "CHAL_prop_nongen", "CHAL_voteshare_nongen")
```

Functions regarding the regressions, the extraction and adjustment of the p-values, and collecting the results of each panel's models.

```
# Estimation of the models
models_list <- list()
control_means <- numeric(length(dep_vars) * 3)
```

```r
i <- 0

# Panel A: Full Sample
for (dep_var in dep_vars) {
  i <- i + 1

  # control mean
  control_mean <- data_filtered %>%
    filter(INT_treatment == 0) %>%
    summarise(mean = mean(!!sym(dep_var), na.rm = TRUE)) %>%
    pull(mean) %>%
    round(2)

  control_means[i] <- control_mean

  # model estimation
  all_vars <- c(dep_var, "INT_treatment", "RES05_gender", "X_anytr_genderres05", gpcontrols, "district")
  if (all(all_vars %in% names(data_filtered))) {
    formula <- as.formula(paste(dep_var, "~ INT_treatment + RES05_gender + X_anytr_genderres05 +",
                                paste(gpcontrols, collapse = " + "), "+ factor(district)"))
    model <- tryCatch({
      lm(formula, data = data_filtered)
    }, error = function(e) {
      message("Error in model fitting: ", e$message)
      NULL
    })

    models_list[[i]] <- model
  }
}

# Panel B: Without Previous Gender Reservation (RES05_gender == 0)
for (dep_var in dep_vars) {
  i <- i + 1

  # control mean
  control_mean <- data_filtered %>%
    filter(INT_treatment == 0, RES05_gender == 0) %>%
    summarise(mean = mean(!!sym(dep_var), na.rm = TRUE)) %>%
    pull(mean) %>%
    round(2)

  control_means[i] <- control_mean

  # model estimation
  all_vars <- c(dep_var, "INT_treatment", "RES05_gender", "X_anytr_genderres05", gpcontrols, "district")
  if (all(all_vars %in% names(data_filtered))) {
    formula <- as.formula(paste(dep_var, "~ INT_treatment + RES05_gender + X_anytr_genderres05 +",
                                paste(gpcontrols, collapse = " + "), "+ factor(district)"))
    model <- tryCatch({
      lm(formula, data = data_filtered %>% filter(RES05_gender == 0))
    }, error = function(e) {
      message("Error in model fitting: ", e$message)
```

```
      NULL
    })

    models_list[[i]] <- model
  }
}

# Panel C: With Previous Gender Reservation (RES05_gender == 1)
for (dep_var in dep_vars) {
  i <- i + 1

  # control mean
  control_mean <- data_filtered %>%
    filter(INT_treatment == 0, RES05_gender == 1) %>%
    summarise(mean = mean(!!sym(dep_var), na.rm = TRUE)) %>%
    pull(mean) %>%
    round(2)

  control_means[i] <- control_mean

  # model estimation
  all_vars <- c(dep_var, "INT_treatment", "RES05_gender", "X_anytr_genderres05", gpcontrols, "district")
  if (all(all_vars %in% names(data_filtered))) {
    formula <- as.formula(paste(dep_var, "~ INT_treatment + RES05_gender + X_anytr_genderres05 +",
                                paste(gpcontrols, collapse = " + "), "+ factor(district)"))
    model <- tryCatch({
      lm(formula, data = data_filtered %>% filter(RES05_gender == 1))
    }, error = function(e) {
      message("Error in model fitting: ", e$message)
      NULL
    })

    models_list[[i]] <- model
  }
}

# Selecting the models corresponding to the panels
selected_models_A <- c(1, 2, 3, 4, 5, 6)  # Full Sample
selected_models_B <- c(7, 8, 9, 10, 11, 12)  # Without Previous Gender Reservation
selected_models_C <- c(13, 14, 15, 16, 17, 18)  # With Previous Gender Reservation

panel_A_models_selected <- models_list[selected_models_A]
panel_B_models_selected <- models_list[selected_models_B]
panel_C_models_selected <- models_list[selected_models_C]


# Variables d'intérêt
outregvar2 <- c("INT_treatment", "RES05_gender", "X_anytr_genderres05")

# Function to extract p-values and apply the FWER correction
get_adjusted_pvalues_selected <- function(models, var_names) {
  all_pvalues <- c()
  for (model in models) {
```

```
    if (!is.null(model)) {
      coef_table <- summary(model)$coefficients
      for (var in var_names) {
        if (var %in% rownames(coef_table)) {
          all_pvalues <- c(all_pvalues, coef_table[var, "Pr(>|t|)"])
        } else {
          all_pvalues <- c(all_pvalues, NA)
        }
      }
    }
  }
  valid_pvalues <- all_pvalues[!is.na(all_pvalues)]
  adjusted_pvalues <- p.adjust(valid_pvalues, method = "holm")
  result <- all_pvalues
  result[!is.na(all_pvalues)] <- adjusted_pvalues
  return(data.frame(raw = all_pvalues, adjusted = result))
}

# Implement FWER correction
pvalues_panel_A_selected <- get_adjusted_pvalues_selected(panel_A_models_selected, outregvar2)
pvalues_panel_B_selected <- get_adjusted_pvalues_selected(panel_B_models_selected, outregvar2)
pvalues_panel_C_selected <- get_adjusted_pvalues_selected(panel_C_models_selected, outregvar2)

# Function to extract adjusted p-values for each variable, each model
get_pvals_by_var_selected <- function(pvalues_df, var_names, n_models) {
  pvals_list <- list()
  for (i in 1:length(var_names)) {
    var <- var_names[i]
    idx <- seq(i, nrow(pvalues_df), by = length(var_names))
    pvals_list[[var]] <- pvalues_df$adjusted[idx]
  }
  return(pvals_list)
}

# Extracting the adjusted p-values for our models
pvals_A_by_var_selected <- get_pvals_by_var_selected(pvalues_panel_A_selected, outregvar2, length(panel
pvals_B_by_var_selected <- get_pvals_by_var_selected(pvalues_panel_B_selected, outregvar2, length(panel
pvals_C_by_var_selected <- get_pvals_by_var_selected(pvalues_panel_C_selected, outregvar2, length(panel
```

Function to display the results.

