Midterm

In the United States, political fundraising is crucial to the success and eventual election of politicians. Female politicians, however, report more fundraising difficulties than their male counterparts. Female politicians are also underrepresented in state legislatures across the country. In this exercise, we investigate the presence of potential gender inequalities in campaign finance.

This exercise is in part based on: Barber, Michael, Daniel Butler, and Jessica Preece. 2016. "Gender Inequalities in Campaign Finance." Quarterly Journal of Political Science 11(2): 219-248.

In this paper, the authors attempt to estimate whether female state legislative incumbents have more trouble fundraising than do male legislative incumbents. Observations consist of information on all U.S. state legislative races in which a male and female candidate ran against each other. The data include their winning margin and their current-cycle fundraising. To mitigate concerns about omitted variable bias (women may run in districts that are fundamentally different than districts in which men are the incumbents), the researchers use a variation of a regression discontinuity design (RDD). As with studies of the incumbency effect, the authors argue that those who barely won last cycle won at random, given the closeness of the previous election.

Name	Description
`bonica.rid`	Candidate ID number
`cycle`	Year in which the election was held
`name`	Legislator's name
`cand.gender`	Legislator's gender
`Party`	Party affiliation (Democrat = 100, Republican = 200)
`seat`	Whether the legislator ran for upper (state:upper) or lower house (state:lower)
`running.variable`	Male candidate vote share minus female candidate vote share in previous election
`total.raised.candidate`	Total funding raised by legislator after winning election
`male.money`	Total raised from male donors

Name	Description
`female.money`	Total raised from female donors
`share.district.total`	Proportion of total district funding raised by the incumbent
`pac.money`	Total amount raised from PACs
`individual.money`	Total amount raised from individuals
`male.winner`	Did the male candidate win (1) or lose (0)

NOTE: THERE ARE MORE COLUMNS IN THE DATAFRAME THAN DESCRIBED ABOVE

Data

```
campaign <- read.csv("campaign.csv")
campaign <- campaign[campaign$cand.gender != "U", ]
```

** Note: You must round all numeric results to two decimal places **

Question 1

1. What *proportion* of candidates were both female and Democrats?

```
round(prop.table(table(campaign$Party == 100 & campaign$cand.gender ==
    "F")), 2)
```

```
FALSE  TRUE
 0.67  0.33
```

```
prop.table(table(campaign$Party, campaign$cand.gender))
```

```
                F           M
  100 0.3322894920 0.1847599165
  200 0.1691022965 0.3131524008
  328 0.0003479471 0.0003479471
```

Answer: .33

Question 2

In which year did male candidates raise the most money from female donors?

```
# Sum of money raised from female donors by male candidates
# per year
sums_by_year <- tapply(campaign$female.money[campaign$cand.gender ==
    "M"], campaign$cycle[campaign$cand.gender == "M"], sum, na.rm = T)

# Find the year with the maximum sum
max(sums_by_year)
```

```
[1] 1916208
```

```
sums_by_year[sums_by_year == max(sums_by_year)]
```

```
   2004
1916208
```

Answer: 2004

Question 3

On average, what is the difference in total money raised from male and female donors (subtract females from males) for Republicans running for a seat in `state:lower`?

```
# Filter for Republicans running for lower state house
republican_lower_house <- campaign[campaign$Party == 200 & campaign$seat ==
    "state:lower", ]

# Calculate the difference in money raised from male and
# female donors
differences <- republican_lower_house$male.money - republican_lower_house$female.money

# Calculate the average of these differences
average_difference <- mean(differences, na.rm = TRUE)
average_difference
```

```
[1] 17506.94
```

Answer: 17506.94

Question 4

On average, how much money did candidates raise after winning election?

```
mean(campaign$total.raised.candidate, na.rm = TRUE)
```

```
[1] 117943.8
```

