

The U.S. Courts of Appeals Experiment: Modeling Randomization to Estimate the Causal Effects of Panel Assignment on Court Outcomes

Maya Sen (joint work with Adam Glynn)

Department of Government & Institute for Quantitative Social Sciences
Harvard University
www.gov.harvard.edu/people/maya-sen

motivation.

“I would hope that a wise Latina woman with the richness of her experiences would more often than not reach a better conclusion than a white male who hasn’t lived that life.”

Sonia Sotomayor, October 26, 2001.

Why do courts decide cases the way they do? Is it because of the law? Or is it because of who the judges are and what they believe?

To explore these questions, we leverage the fact that incoming cases in federal courts **are randomly assigned to 3-judge panels for adjudication**. By explicitly modeling this randomization mechanism, we can easily estimate the causal effects of different panel compositions.

randomization in the federal appellate courts.

In the interest of fairness, all U.S. federal appellate courts have in place mechanisms that somehow randomize cases to judicial panels. Here, we focus on the Fourth Circuit U.S. Court of Appeals (MD, NC, SC, VA, WV), where

- panels composed of 3 judges for each sitting are determined in advance;
- a computer program randomly assigns to panels cases that are ready for review;
- cases are heard and adjudicated by the panels.

ideology as an illustration.

Suppose we are interested in estimating the causal effect of having one, two, or three Democratic judges on a three-judge panel.

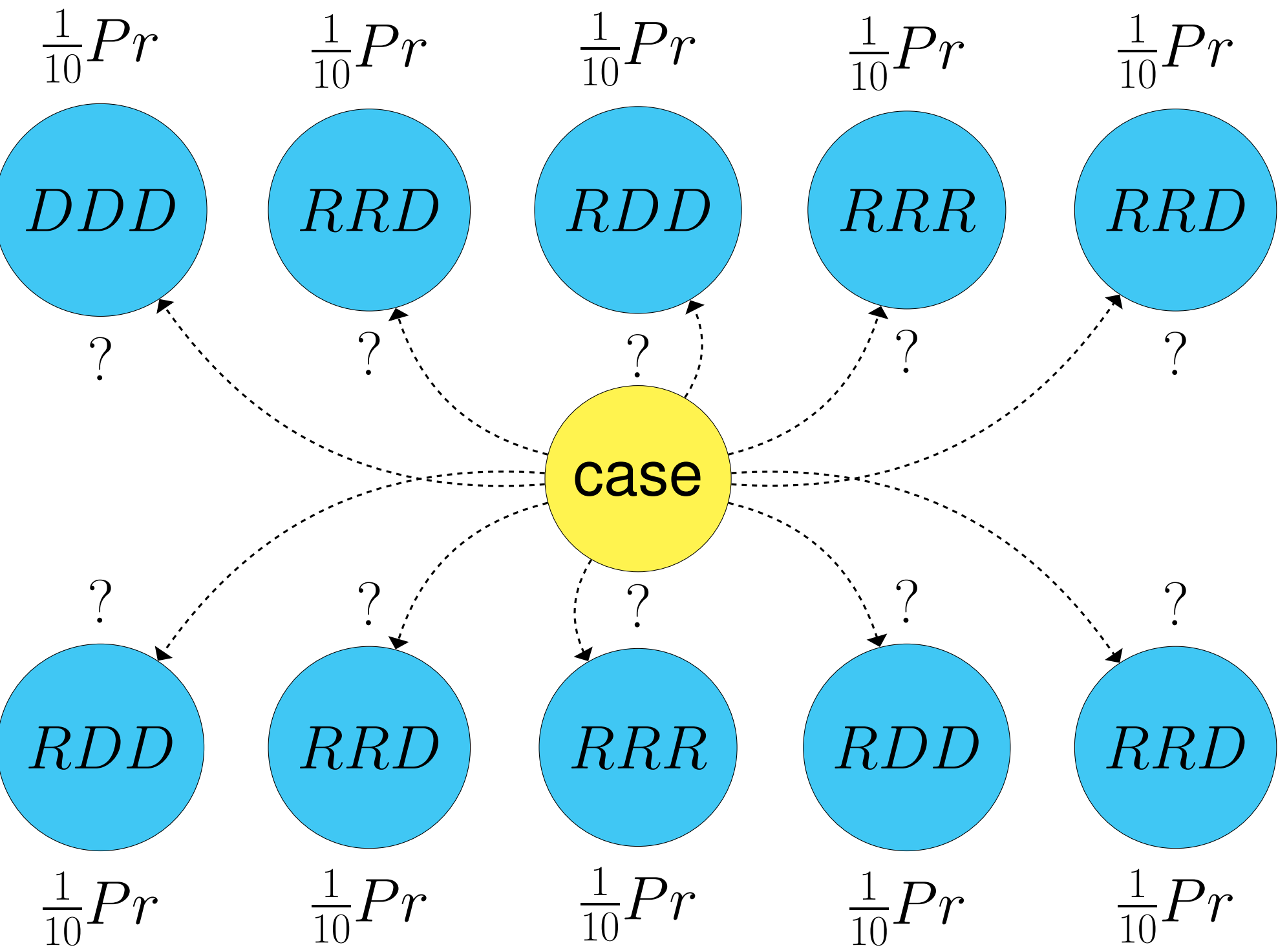
Let R = Republican, D = Democrat. Given that (a) three judges hear each case and (b) panels are randomly assigned, we effectively have four possible “treatment” regimes:

