Precept 2

Sources of Empathy in the Circuit Courts

In this precept, we will analyze the relationship between various demographic traits and pro-feminist voting behavior among circuit court judges. We will use data from Glynn and Sen (2015) 'Identifying Judicial Empathy: Does Having Daughters Cause Judges to Rule for Women's Issues? in which the authors argue that having a female child causes circuit court judges to make more pro-feminist decisions.

The dataset `dbj.csv` in the `data` folder contains the following variables:

Name	Description
`name`	The judge's name
`circuit` Wh	ich federal circuit the judge serves in
`children`	The number of children each judge has
`daughters`	The number of female children the judge has
`sons`	The number of male children the judge has
`woman`	Takes a value of 1 if the judge is a woman, 0 otherwise
`yearb`	The year the judge was born
`race`	The judge's race (1: white, 2: African-American, 3: Hispanic, 4: Asian-American)
`religion`	The judge's religion (1: Unitarian, 2: Episcopalian, 3: Baptist, 4: Catholic, 5: Jewish, 7: Presbyterian, 8: Protestant, 9: Congregationalist, 10: Methodist, 11: Church of Christ, 16: Baha'i, 17: Mormon, 21: Anglican, 24: Lutheran, 99: Unknown)
`republican`	Takes a value of 1 if the judge was appointed by a Republican president, 0 otherwise. Used as a proxy for the judge's party.
`progressive.vote`	The proportion of the judge's votes on women's issues which were decided in a pro-feminist direction

First, let's start with the design of the study.

Part 1: Thinking about the design of the study

Question 1.1

We are going to assume that the number of daughters is random, but the number of children a judge has is not. Why is it reasonable to assume that the number of daughters is random, given a fixed number of children? Why is it not reasonable to assume that the total number of children is random?

Question 1.2

Under this assumption, what is the treatment variable? What is the outcome? What sorts of behavior could violate our assumption of randomness?

Question 1.3

Imagine a judge with exactly one child. Describe his potential outcomes. Please use potential outcome notation: $Y_i(0)$, $Y_i(1)$ etc.[1]

[1] If you want to write a subscript, e.g. Y_i, then type it as `Y~i~` with the subscripted part surrounded by one `~`.

Imagine that this judge with exactly one child has a daughter. What is the observed outcome? The counterfactual outcome? What is the causal effect of having exactly one daughter on pro-feminist voting behavior, for this judge, written in potential outcomes notation?

Part 2: Analyzing the Data

Question 2.1

Read the data into an object named `dbj`. How many judges are there in the dataset? What is the gender composition of judges in the data set? What is the party composition of female judges in the data set?

```
dbj <- read.csv("data/dbj.csv")
## How many judges are there in the data set?
summary(dbj) # 244 judges are in the data set
```

```
                   name        circuit           child
 Alarcon, Arthur L.   :  1   Min.   : 1.000   Min.   :0.000
 Aldisert, Ruggero    :  1   1st Qu.: 4.000   1st Qu.:2.000
 Aldrich, Bailey      :  1   Median : 7.000   Median :2.000
 Alito, Samuel A., Jr.:  1   Mean   : 6.487   Mean   :2.473
 Altimari, Frank X.   :  1   3rd Qu.: 9.000   3rd Qu.:3.000
 Anderson, Stephen H. :  1   Max.   :12.000   Max.   :9.000
 (Other)              :218
  daughters          sons           woman            yearb
 Min.   :0.000   Min.   :0.000   Min.   :0.0000   Min.   :1905
 1st Qu.:0.000   1st Qu.:0.000   1st Qu.:0.0000   1st Qu.:1926
 Median :1.000   Median :1.000   Median :0.0000   Median :1935
 Mean   :1.237   Mean   :1.237   Mean   :0.1696   Mean   :1935
 3rd Qu.:2.000   3rd Qu.:2.000   3rd Qu.:0.0000   3rd Qu.:1944
 Max.   :5.000   Max.   :5.000   Max.   :1.0000   Max.   :1955

     race         religion       republican     progressive.vote
 Min.   :1.00   Min.   : 1.00   Min.   :0.0000   Min.   :0.0000
 1st Qu.:1.00   1st Qu.: 4.00   1st Qu.:0.0000   1st Qu.:0.2703
 Median :1.00   Median : 5.00   Median :1.0000   Median :0.4226
 Mean   :1.17   Mean   :16.47   Mean   :0.5402   Mean   :0.4341
 3rd Qu.:1.00   3rd Qu.: 8.00   3rd Qu.:1.0000   3rd Qu.:0.5744
 Max.   :4.00   Max.   :99.00   Max.   :1.0000   Max.   :1.0000
```

```
## What is the gender composition of the judges in the data set?
table(dbj$woman) # 186 men and 38 women
```

```
  0   1
186  38
```

```
## What is the party composition of female judges in the data set?
# First, create a subset of the data including only women
female.subset <- dbj[dbj$woman == 1, ]
# Then determine the party composition of that subset
table(female.subset$republican) # 11 Republican women, 27 Democratic women
```

```
 0  1
27 11
```

