

Precept 3

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POL 345

Agenda

- Check in/share
- Logistics
- Review of potential outcomes framework & study designs
- Precept Questions

Check In/Share

1. Most frustrating thing about the problem set
2. 1 thing you have or do/have done you think no one else in the group has

Logistics

- Problem set
 - Should have been challenging but doable
 - We are grading them now- wait until we return them for questions
 - We know the wording was confusing & there was a lack of consensus on interpretation -> ambiguity goes to the student
- Quiz Wednesday 9/30
 - Open everything
- Office hours: Wednesdays 12-2PM eastern
 - Welcome to come to mine or any other preceptors'
 - Just click the link (zoom tab on canvas) & show up
 - Email me if I've stepped away

Potential Outcomes Framework

Treatment (T_i)

- Two treatment groups:
 - $T_i = 1$, i receives the treatment
 - $T_i = 0$, i does not receive the treatment

Outcome ($Y_i(T_i)$)

- Two potential outcomes:
 - $Y_i(1)$, outcome if i receives the treatment
 - $Y_i(0)$, outcome if i does not receive the treatment

Effect of treatment on $i = Y_i(1) - Y_i(0)$

Average Treatment Effect = $\frac{1}{N} \sum_{i=1}^N (Y_i(1) - Y_i(0))$

- Remember that this is the same as difference-in-means!

Study Designs

1. Experiments- treatment is randomized (so can estimate causal effect)
 1. Laboratory experiments- in a highly controlled environment
 - internal validity > external validity
 2. Field/”natural” experiments- in the “real world”
 - external validity > internal validity
2. Observational studies- treatment is not randomized
 - Can only estimate causal effect if you control for all potential confounding

Precept Questions

Precept Paper

Identifying Judicial Empathy: Does Having Daughters Cause Judges to Rule for Women's Issues?

- Very pertinent- we'll contextualize it in contemporary events
- Data: dbj.csv

Variables

| Name | Description |
|-------------------------------|--|
| <code>name</code> | The judge's name |
| <code>circuit</code> | Which federal circuit the judge serves in |
| <code>children</code> | The number of children each judge has |
| <code>daughters</code> | The number of female children the judge has |
| <code>sons</code> | The number of male children the judge has |
| <code>woman</code> | Takes a value of 1 if the judge is a woman, 0 otherwise |
| <code>yearb</code> | The year the judge was born |
| <code>race</code> | The judge's race (1: white, 2: African-American, 3: Hispanic, 4: Asian-American) |
| <code>religion</code> | 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) |
| <code>republican</code> | 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. |
| <code>progressive.vote</code> | The proportion of the judge's votes on women's issues which were decided in a pro-feminist direction |

Part 1: Conceptual Questions

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

- What is the treatment variable?
- The outcome variable?
- What sorts of behavior could violate our assumption of randomness?

Question 1.3- potential outcomes

Imagine...

A judge with one child

- Describe his/her potential outcomes
- Write this in potential outcomes notation
 - Write subscripts as $\sim i \sim$

A judge with one daughter

- Write in potential outcomes notation:
 - His/her observed outcome
 - His/her counterfactual outcome
 - Causal effect of having one daughter on his/her voting record

Part 2: Data Analysis/Coding Questions

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?

What is the range of our outcome (pro-feminist rulings)? Why?

Question 2.2- difference-in-means

Calculate the difference-in-means for pro-feminist voting across:

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

Question 2.2 (cont'd)- conceptual questions

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- graphing

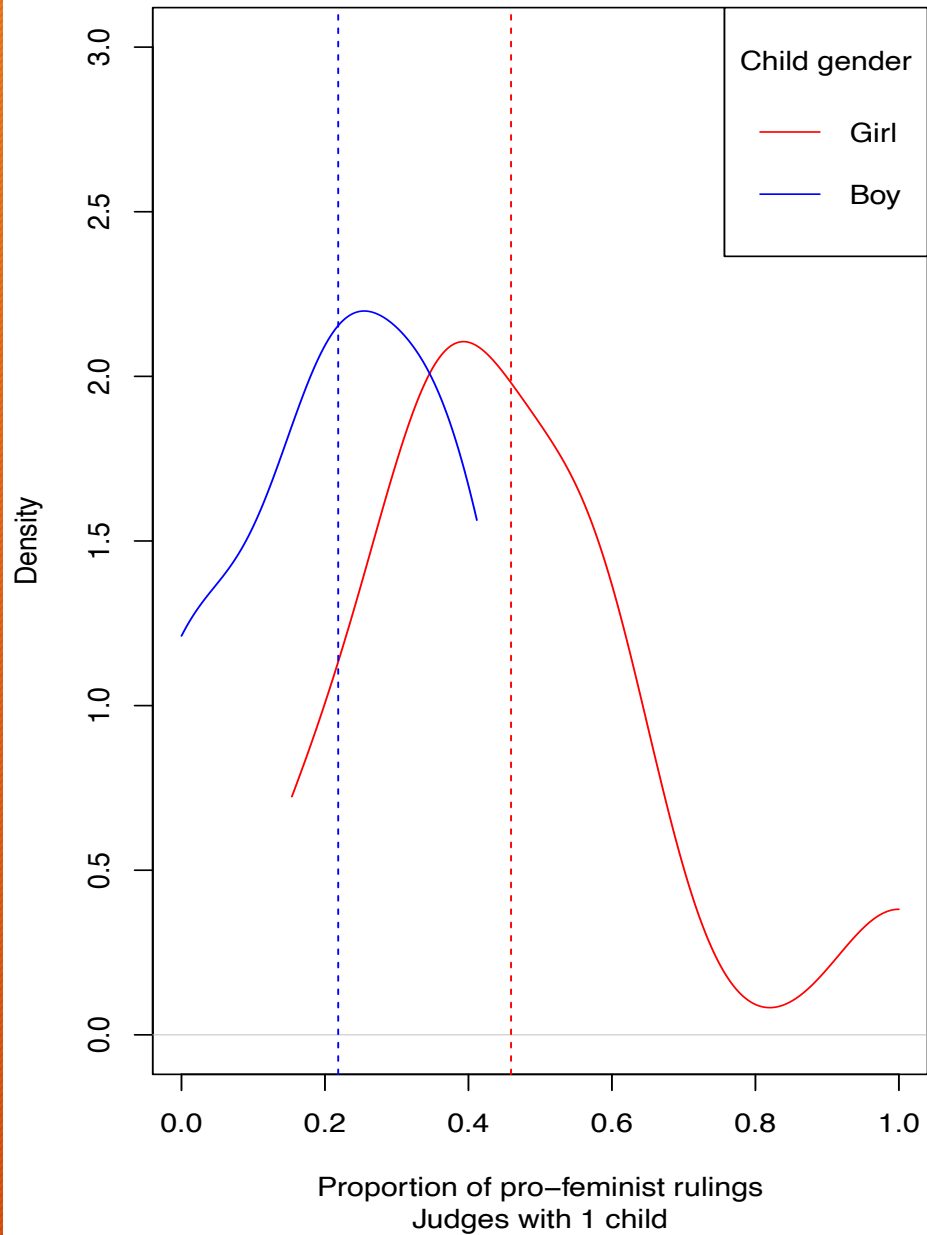
Create 2 density plots of progressive voting record by child gender

- Plot on the left = judges with 1 child
 - 1 girl = red
 - 1 boy = blue
- Plot on the right = judges with 2 children
 - 1+ girls = red
 - only boys = blue