```
# Function to print the results with both types of p-values
print_selected_results <- function(models, var_names, pvalues_by_var, panel_name, control_means, dep_va
  cat("\n\n============================================================================\n")
  cat(panel_name, "\n")
  cat("============================================================================\n\n")

  for (i in 1:length(selected_models)) {
    model_index <- selected_models[i]
    model <- models[[model_index]]
    if (!is.null(model)) {
      coef_table <- summary(model)$coefficients
      dep_var_name <- dep_vars[(model_index-1) %% length(dep_vars) + 1]
```

```
      cat("--- Model ", selected_models[i], ": ", dep_var_name, " ---\n", sep = "")
      cat("Variable                     | Coeff (Std. Error) | p-value | FWER-adj p\n")
      cat("-----------------------------|--------------------|---------|------------\n")

      for (var in var_names) {
        if (var %in% rownames(coef_table)) {
          coef_val <- round(coef_table[var, "Estimate"], 4)
          se_val <- round(coef_table[var, "Std. Error"], 4)
          pval_raw <- round(coef_table[var, "Pr(>|t|)"], 4)
          pval_adj_idx <- which(var_names == var) + (i - 1) * length(var_names)
          pval_adj <- round(pvalues_by_var[[var]][i], 4)

          stars <- ifelse(pval_adj < 0.01, "***",
                          ifelse(pval_adj < 0.05, "**",
                                 ifelse(pval_adj < 0.1, "*", "")))

          cat(sprintf("%-28s | %4.3f (%4.3f)       | %5.4f   | %6.4f%s\n",
                      var, coef_val, se_val, pval_raw, pval_adj, stars))
        }
      }
      cat("Mean in Control not WR in 2005: ", control_means[model_index], "\n")
      cat("Observations: ", nobs(model), "\n")
    }
  }
}

# Print results for each panel
print_selected_results(models_list, outregvar2, pvals_A_by_var_selected,
                       "SELECTED MODELS: Full Sample",
                       control_means, dep_vars, selected_models_A)
```

```
##
##
## ========================================================================
## SELECTED MODELS: Full Sample
## ========================================================================
##
## --- Model 1: ELEC10_nbcands ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.305 (0.560)       | 0.5863   | 1.0000
## RES05_gender                 | 1.035 (0.575)       | 0.0729   | 1.0000
## X_anytr_genderres05          | -0.789 (0.933)       | 0.3981   | 1.0000
## Mean in Control not WR in 2005:  7.69
## Observations:  382
## --- Model 2: CHAL_nbchal ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.385 (0.562)       | 0.4936   | 1.0000
## RES05_gender                 | 1.221 (0.577)       | 0.0349   | 0.6282
## X_anytr_genderres05          | -0.904 (0.935)       | 0.3345   | 1.0000
## Mean in Control not WR in 2005:  7.48
## Observations:  382
## --- Model 3: CHAL_prop_female ---
```

```
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.006 (0.027)      | 0.8183  | 1.0000
## RES05_gender                 | 0.010 (0.027)      | 0.7041  | 1.0000
## X_anytr_genderres05          | -0.000 (0.044)     | 0.9931  | 1.0000
## Mean in Control not WR in 2005:  0.12
## Observations:  382
## --- Model 4: CHAL_voteshare_female ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | -2.805 (2.966)     | 0.3449  | 1.0000
## RES05_gender                 | 4.089 (3.012)      | 0.1755  | 1.0000
## X_anytr_genderres05          | 0.534 (4.926)      | 0.9138  | 1.0000
## Mean in Control not WR in 2005:  13.16
## Observations:  373
## --- Model 5: CHAL_prop_nongen ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.069 (0.033)      | 0.0382  | 0.6282
## RES05_gender                 | 0.045 (0.034)      | 0.1849  | 1.0000
## X_anytr_genderres05          | -0.054 (0.055)     | 0.3262  | 1.0000
## Mean in Control not WR in 2005:  0.79
## Observations:  382
## --- Model 6: CHAL_voteshare_nongen ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 7.488 (3.539)      | 0.0350  | 0.6282
## RES05_gender                 | 4.088 (3.594)      | 0.2561  | 1.0000
## X_anytr_genderres05          | -7.827 (5.877)     | 0.1838  | 1.0000
## Mean in Control not WR in 2005:  78.2
## Observations:  373
```

```
print_selected_results(models_list, outregvar2, pvals_B_by_var_selected,
                       "SELECTED MODELS: Without Previous Gender Reservation (RES05_gender == 0)",
                       control_means, dep_vars, selected_models_B)
```