1. $\{R, R, R\}$ – panel assigned is composed of all Republicans
2. $\{R, R, D\}$ – two Republicans, one Democrat
3. $\{R, D, D\}$ – one Republican, two Democrats
4. $\{D, D, D\}$ – panel assigned is composed of all Democrats

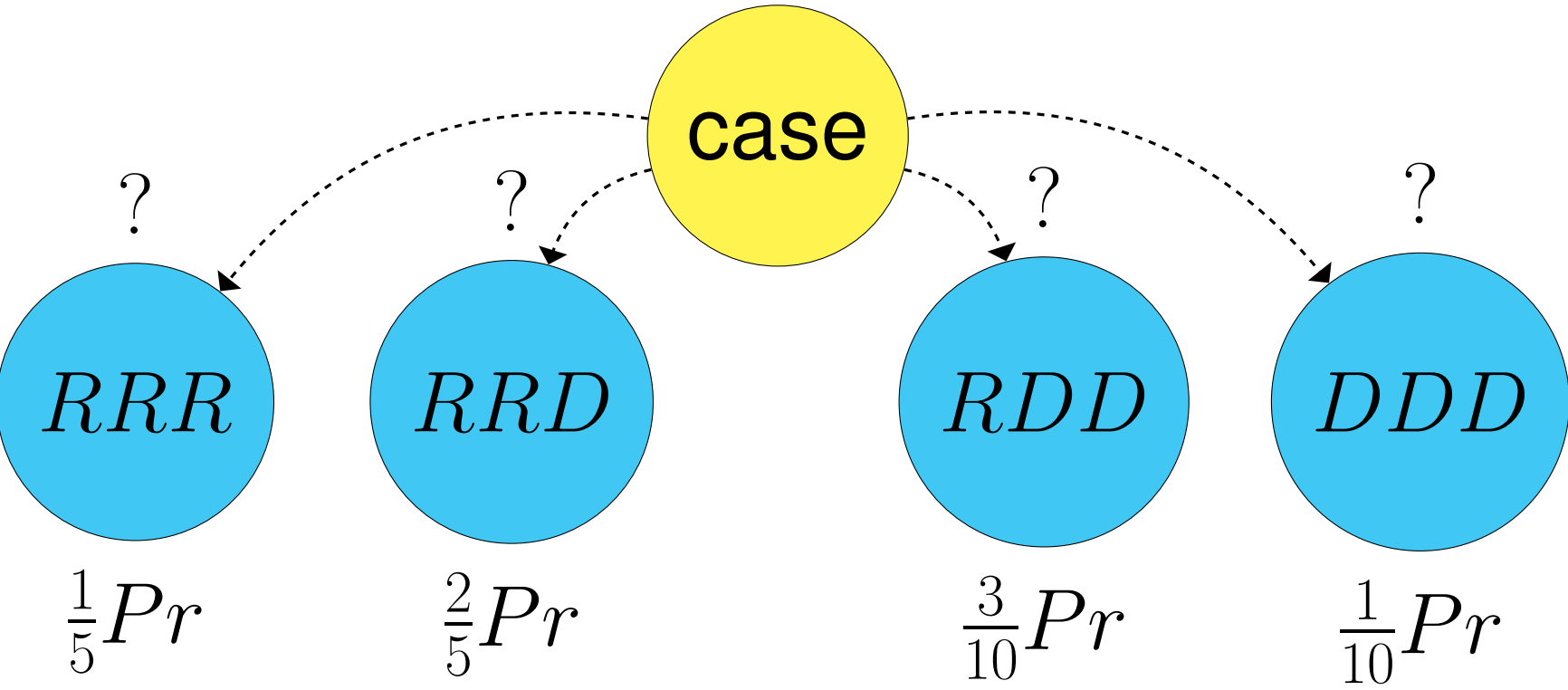
Our goal is to calculate the probability of a case receiving any one of these randomly assigned treatments.

