FLS 6441 - Methods III: Explanation and Causation

Week 5 - Natural Experiments

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April 2019

Classification of Research Designs

	Independence of Treatment Assignment?	**Researcher Controls Treatment Assignment?**
Controlled Experiments	✓	✓
Natural Experiments	✓	
Observational Studies		

Classification of Research Designs

		Independence of Treatment Assignment	**Researcher Controls Treatment Assignment?**
Controlled Experiments	Field Experiments	✓	✓
	Survey and Lab Experiments	✓	✓
Natural Experiments	Natural Experiments	✓	
	Instrumental Variables	✓	
	Discontinuities	✓	
Observational Studies	Difference-in-Differences		
	Controlling for Confounding		
	Matching		
	Comparative Cases and Process Tracing		

Section 1

Natural Experiments

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     - Identify risks of reverse causation, omitted variables, (Self-)selection

Verifying Randomization

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- How do we know that Brazil's municipal audits are random?

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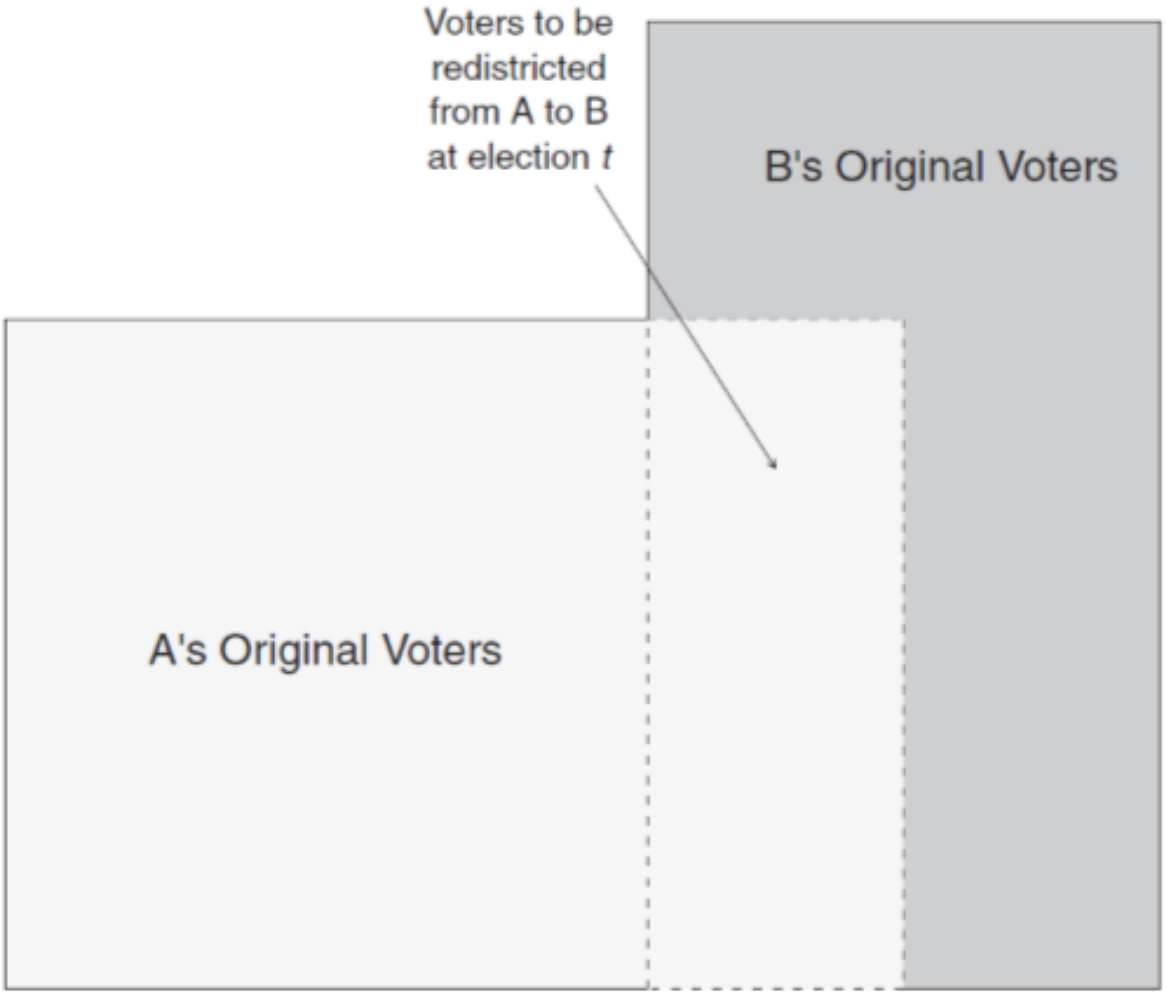
     - Sometimes treatments are 'bundles'
     - Sometimes treatments are 'repeated', creating interactions or changing expectations