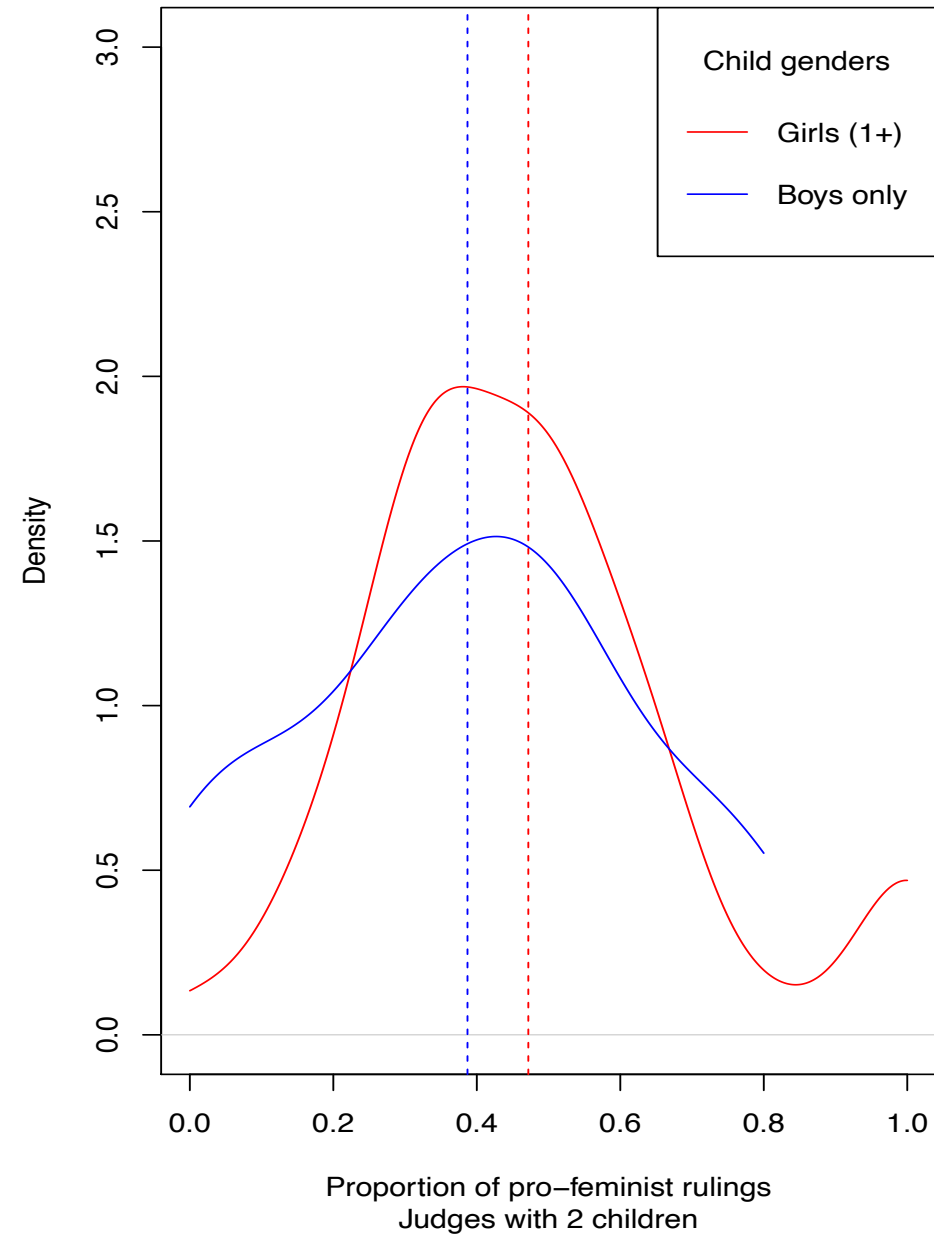
Include:

- Dashed vertical lines at mean voting record in each group
- Proper formatting: title, legend, axes labels
- x and y-axes should be the same for each plot

Voting records of judges by child gender



Voting records of judges by child genders



Question 2.3- conceptual questions

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?