```
##
##
## ========================================================================
## SELECTED MODELS: Without Previous Gender Reservation (RES05_gender == 0)
## ========================================================================
##
## --- Model 7: ELEC10_nbcands ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.284 (0.567)      | 0.6170  | 1.0000
## Mean in Control not WR in 2005:  7.39
## Observations:  254
## --- Model 8: CHAL_nbchal ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.359 (0.569)      | 0.5282  | 1.0000
## Mean in Control not WR in 2005:  7.14
## Observations:  254
## --- Model 9: CHAL_prop_female ---
```

```
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ---------------------------|--------------------|---------|------------
## INT_treatment               | 0.006 (0.029)      | 0.8322  | 1.0000
## Mean in Control not WR in 2005:  0.13
## Observations:  254
## --- Model 10: CHAL_voteshare_female ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ---------------------------|--------------------|---------|------------
## INT_treatment               | -3.220 (3.055)     | 0.2931  | 1.0000
## Mean in Control not WR in 2005:  12.89
## Observations:  248
## --- Model 11: CHAL_prop_nongen ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ---------------------------|--------------------|---------|------------
## INT_treatment               | 0.072 (0.032)      | 0.0247  | 0.1234
## Mean in Control not WR in 2005:  0.79
## Observations:  254
## --- Model 12: CHAL_voteshare_nongen ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ---------------------------|--------------------|---------|------------
## INT_treatment               | 8.187 (3.457)      | 0.0187  | 0.1123
## Mean in Control not WR in 2005:  78.7
## Observations:  248
```

```
print_selected_results(models_list, outregvar2, pvals_C_by_var_selected,
                       "SELECTED MODELS: With Previous Gender Reservation (RES05_gender == 1)",
                       control_means, dep_vars, selected_models_C)
```

```
##
##
## ========================================================================
## SELECTED MODELS: With Previous Gender Reservation (RES05_gender == 1)
## ========================================================================
##
## --- Model 13: ELEC10_nbcands ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ---------------------------|--------------------|---------|------------
## INT_treatment               | -0.309 (0.806)     | 0.7019  | 1.0000
## Mean in Control not WR in 2005:  8.33
## Observations:  128
## --- Model 14: CHAL_nbchal ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ---------------------------|--------------------|---------|------------
## INT_treatment               | -0.379 (0.810)     | 0.6406  | 1.0000
## Mean in Control not WR in 2005:  8.2
## Observations:  128
## --- Model 15: CHAL_prop_female ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ---------------------------|--------------------|---------|------------
## INT_treatment               | 0.020 (0.032)      | 0.5226  | 1.0000
## Mean in Control not WR in 2005:  0.11
## Observations:  128
## --- Model 16: CHAL_voteshare_female ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ---------------------------|--------------------|---------|------------
```

```
## INT_treatment                | -1.084 (3.935)       | 0.7835   | 1.0000
## Mean in Control not WR in 2005:  13.73
## Observations:  125
## --- Model 17: CHAL_prop_nongen ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.009 (0.051)       | 0.8662   | 1.0000
## Mean in Control not WR in 2005:  0.78
## Observations:  128
## --- Model 18: CHAL_voteshare_nongen ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | -1.450 (5.309)       | 0.7853   | 1.0000
## Mean in Control not WR in 2005:  77.1
## Observations:  125
```

Function to create the .tex script.

```
#### .tex output ####

# output path
output_path <- "~/work/FWER_table3.tex"

# change labels of variables (easier to read + to compile)
var_labels <- c(
  "INT_treatment" = "Treatment",
  "RES05_gender" = "Reserved for Women (2005)",
  "X_anytr_genderres05" = "Treatment$\\times$Reserved for Women (2005)",
  "ELEC10_nbcands" = "Number of Candidates 2010",
  "CHAL_nbchal" = "Number of Challengers",
  "CHAL_prop_female" = "Proportion of Female Challengers",
  "CHAL_voteshare_female" = "Vote Share of Female Challengers",
  "CHAL_prop_nongen" = "Proportion of NonGeneral Challengers",
  "CHAL_voteshare_nongen" = "Vote Share of NonGeneral Challengers"
)

# extract previous results from the models
extract_panel_results <- function(models, var_names, pvals_by_var, dep_vars, selected_models, control_m
  panel_results <- list()
  for (i in 1:length(selected_models)) {
    model_index <- selected_models[i]
    model <- models[[model_index]]
    if (!is.null(model)) {
      coef_table <- summary(model)$coefficients
      dep_var_name <- dep_vars[(model_index-1) %% length(dep_vars) + 1]

      coefs <- data.frame(
        Variable = rownames(coef_table),
        Coeff = coef_table[, "Estimate"],
        SE = coef_table[, "Std. Error"],
        P = coef_table[, "Pr(>|t|)"]
      )

      for (var in var_names) {
        if (var %in% rownames(coef_table)) {
```

```
          idx <- which(var_names == var)
          coefs$FWER[coefs$Variable == var] <- pvals_by_var[[var]][i]
        }
      }

      coefs <- coefs[coefs$Variable %in% var_names, ]
      coefs$Variable <- var_labels[match(coefs$Variable, names(var_labels))]

      # no underscores (to compile)
      dep_var_label <- gsub("_", " ", dep_var_name)

      panel_results[[i]] <- list(
        dep_var = dep_var_label,
        coefs = coefs,
        control_mean = control_means[model_index],
        observations = nobs(model)
      )
    }
  }
  return(panel_results)
}