Our outcome will be the proportion of pro-feminist rulings. What is the range of this variable?

```
range(dbj$progressive.vote)
```

```
[1] 0 1
```

Why? (Don't overthink this one.)

Question 2.2

Next, we are going to consider some difference-in-means between two subsets of the data. For each of the following groups, calculate the difference-in-means for progressive voting across:

1. All Republicans and Democrats
2. All men and women
3. Republican men and women
4. Democratic men and women

```
## All republicans and democrats
rep.mean <- mean(dbj$progressive.vote[dbj$republican == 1])
dem.mean <- mean(dbj$progressive.vote[dbj$republican == 0])
rep.mean - dem.mean
```

```
[1] -0.110029
```

```
## All men and women
man.mean <- mean(dbj$progressive.vote[dbj$woman == 0])
woman.mean <- mean(dbj$progressive.vote[dbj$woman == 1])
man.mean - woman.mean
```

```
[1] 0.02666059
```

```
## Republican men and women and Democratic men and women
rep.w.mean <- mean(dbj$progressive.vote[dbj$republican == 1 & dbj$woman == 1])
dem.w.mean <- mean(dbj$progressive.vote[dbj$republican == 0 & dbj$woman == 1])
rep.m.mean <- mean(dbj$progressive.vote[dbj$republican == 1 & dbj$woman == 0])
dem.m.mean <- mean(dbj$progressive.vote[dbj$republican == 0 & dbj$woman == 0])
rep.m.mean - rep.w.mean
```

```
[1] 0.0841608
```

```
dem.m.mean - dem.w.mean
```

```
[1] 0.05259684
```

Do any of the results surprise you? Does it appear that partisanship, gender, or both contribute to progressive voting patterns? Should we interpret any of these effects causally? Why or why not?

Question 2.3

For this question, you are going to create a figure with two density plots. In the leftmost plot, we are going to use data for judges with exactly one child. Plot the density of `progressive.vote` for judges with a girl in red and a boy in blue. Add separate dashed vertical lines in red and blue at the mean of `progressive.vote` for one girl and one boy.

In the rightmost plot, use data for judges with exactly two children. Plot the density of `progressive.vote` for judges with *at least one* girl in red and no daughters in blue. Add dashed vertical lines in red and blue at the mean of `progressive.vote` for at least one girl and no girls.

Make sure that each plot is formatted properly, with a title, legend, and informative titles on the axes. Please make sure that the x and y-axes are the same in both the left plot and the right plot.