example: ten available panels.

Suppose 10 panels are available to hear a case. The case has equal probability of being randomly assigned to any of the panels:



which in turn simplifies to:



We can therefore calculate an **exact propensity score** – the probability of a case being assigned to any of the available treatments.

operationalizing the methodology.

Key to this analysis is that we know the number and composition of all available panels. We gather this data by

1. downloading all Fourth Circuit cases from 1996-2003;
2. scraping the text to get the date each case was argued;
3. using the dates to back out composition of all panels available at each sitting.

From this we can calculate the exact propensity score.

extracting causal inferences.

We next used a simple inverse propensity weighted (IPW) estimator to extract our causal inferences,

- outcome var \rightarrow case outcome (1 if liberal, 0 if conservative)
- independent var \rightarrow treatment (whether D on panel)
- regression weighted by inverse probability of treatment received

preliminary results.

We looked at 236 Fourth Circuit cases from 1996-2003:

	All cases	Criminal cases only
At least one Democrat	0.24*	0.15*
	(0.05)	(0.07)
N	236	138

* indicates significance at $p < 0.05$

Above: ATE of **at least one Democratic judge on a panel**. Liberal case outcome regressed on treatment using inverse probability of treatment as weights.

	All cases	Criminal cases only
Additional Democrat	0.63*	0.54*
	(0.08)	(0.09)
N	236	138

* indicates significance at $p < 0.05$

Above: Logit coefficients when liberal case outcome is regressed on **number of Democratic judges on panel** weighing by inverse probability of treatment.

	Estimate	Std. Error	2.5%	97.5%
0 Democrats to 1	0.110	0.010	0.089	0.128
1 Democrats to 2	0.142	0.018	0.108	0.179
2 Democrats to 3	0.433	0.021	0.395	0.474

Above: First differences (looking at all cases, $n = 236$) of effect on liberal case outcome when the number of Democrats on the panel goes from (1) zero to one, (2) one to two, and (3) two to three.

extensions and future research.

A variety of causal questions can be explored with this method:

- Effect of having women, minority, or religious judges on panels?
- Effect of having only Ivy-educated judges on panels?
- Effect of intersecting treatments (e.g., black Republicans)?
- Ability of Presidents to make influential appointments?