# extracting for each panel
panel_A_results <- extract_panel_results(
  models_list, outregvar2, pvals_A_by_var_selected,
  dep_vars, selected_models_A, control_means
)

panel_B_results <- extract_panel_results(
  models_list, c("INT_treatment"), pvals_B_by_var_selected,
  dep_vars, selected_models_B, control_means
)

panel_C_results <- extract_panel_results(
  models_list, c("INT_treatment"), pvals_C_by_var_selected,
  dep_vars, selected_models_C, control_means
)


file <- file(output_path, open = "wt")
cat(
  c(
    "\\documentclass[a4paper, 12pt]{article}",
    "\\usepackage[margin=2cm]{geometry}",
    "\\usepackage{booktabs}",
    "\\usepackage[utf8]{inputenc}",
    "\\usepackage{amsmath}",
    "\\usepackage{pdflscape}",
    "\\usepackage{graphicx}",
    "\\usepackage{longtable}",
    "\\begin{document}"
  ),
  file = file, sep = "\n"
```

```
)
close(file)

# .tex writing
write_panel_to_tex <- function(file_path, panel_name, panel_results) {
  file <- file(file_path, open = "at")

  cat("\\begin{landscape}\n", file = file)
  cat("\\begin{longtable}{lccc}\n", file = file)
  cat("\\caption{" , panel_name, "} \\\\\n", file = file)
  cat("\\label{tab:", gsub("[^a-zA-Z0-9]", "", tolower(panel_name)), "} \\\\\n", file = file)
  cat("\\toprule\n", file = file)
  cat("\\multicolumn{4}{c}{", panel_name, "} \\\\\n", file = file)
  cat("\\midrule\n", file = file)
  cat("\\endfirsthead\n", file = file)
  cat("\\toprule\n", file = file)
  cat("\\multicolumn{4}{c}{", panel_name, "} \\\\\n", file = file)
  cat("\\midrule\n", file = file)
  cat("\\endhead\n", file = file)

  for (result in panel_results) {
    cat("\\multicolumn{4}{l}{--- ", result$dep_var, " ---} \\\\\n", file = file)
    cat("\\midrule\n", file = file)
    cat("Variable & Coeff (Std. Error) & p-value & FWER-adj p \\\\\n", file = file)

    for (i in 1:nrow(result$coefs)) {
      var_name <- result$coefs$Variable[i]
      coef_val <- round(result$coefs$Coeff[i], 4)
      se_val <- round(result$coefs$SE[i], 4)
      p_val <- round(result$coefs$P[i], 4)
      fwer_p <- round(result$coefs$FWER[i], 4)

      cat(var_name, " & ", coef_val, " (", se_val, ") & ", p_val, " & ", fwer_p, " \\\\\n", file = file)
    }
    cat("\\midrule\n", file = file)
    cat("Control Mean: ", result$control_mean, " & & & \\\\\n", file = file)
    cat("Observations: ", result$observations, " & & & \\\\\n", file = file)
  }
  cat("\\bottomrule\n", file = file)
  cat("\\end{longtable}\n", file = file)
  cat("\\end{landscape}\n\n", file = file)

  close(file)
}

# write each panel
write_panel_to_tex(output_path, "Panel A Full Sample", panel_A_results)
write_panel_to_tex(output_path, "Panel B Without Previous Gender Reservation", panel_B_results)
write_panel_to_tex(output_path, "Panel C With Previous Gender Reservation", panel_C_results)

# close .tex file
file <- file(output_path, open = "at")
cat("\\end{document}", file = file)
```

```
close(file)
```

Table 4

Data and variables.

```
# Define control variables
gpcontrols <- c("GP_population", "GP_lit", "GP_sc", "GP_st", "GP_nbvillages",
                "RES00_gender", "RES00_obc", "RES00_sc", "RES00_st",
                "RES10_obc", "RES10_sc", "RES10_st", "RES05_obc", "RES05_sc", "RES05_st")
gpcontrols15 <- c(gpcontrols, "RES15_obc", "RES15_sc", "RES15_st")

# Load the data
data <- read_dta("~/work/Electoral data 2015 cleaned.dta")

# Filter the data
data_filtered <- data %>%
  filter(RES10_gender == 0, GP_tag == 1, RES15_gender == 0) %>%
  mutate(
    INC10_can_run = 1,
    INC10_can_run = ifelse(ELEC10_won_female == 0 & RES15_gender == 1, 0, INC10_can_run),
    INC10_can_run = ifelse(ELEC10_won_sc == 0 & RES15_sc == 1, 0, INC10_can_run),
    INC10_can_run = ifelse(ELEC10_won_st == 0 & RES15_st == 1, 0, INC10_can_run),
    X_anytr_genderres05 = INT_treatment * RES05_gender
  )

# Dependent variables
dep_vars <- c("ELEC15_nbcands", "ELEC15_incum10_running", "ELEC15_voteshare_incum10",
              "ELEC15_prop_cand2010", "ELEC15_voteshare_cand2010", "ELEC15_prop_female",
              "ELEC15_voteshare_female", "ELEC15_prop_nongen", "ELEC15_voteshare_nongen")
```

Functions regarding the regressions, the extraction and adjustment of the p-values, and collecting the results of each panel's models.