Answer: 117943.8

Question 5

Compute the IQR for the total amount of money raised after winning election. Only include male candidates.

```
# Filter for male candidates
male_candidates <- campaign[campaign$cand.gender == "M", ]

# Calculate the IQR of total money raised for these male
# candidates
IQR(male_candidates$total.raised.candidate, na.rm = TRUE)
```

```
[1] 113736.5
```

Answer: 113736.5

Question 6

Compute the absolute average difference in `share.district.total` for men and and for women. Also compute the absolute average difference in `share.district.total` for Democrats and for Republicans. Report the numerical value for the largest difference.

```
# Mean of share.district.total for male and female
# candidates
mean_share_male = mean(campaign$share.district.total[campaign$cand.gender ==
    "M"], na.rm = TRUE)
mean_share_female = mean(campaign$share.district.total[campaign$cand.gender ==
    "F"], na.rm = TRUE)
```

```r
# Difference in share.district.total for male vs. female
difference_gender = abs(mean_share_male - mean_share_female)

# Mean of share.district.total for Democrat and Republican
# candidates
mean_share_democrat = mean(campaign$share.district.total[campaign$Party ==
    100], na.rm = TRUE)
mean_share_republican = mean(campaign$share.district.total[campaign$Party ==
    200], na.rm = TRUE)

# Difference in share.district.total for Democrat vs.
# Republican
difference_party = abs(mean_share_democrat - mean_share_republican)

# Smallest difference
max(difference_gender, difference_party)
```

```
[1] 0.02408793
```

Answer: 0.02

Question 7

Which candidate (report the value of `bonica.rid`) raised the most money from female donors? Note there might be NAs.

```r
# Find the maximum amount raised from female donors
max_female_money = max(campaign$female.money, na.rm = TRUE)

# Subset the dataframe to find the candidate who raised
# this amount
campaign$bonica.rid[campaign$female.money == max_female_money]
```

```
 [1] NA           NA           NA           NA           NA
 [6] NA           "cand107423" NA           NA           NA
[11] NA           NA           NA           NA           NA
[16] NA           NA           NA           NA           NA
[21] NA           NA           NA           NA           NA
[26] NA           NA           NA           NA           NA
[31] NA           NA           NA           NA           NA
```

```
[36] NA           NA           NA           NA           NA
[41] NA           NA           NA           NA           NA
[46] NA           NA
```

Answer: cand107423

Question 8

PACs (Political Action Committees) are groups that support candidates. How much more (or less) money in *total* did *ALL* female candidates raise from PACs compared to *ALL* male candidates? Report the absolute value of the difference.

```
# Total PAC money received by female candidates
total_pac_female = sum(campaign$pac.money[campaign$cand.gender ==
    "F"], na.rm = TRUE)

# Total PAC money received by male candidates
total_pac_male = sum(campaign$pac.money[campaign$cand.gender ==
    "M"], na.rm = TRUE)

# Difference in PAC money: Female - Male
abs(total_pac_female - total_pac_male)
```

```
[1] 24415264
```

Answer: 24415264

Question 9

Which state had the most female Republicans run for office? Report the state abbreviation.

```
# Filter for female Republican candidates
female_republicans <- campaign[campaign$cand.gender == "F" &
    campaign$Party == 200, ]

# Count the number of female Republican candidates in each
# state
state_counts <- table(female_republicans$State)

# Identify the state with the maximum number of female
```

```r
# Republican candidates
names(which.max(state_counts))
```

```
[1] "MO"
```

Answer: MO

Quesiton 10

On average, how much more did males who won election raise from PACs compared to individual donors? Report the absolute mean difference.

```r
# Filter for male winners
male_winners = campaign[campaign$male.winner == 1, ]

# Calculate the difference between PAC money and individual
# money for each male winner
mean(male_winners$pac.money, na.rm = TRUE) - mean(male_winners$individual.money,
    na.rm = TRUE)
```

```
[1] 38577.28
```

Answer: 38577.28