Voters to be
redistricted
from A to B
at election t
B's Original Voters
A's Original Voters

The Problem of Not Controlling Treatment Assignment

	A's Original Voters	**Switched Voters**	**B's Original Voters**
2000 election context		Same	Same
Duration of exposure to incumbent in district B		4 years	10 years
1996 and prior election context	Same	Same	

The Problem of Not Controlling Treatment Assignment

	A's Original Voters vs. Switched Voters	**B's Original Voters vs. Switched Voters**
Potential Outcomes Independent of Treatment Assignment?	Yes	No
What is 'Treatment'?	Different election context, different candidates	Difference in duration of exposure to incumbent

Section 2

Randomized Natural Experiments

Ferraz and Finan (2008)

- Do voters punish corrupt politicians?

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- Corruption is hard to manipulate (ethically)
- We can also look at voters' *information* about corruption

Ferraz and Finan (2008)

- **Population:** Brazilian municipalities with population less than 450,000
- **Sample:** 373 Municipalities with audits either side of 2004 elections and first-term mayors
- **Treatment:** CGU Audit before election
- **Control:** Audit after election
- **Treatment Assignment Mechanism:** Randomized (Caixa)
- **Outcome:** Vote Share for the Incumbent

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- Methodology
  - $VS_{ms} = \alpha + \beta \text{Audited Early}_{ms} + X_{ms} + FE_s + \epsilon_{ms}$

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  - $VS_{ms} = \alpha + \beta \text{Audited Early}_{ms} + X_{ms} + FE_s + \epsilon_{ms}$
  - Result: No Effect

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- The importance of a theoretical model:
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- So we need treatment and control groups reflecting the theory
- Voters'*priors* about the candidate's corruption vary
- And the *content* of the information varies
- It's the interaction of expectations and information content that matters

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  - $VS_{ms} = \alpha + \beta \text{Audited Early}_{ms} + \beta_2 \text{Corruption}_{ms} + \beta_3 \text{Audited Early}_{ms} * \text{Corruption}_{ms} + X_{ms} + \text{FE}_s + \epsilon_{ms}$