```
# Estimation of the models
models_list <- list()
control_means <- numeric(length(dep_vars) * 3)
i <- 0

# Panel A: Full Sample
for (dep_var in dep_vars) {
  i <- i + 1

  # control mean
  control_mean <- data_filtered %>%
    filter(INT_treatment == 0, RES05_gender == 0) %>%
    summarise(mean = mean(!!sym(dep_var), na.rm = TRUE)) %>%
    pull(mean) %>%
    round(2)

  control_means[i] <- control_mean

  # model estimation
  all_vars <- c(dep_var, "INT_treatment", "RES05_gender", "X_anytr_genderres05", gpcontrols15, "district
  if (all(all_vars %in% names(data_filtered))) {
```

```
    formula <- as.formula(paste(dep_var, "~ INT_treatment + RES05_gender + X_anytr_genderres05 +",
                                paste(gpcontrols15, collapse = " + "), "+ factor(district)"))
    model <- tryCatch({
      lm(formula, data = data_filtered)
    }, error = function(e) {
      message("Error in model fitting: ", e$message)
      NULL
    })

    models_list[[i]] <- model
  }
}

# Panel B: Without Previous Gender Reservation (RES05_gender == 0)
for (dep_var in dep_vars) {
  i <- i + 1

  # control mean
  control_mean <- data_filtered %>%
    filter(INT_treatment == 0, RES05_gender == 0) %>%
    summarise(mean = mean(!!sym(dep_var), na.rm = TRUE)) %>%
    pull(mean) %>%
    round(2)

  control_means[i] <- control_mean

  # model estimation
  all_vars <- c(dep_var, "INT_treatment", gpcontrols15, "district")
  if (all(all_vars %in% names(data_filtered))) {
    formula <- as.formula(paste(dep_var, "~ INT_treatment +",
                                paste(gpcontrols15, collapse = " + "), "+ factor(district)"))
    model <- tryCatch({
      lm(formula, data = data_filtered %>% filter(RES05_gender == 0))
    }, error = function(e) {
      message("Error in model fitting: ", e$message)
      NULL
    })

    models_list[[i]] <- model
  }
}

# Panel C: With Previous Gender Reservation (RES05_gender == 1)
for (dep_var in dep_vars) {
  i <- i + 1

  # control mean
  control_mean <- data_filtered %>%
    filter(INT_treatment == 0, RES05_gender == 1) %>%
    summarise(mean = mean(!!sym(dep_var), na.rm = TRUE)) %>%
    pull(mean) %>%
    round(2)
```

```
  control_means[i] <- control_mean

  # model estimation
  all_vars <- c(dep_var, "INT_treatment", gpcontrols15, "district")
  if (all(all_vars %in% names(data_filtered))) {
    formula <- as.formula(paste(dep_var, "~ INT_treatment +",
                                paste(gpcontrols15, collapse = " + "), "+ factor(district)"))
    model <- tryCatch({
      lm(formula, data = data_filtered %>% filter(RES05_gender == 1))
    }, error = function(e) {
      message("Error in model fitting: ", e$message)
      NULL
    })

    models_list[[i]] <- model
  }
}

# Selecting the models corresponding to the panels
selected_models_A <- 1:length(dep_vars)  # Full Sample
selected_models_B <- (length(dep_vars) + 1):(2 * length(dep_vars))  # Without Previous Gender Reservati
selected_models_C <- ((2 * length(dep_vars) + 1)):(3 * length(dep_vars))  # With Previous Gender Reserv

panel_A_models_selected <- models_list[selected_models_A]
panel_B_models_selected <- models_list[selected_models_B]
panel_C_models_selected <- models_list[selected_models_C]

# Variables d'intérêt
outregvar2 <- c("INT_treatment", "RES05_gender", "X_anytr_genderres05")
outregvar2_B <- c("INT_treatment")
outregvar2_C <- c("INT_treatment")

# Function to extract p-values and apply the FWER correction
get_adjusted_pvalues_selected <- function(models, var_names) {
  all_pvalues <- c()
  for (model in models) {
    if (!is.null(model)) {
      coef_table <- summary(model)$coefficients
      for (var in var_names) {
        if (var %in% rownames(coef_table)) {
          all_pvalues <- c(all_pvalues, coef_table[var, "Pr(>|t|)"])
        } else {
          all_pvalues <- c(all_pvalues, NA)
        }
      }
    }
  }
  valid_pvalues <- all_pvalues[!is.na(all_pvalues)]
  adjusted_pvalues <- p.adjust(valid_pvalues, method = "holm")
  result <- all_pvalues
  result[!is.na(all_pvalues)] <- adjusted_pvalues
  return(data.frame(raw = all_pvalues, adjusted = result))
}
```

```r
# Implement FWER correction
pvalues_panel_A_selected <- get_adjusted_pvalues_selected(panel_A_models_selected, outregvar2)
pvalues_panel_B_selected <- get_adjusted_pvalues_selected(panel_B_models_selected, outregvar2_B)
pvalues_panel_C_selected <- get_adjusted_pvalues_selected(panel_C_models_selected, outregvar2_C)

# Function to extract adjusted p-values for each variable, each model
get_pvals_by_var_selected <- function(pvalues_df, var_names, n_models) {
  pvals_list <- list()
  for (i in 1:length(var_names)) {
    var <- var_names[i]
    idx <- seq(i, nrow(pvalues_df), by = length(var_names))
    pvals_list[[var]] <- pvalues_df$adjusted[idx]
  }
  return(pvals_list)
}

# Extracting the adjusted p-values for our models
pvals_A_by_var_selected <- get_pvals_by_var_selected(pvalues_panel_A_selected, outregvar2, length(panel
pvals_B_by_var_selected <- get_pvals_by_var_selected(pvalues_panel_B_selected, outregvar2_B, length(pan
pvals_C_by_var_selected <- get_pvals_by_var_selected(pvalues_panel_C_selected, outregvar2_C, length(pan
```

Function to display the results.