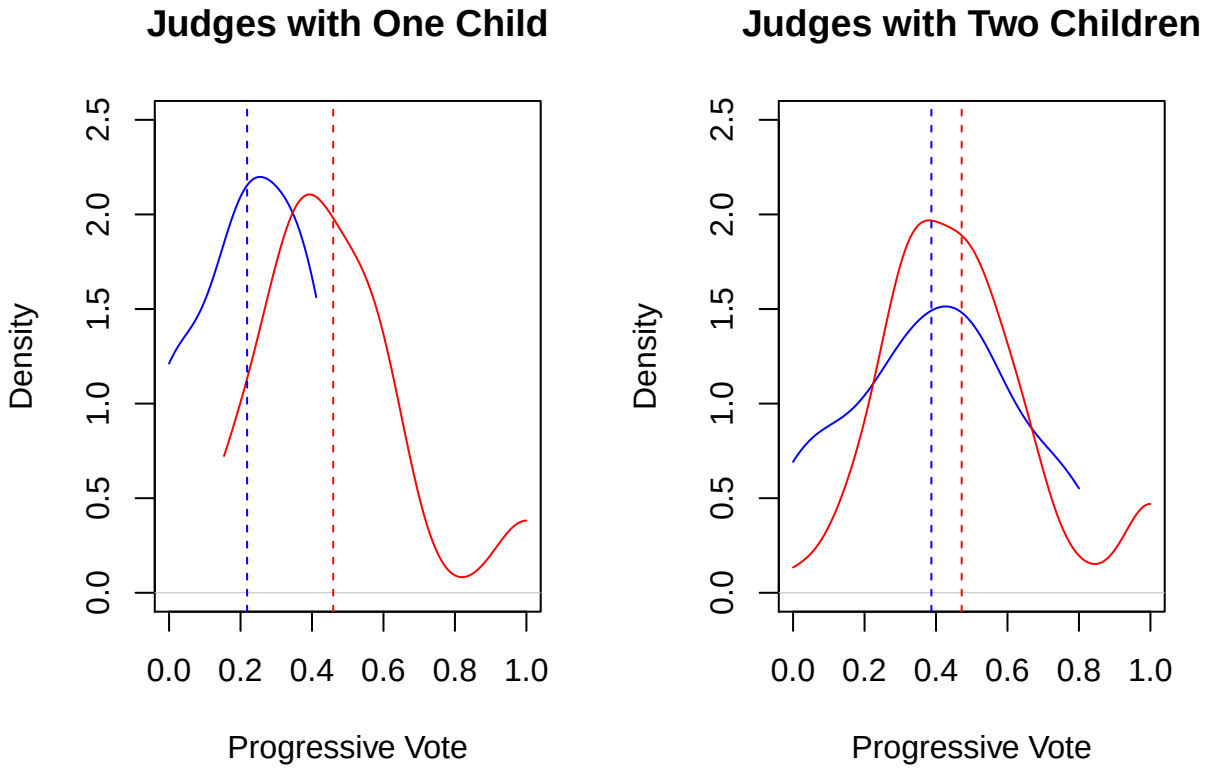
```
par(mfrow = c(1,2))

one.boy <- dbj$progressive.vote[dbj$child == 1 & dbj$daughters == 0]
one.girl <- dbj$progressive.vote[dbj$child == 1 & dbj$daughters == 1]

plot(density(one.boy, cut = 0),
     col = "blue", xlim = c(0, 1), ylim = c(0, 2.5),
     main = "Judges with One Child",
     xlab = "Progressive Vote", ylab = "Density")
lines(density(one.girl, cut = 0), col = "red")
abline(v = mean(one.girl), col = "red", lty = "dashed")
abline(v = mean(one.boy), col = "blue", lty = "dashed")

two.nodaughters <- dbj$progressive.vote[dbj$child == 2 & dbj$daughters == 0]
two.daughters <- dbj$progressive.vote[dbj$child == 2 & dbj$daughters > 0]

plot(density(two.nodaughters, cut = 0),
     col = "blue", xlim = c(0, 1), ylim = c(0, 2.5),
     xlab = "Progressive Vote",
     main = "Judges with Two Children")
lines(density(two.daughters, cut = 0),
      col = "red", xlab = "Progressive Vote", ylab = "Density")
abline(v = mean(two.daughters), col = "red", lty = "dashed")
abline(v = mean(two.nodaughters), col = "blue", lty = "dashed")
```



```r
par(mfrow = c(1,1)) # change back to single plots
```

Do you notice a stronger effect for one child families or two child families? Why might we be worried about family size as a confounder? How does this figure control for the confounder of family size?

References

Glynn, Adam N., and Maya Sen. 2015. "Identifying Judicial Empathy: Does Having Daughters Cause Judges to Rule for Women's Issues?" *American Journal of Political Science* 59 (1): 37–54. doi:10.1111/ajps.12118.