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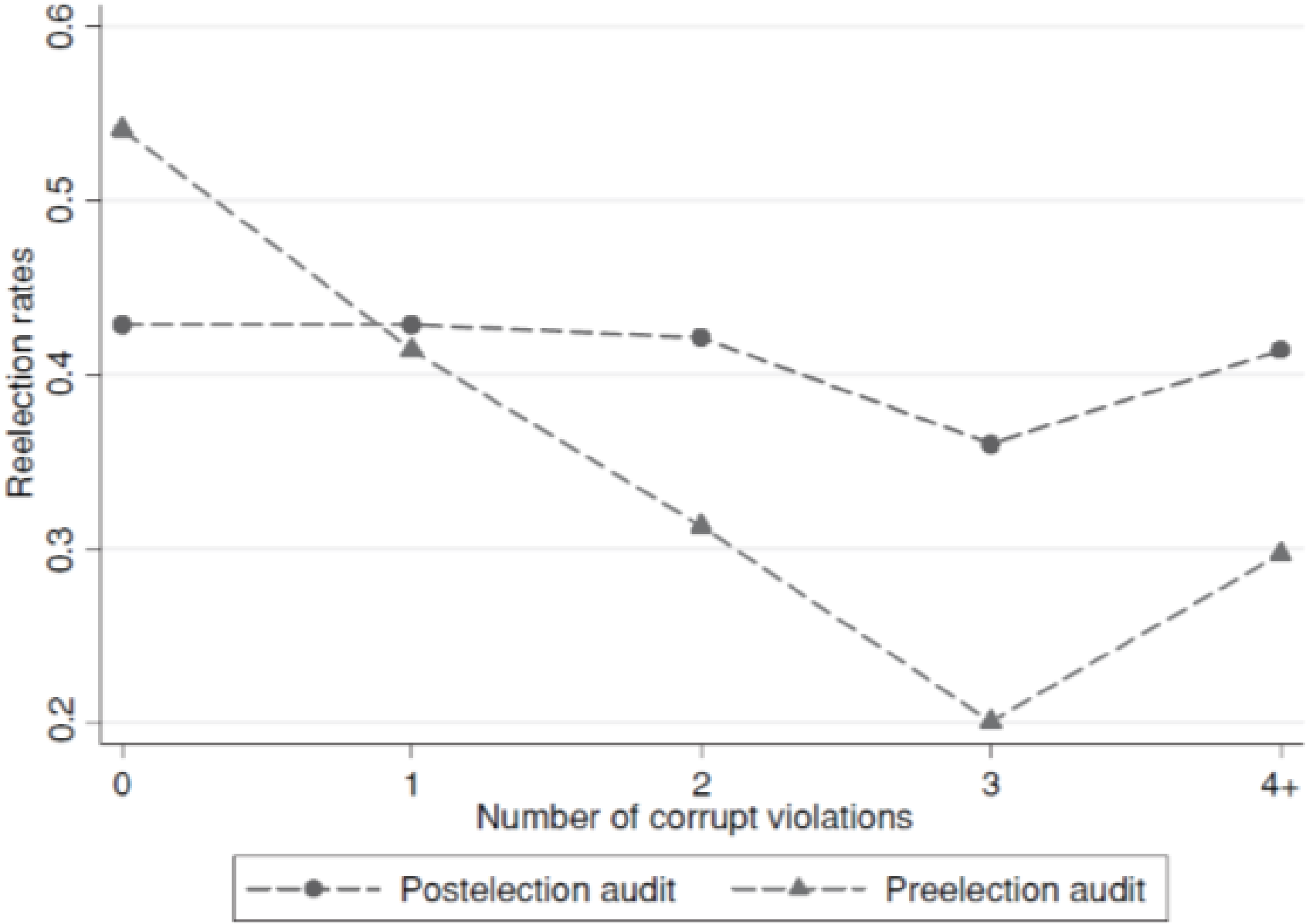
  - Stronger corruption information (3 violations) reduces re-election by 14% points
  - Strong corruption information (2 violations) with local radio reduces re-election by 11% points


Reelection rates
0.2
0.3
0.4
0.5
0.6
0
1
2
3
4+
Number of corrupt violations
Postelection audit
Preelection audit

Section 3

Non-Randomized Natural Experiments

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- Our assumption is always "The Treatment Assignment Mechanism is independent of potential outcomes"
- Can we find real-world treatment assignments that ignored potential outcomes?
  - "As good as random", "As-if random"

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  - But we cannot test this
  - We have to rely on qualitative evidence of the treatment assignment mechanism

Posner (2004)

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- **Treatment:** Smaller country (relative to size of ethnic group)
- **Control:** Larger country
- **Potential Outcomes:** Degree of political conflict between ethnic groups in larger/smaller countries
- **Treatment Assignment Mechanism:** African borders that cross ethnic group boundaries

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- Splitting the Chewa and Tumbuka groups