```r
# Function to print the results with both types of p-values
print_selected_results <- function(models, var_names, pvalues_by_var, panel_name, control_means, dep_va
  cat("\n\n==========================================================================\n")
  cat(panel_name, "\n")
  cat("==========================================================================\n\n")

  for (i in 1:length(selected_models)) {
    model_index <- selected_models[i]
    model <- models[[model_index]]
    if (!is.null(model)) {
      coef_table <- summary(model)$coefficients
      dep_var_name <- dep_vars[i]

      cat("--- Model ", model_index, ": ", dep_var_name, " ---\n", sep = "")
      cat("Variable                    | Coeff (Std. Error) | p-value | FWER-adj p\n")
      cat("----------------------------|--------------------|---------|------------\n")

      for (var in var_names) {
        if (var %in% rownames(coef_table)) {
          coef_val <- round(coef_table[var, "Estimate"], 4)
          se_val <- round(coef_table[var, "Std. Error"], 4)
          pval_raw <- round(coef_table[var, "Pr(>|t|)"], 4)
          pval_adj <- round(pvalues_by_var[[var]][i], 4)

          stars <- ifelse(pval_adj < 0.01, "***",
                          ifelse(pval_adj < 0.05, "**",
                                 ifelse(pval_adj < 0.1, "*", "")))

          cat(sprintf("%-28s | %4.3f (%4.3f)       | %5.4f   | %6.4f%s\n",
                      var, coef_val, se_val, pval_raw, pval_adj, stars))
        }
```

```
      }
      cat("Mean in Control not WR in 2005: ", control_means[model_index], "\n")
      cat("Observations: ", nobs(model), "\n")
    }
  }
}

# Print results for each panel
print_selected_results(models_list, outregvar2, pvals_A_by_var_selected,
                       "Panel A: Full Sample",
                       control_means, dep_vars, selected_models_A)
```

```
##
##
## ========================================================================
## Panel A: Full Sample
## ========================================================================
##
## --- Model 1: ELEC15_nbcands ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.349 (1.214)       | 0.7746   | 1.0000
## RES05_gender                 | 0.818 (1.132)       | 0.4724   | 1.0000
## X_anytr_genderres05          | -2.575 (1.890)       | 0.1778   | 1.0000
## Mean in Control not WR in 2005:  7.83
## Observations:  89
## --- Model 2: ELEC15_incum10_running ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.070 (0.049)       | 0.1588   | 1.0000
## RES05_gender                 | 0.122 (0.045)       | 0.0090   | 0.2439
## X_anytr_genderres05          | -0.136 (0.076)       | 0.0773   | 1.0000
## Mean in Control not WR in 2005:  0
## Observations:  89
## --- Model 3: ELEC15_voteshare_incum10 ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 2.625 (1.286)       | 0.0452   | 1.0000
## RES05_gender                 | 2.424 (1.198)       | 0.0472   | 1.0000
## X_anytr_genderres05          | -3.715 (2.001)       | 0.0679   | 1.0000
## Mean in Control not WR in 2005:  0
## Observations:  89
## --- Model 4: ELEC15_prop_cand2010 ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.005 (0.021)       | 0.8192   | 1.0000
## RES05_gender                 | -0.014 (0.020)       | 0.4908   | 1.0000
## X_anytr_genderres05          | 0.012 (0.033)       | 0.7257   | 1.0000
## Mean in Control not WR in 2005:  0.02
## Observations:  89
## --- Model 5: ELEC15_voteshare_cand2010 ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## -----------------------------|--------------------|---------|------------
## INT_treatment                | 0.678 (3.008)       | 0.8223   | 1.0000
```

```
## RES05_gender                | -2.227 (2.804)       | 0.4301   | 1.0000
## X_anytr_genderres05         | 2.976 (4.682)       | 0.5273   | 1.0000
## Mean in Control not WR in 2005:  3.05
## Observations:  89
## --- Model 6: ELEC15_prop_female ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment               | 0.183 (0.083)       | 0.0307   | 0.7977
## RES05_gender                | 0.025 (0.077)       | 0.7512   | 1.0000
## X_anytr_genderres05         | -0.059 (0.129)       | 0.6504   | 1.0000
## Mean in Control not WR in 2005:  0.08
## Observations:  89
## --- Model 7: ELEC15_voteshare_female ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment               | 17.391 (8.859)       | 0.0539   | 1.0000
## RES05_gender                | 7.566 (8.259)       | 0.3630   | 1.0000
## X_anytr_genderres05         | -11.201 (13.792)       | 0.4197   | 1.0000
## Mean in Control not WR in 2005:  8.1
## Observations:  89
## --- Model 8: ELEC15_prop_nongen ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment               | 0.087 (0.078)       | 0.2670   | 1.0000
## RES05_gender                | -0.086 (0.073)       | 0.2425   | 1.0000
## X_anytr_genderres05         | 0.147 (0.121)       | 0.2291   | 1.0000
## Mean in Control not WR in 2005:  0.8
## Observations:  89
## --- Model 9: ELEC15_voteshare_nongen ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment               | 6.688 (8.328)       | 0.4248   | 1.0000
## RES05_gender                | -7.176 (7.764)       | 0.3588   | 1.0000
## X_anytr_genderres05         | 9.024 (12.965)       | 0.4889   | 1.0000
## Mean in Control not WR in 2005:  86.65
## Observations:  89
```

```
print_selected_results(models_list, outregvar2_B, pvals_B_by_var_selected,
                       "Panel B: Without Previous Gender Reservation (RES05_gender == 0)",
                       control_means, dep_vars, selected_models_B)
```

```
##
##
## ========================================================================
## Panel B: Without Previous Gender Reservation (RES05_gender == 0)
## ========================================================================
##
## --- Model 10: ELEC15_nbcands ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment               | 0.773 (1.084)       | 0.4815   | 1.0000
## Mean in Control not WR in 2005:  7.83
## Observations:  51
## --- Model 11: ELEC15_incum10_running ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
```

```
## ----------------------------|--------------------|---------|------------
## INT_treatment                | 0.071 (0.045)       | 0.1244   | 0.9950
## Mean in Control not WR in 2005:  0
## Observations:  51
## --- Model 12: ELEC15_voteshare_incum10 ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment                | 2.559 (1.617)       | 0.1244   | 0.9950
## Mean in Control not WR in 2005:  0
## Observations:  51
## --- Model 13: ELEC15_prop_cand2010 ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment                | -0.005 (0.029)       | 0.8707   | 1.0000
## Mean in Control not WR in 2005:  0.02
## Observations:  51
## --- Model 14: ELEC15_voteshare_cand2010 ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment                | -1.030 (4.051)       | 0.8012   | 1.0000
## Mean in Control not WR in 2005:  3.05
## Observations:  51
## --- Model 15: ELEC15_prop_female ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment                | 0.145 (0.084)       | 0.0937   | 0.8429
## Mean in Control not WR in 2005:  0.08
## Observations:  51
## --- Model 16: ELEC15_voteshare_female ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment                | 12.539 (8.584)       | 0.1548   | 0.9950
## Mean in Control not WR in 2005:  8.1
## Observations:  51
## --- Model 17: ELEC15_prop_nongen ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment                | 0.092 (0.086)       | 0.2973   | 1.0000
## Mean in Control not WR in 2005:  0.8
## Observations:  51
## --- Model 18: ELEC15_voteshare_nongen ---
## Variable                     | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|------------
## INT_treatment                | 6.901 (8.845)       | 0.4416   | 1.0000
## Mean in Control not WR in 2005:  86.65
## Observations:  51
```

```
print_selected_results(models_list, outregvar2_C, pvals_C_by_var_selected,
                       "Panel C: With Previous Gender Reservation (RES05_gender == 1)",
                       control_means, dep_vars, selected_models_C)
```

```
##
##
## ========================================================================
## Panel C: With Previous Gender Reservation (RES05_gender == 1)
```

```
## ========================================================================
##
## --- Model 19: ELEC15_nbcands ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | -4.066 (2.315)       | 0.0982   | 0.7853
## Mean in Control not WR in 2005:  8.35
## Observations:  38
## --- Model 20: ELEC15_incum10_running ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | -0.062 (0.080)       | 0.4461   | 1.0000
## Mean in Control not WR in 2005:  0.04
## Observations:  38
## --- Model 21: ELEC15_voteshare_incum10 ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | -0.408 (0.522)       | 0.4461   | 1.0000
## Mean in Control not WR in 2005:  0.25
## Observations:  38
## --- Model 22: ELEC15_prop_cand2010 ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | 0.015 (0.017)       | 0.3735   | 1.0000
## Mean in Control not WR in 2005:  0
## Observations:  38
## --- Model 23: ELEC15_voteshare_cand2010 ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | 3.205 (3.012)       | 0.3032   | 1.0000
## Mean in Control not WR in 2005:  0.25
## Observations:  38
## --- Model 24: ELEC15_prop_female ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | 0.285 (0.143)       | 0.0638   | 0.5743
## Mean in Control not WR in 2005:  0.16
## Observations:  38
## --- Model 25: ELEC15_voteshare_female ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | 20.829 (13.028)       | 0.1294   | 0.9059
## Mean in Control not WR in 2005:  20.24
## Observations:  38
## --- Model 26: ELEC15_prop_nongen ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | 0.163 (0.141)       | 0.2660   | 1.0000
## Mean in Control not WR in 2005:  0.74
## Observations:  38
## --- Model 27: ELEC15_voteshare_nongen ---
## Variable                    | Coeff (Std. Error) | p-value | FWER-adj p
## ----------------------------|--------------------|---------|-----------
## INT_treatment               | 11.588 (16.298)       | 0.4873   | 1.0000
```

```
## Mean in Control not WR in 2005:  83.03
## Observations:  38
```

Function to create the .tex script.