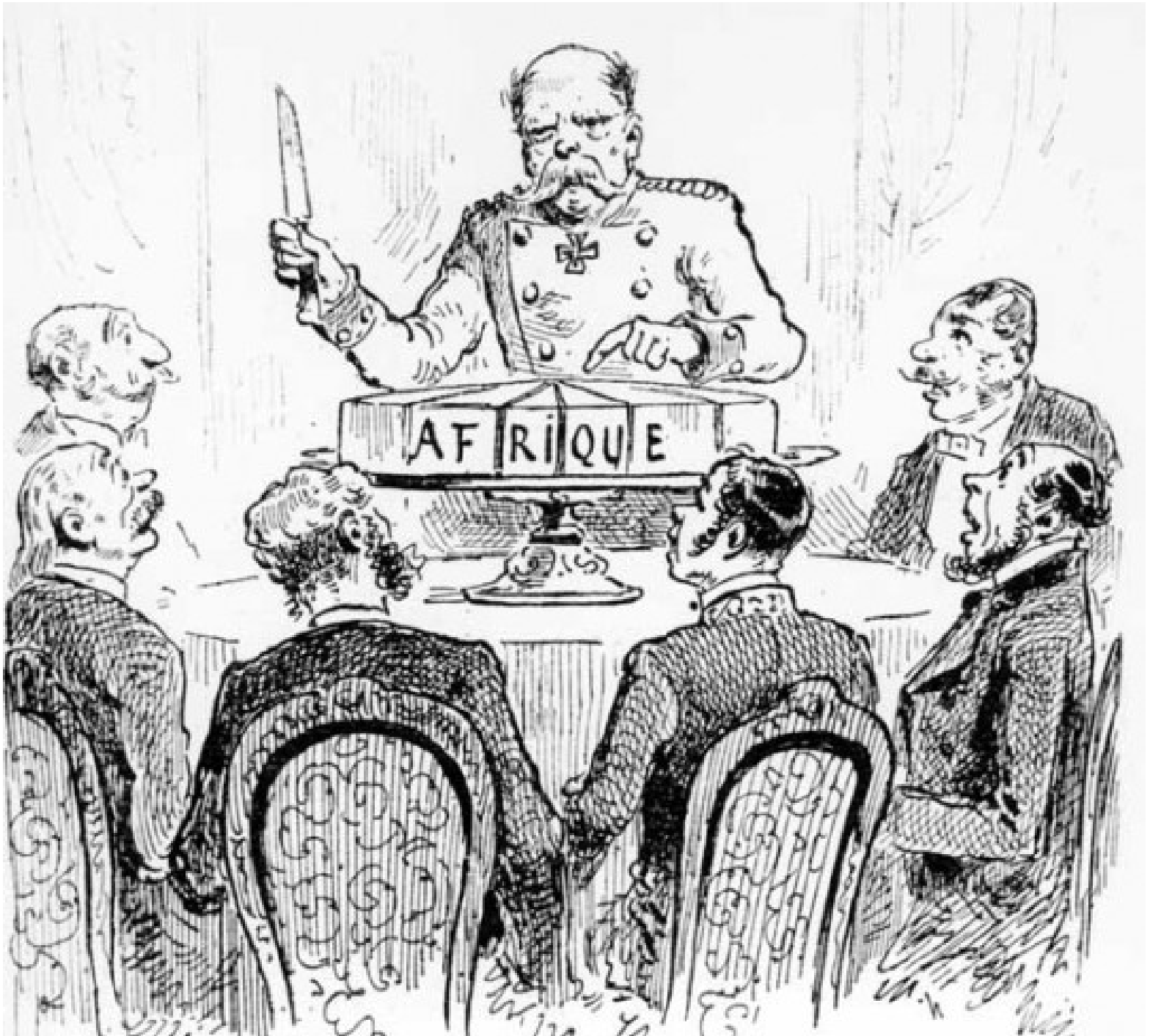
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FIGURE 1. Research Sites