```
#### .tex output ####


# output path
output_path <- "~/work/FWER_table4.tex"

# variables' labels to avoid compilation issues
var_labels <- c(
  "INT_treatment" = "Treatment",
  "RES05_gender" = "Reserved for Women (2005)",
  "X_anytr_genderres05" = "Treatment$\\times$Reserved for Women (2005)"
)

# Function to extract results from a model
extract_panel_results <- function(models, var_names, pvals_by_var, dep_vars, selected_models, control_m
  panel_results <- list()
  for (i in 1:length(selected_models)) {
    model_index <- selected_models[i]
    model <- models[[model_index]]
    if (!is.null(model)) {
      coef_table <- summary(model)$coefficients
      dep_var_name <- dep_vars[i]

      # extract coeffs
      coefs <- data.frame(
        Variable = rownames(coef_table),
        Coeff = coef_table[, "Estimate"],
        SE = coef_table[, "Std. Error"],
        P = coef_table[, "Pr(>|t|)"]
      )

      # add adjusted p-values
      for (var in var_names) {
        if (var %in% rownames(coef_table)) {
          idx <- which(var_names == var)
          coefs$FWER[coefs$Variable == var] <- pvals_by_var[[var]][i]
        }
      }

      # filter for interest variables
      coefs <- coefs[coefs$Variable %in% var_names, ]

      # replace variable names
      coefs$Variable <- var_labels[match(coefs$Variable, names(var_labels))]

      # name of variable without underscore (compilation issue)
      dep_var_label <- gsub("_", " ", dep_var_name)

      panel_results[[i]] <- list(
        dep_var = dep_var_label,
```

```
        coefs = coefs,
        control_mean = control_means[model_index],
        observations = nobs(model)
      )
    }
  }
  return(panel_results)
}

# Extracting the results for each panel
panel_A_results <- extract_panel_results(
  models_list, outregvar2, pvals_A_by_var_selected,
  dep_vars, selected_models_A, control_means
)

panel_B_results <- extract_panel_results(
  models_list, outregvar2_B, pvals_B_by_var_selected,
  dep_vars, selected_models_B, control_means
)

panel_C_results <- extract_panel_results(
  models_list, outregvar2_C, pvals_C_by_var_selected,
  dep_vars, selected_models_C, control_means
)


# Beginning of the .tex script
file <- file(output_path, open = "wt")
cat(
  c(
    "\\documentclass[a4paper, 12pt]{article}",
    "\\usepackage[margin=2cm]{geometry}",
    "\\usepackage{booktabs}",
    "\\usepackage[utf8]{inputenc}",
    "\\usepackage{amsmath}",
    "\\usepackage{pdflscape}",
    "\\usepackage{graphicx}",
    "\\usepackage{longtable}",
    "\\begin{document}",
    "\\begin{landscape}"
  ),
  file = file, sep = "\n"
)
close(file)

# Function to write a panel in the .tex
write_panel_to_tex <- function(file_path, panel_name, panel_results) {
  file <- file(file_path, open = "at")

  cat("\\begin{longtable}{lccc}\n", file = file)
  cat("\\caption{" , panel_name, "} \\\\ \n", file = file)
  cat("\\label{tab:", gsub("[^a-zA-Z0-9]", "", tolower(panel_name)), "} \\\\ \n", file = file)
  cat("\\toprule\n", file = file)
```

```
  cat("\\multicolumn{4}{c}{", panel_name, "} \\\\ \n", file = file)
  cat("\\midrule\n", file = file)
  cat("\\endfirsthead\n", file = file)
  cat("\\toprule\n", file = file)
  cat("\\multicolumn{4}{c}{", panel_name, "} \\\\ \n", file = file)
  cat("\\midrule\n", file = file)
  cat("\\endhead\n", file = file)

  for (result in panel_results) {
    cat("\\multicolumn{4}{l}{", result$dep_var, "} \\\\ \n", file = file)
    cat("\\midrule\n", file = file)
    cat("Variable & Coefficient (Std. Error) & p-value & FWER-adj p \\\\ \n", file = file)

    for (i in 1:nrow(result$coefs)) {
      var_name <- result$coefs$Variable[i]
      coef_val <- round(result$coefs$Coeff[i], 4)
      se_val <- round(result$coefs$SE[i], 4)
      p_val <- round(result$coefs$P[i], 4)
      fwer_p <- round(result$coefs$FWER[i], 4)

      # add stars if wanted
      stars <- ifelse(fwer_p < 0.01, "$^{***}$",
                      ifelse(fwer_p < 0.05, "$^{**}$",
                             ifelse(fwer_p < 0.1, "$^{*}$", "")))

      cat(var_name, " & ", coef_val, " (", se_val, ")", stars, " & ", p_val, " & ", fwer_p, " \\\\ \n",
    }
    cat("\\midrule\n", file = file)
    cat("Control Mean: ", result$control_mean, " & & & \\\\ \n", file = file)
    cat("Observations: ", result$observations, " & & & \\\\ \n", file = file)
  }
  cat("\\bottomrule\n", file = file)
  cat("\\end{longtable}\n", file = file)

  close(file)
}

# Write each panel
write_panel_to_tex(output_path, "Panel A: Full Sample", panel_A_results)
write_panel_to_tex(output_path, "Panel B: Without Previous Gender Reservation (RES05\\_gender == 0)", pa
write_panel_to_tex(output_path, "Panel C: With Previous Gender Reservation (RES05\\_gender == 1)", panel

# Close the script
file <- file(output_path, open = "at")
cat(
  c(
    "\\end{landscape}",
    "\\end{document}"
  ),
  file = file, sep = "\n"
)
close(file)
```