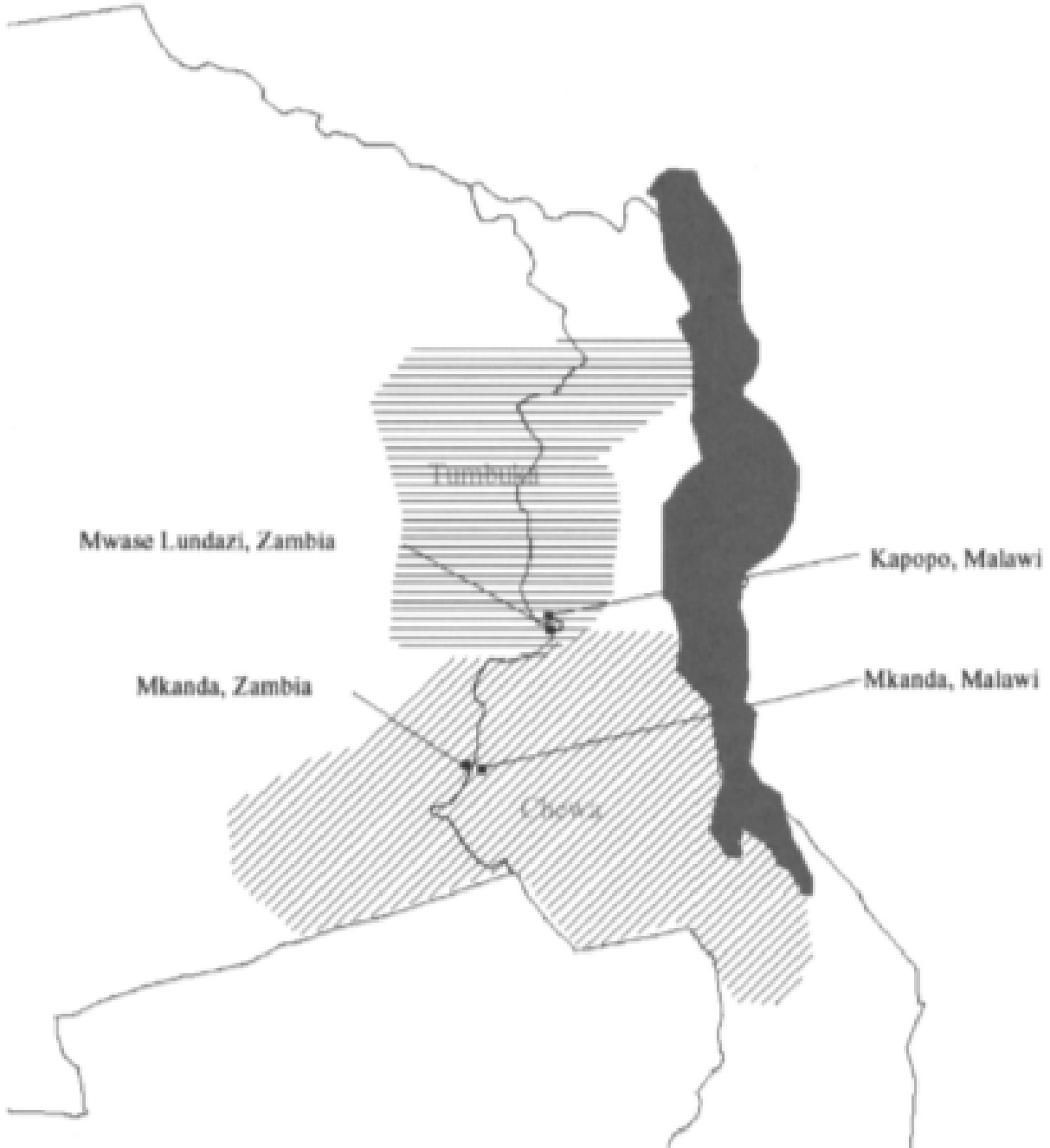
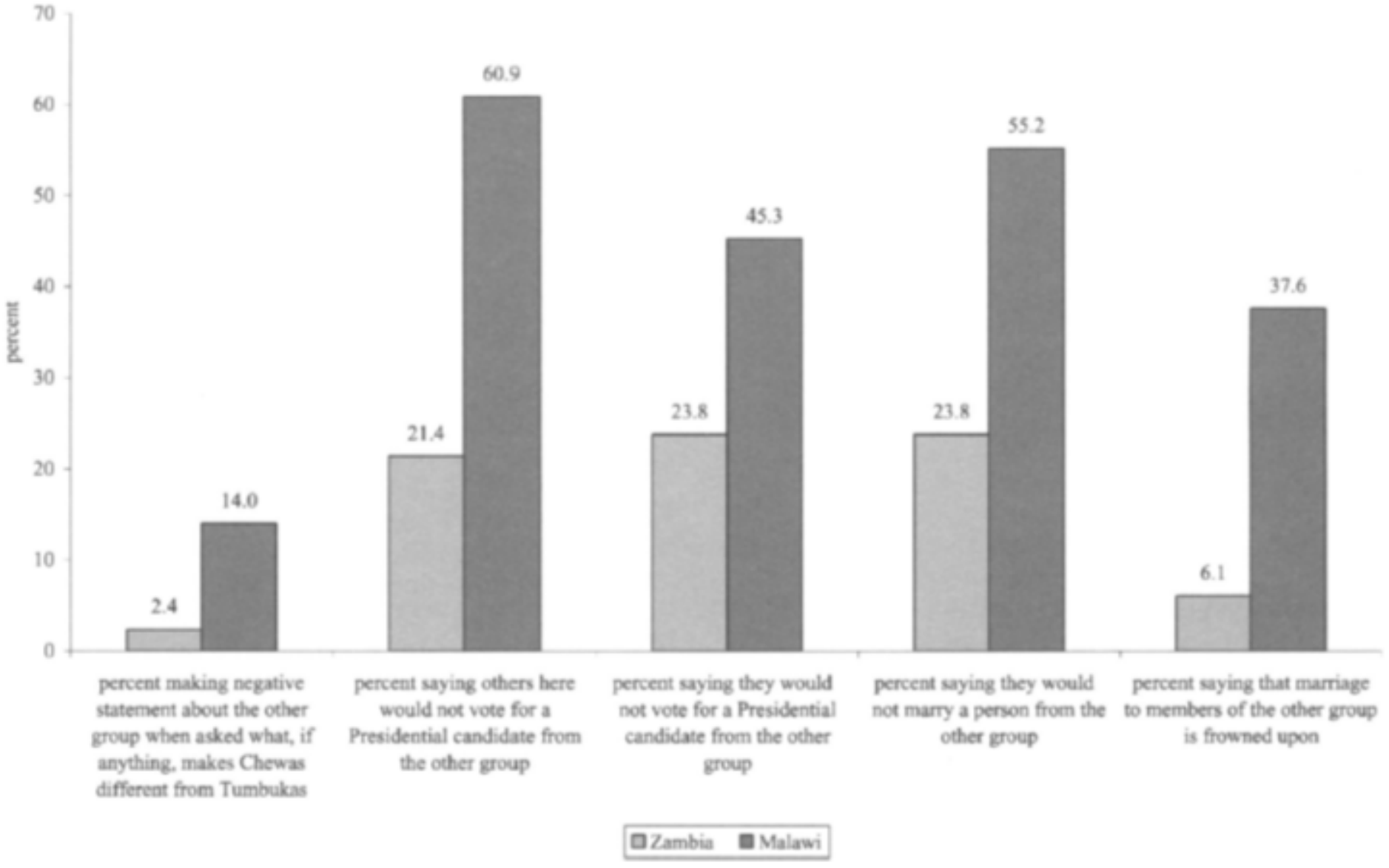


FIGURE 2. Chewa—Tumbuka Relations in Zambia and Malawi Compared



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- What is Posner interested in? Large ethnic groups relative to country size
- But lots of things are different about Zambia!
- Eg. Zambia is *much* richer than Malawi due to copper revenues - maybe politics doesn't need to be as conflictual