

Discrimination (cont.)

Urban Economics

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November 14, 2023

Discrimination

- ▶ Black people are less likely to find a house, be employed, more likely to be arrested by the police, and more likely to be incarcerated.
- ▶ Women are very scarce at the top echelon of the corporate, academic and political ladders despite the fact that (in rich countries at least) they get better grades in school and are more likely to graduate from college.
- ▶ While many in the media and public opinion circles argue that discrimination is a key force in driving these patterns, showing that it is actually the case is not simple.
- ▶ Indeed, it has proven elusive to produce convincing evidence of discrimination using standard regression analysis methods and observational data, in the sense in which we define discrimination: members of a minority group (women, Blacks, Muslims, immigrants, etc.) are treated differentially (less favorably) than members of a majority group with otherwise identical characteristics in similar circumstances.

Discrimination in Housing Markets

- ▶ Recent research has shown that the neighborhood where people live has important implications for short-run, long-run and even intergenerational outcomes.
- ▶ Observational data make it difficult to disentangle the multiple factors involved in the residential location choice.
 - ▶ Housing/neighborhood preferences that also affect residential sorting behavior (Depero et al., 2015, Banzhaf and Walsh, 2013).
 - ▶ Disparities in income, differences in information about neighborhood attributes (Banzhaf et al., 2019, Aliprantis et al., 2019, Logan, 2011),
 - ▶ Labor market opportunities (Hausman and Stolper, 2019, Currie and Walker, 2011), and
 - ▶ Racial discrimination (Ewens et al., 2014, Carlsson and Eriksson, 2014, Hanson and Hawley, 2011, Ahmed and Hammarstedt, 2008, Christensen and Timmins, 2018, Christensen et al., 2020).

Measuring Discrimination in the Field

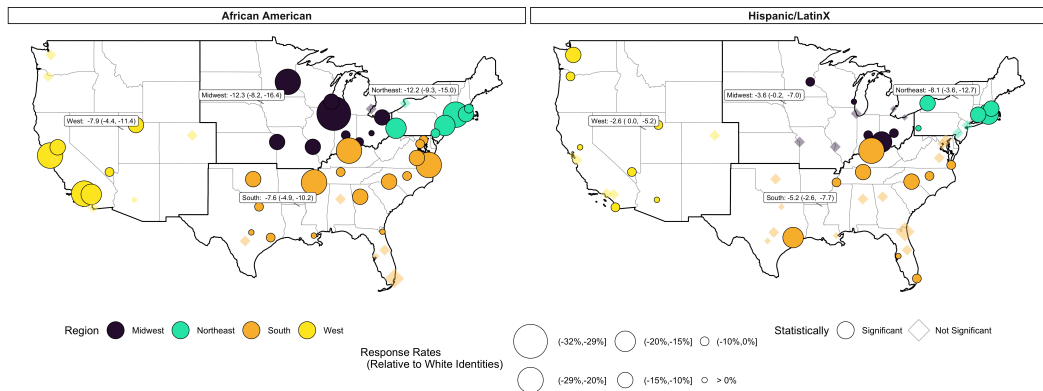
- ▶ Earlier research on discrimination focused on individual-level outcome regressions, with discrimination estimated from the “minority” differential that remains unexplained after including as many proxies as possible.
- ▶ The limitations of this approach are well-known. The interpretation of the estimated “minority” coefficient is problematic due to OVB.
- ▶ The traditional answer has been to saturate the regression with as many relevant variables as are available.
- ▶ But, of course, ensuring that the researcher observes all that the decision-maker observes is a hopeless task.
- ▶ Saturating also changes the interpretation and may introduce “bad controls” (Guryan and Charles, 2013)
- ▶ Audit and correspondence methodologies were developed to address these core limitations of the regression approach to measuring discrimination.

Experiment Set up: Identifying Housing Discrimination

- ▶ Audit Studies
- ▶ Correspondence Research Design ([Bertrand and Mullainathan, 2004](#))

The Geography of Discriminatory Behavior in the US

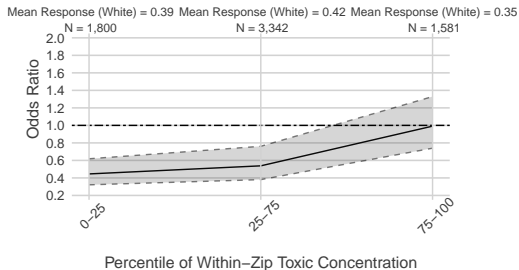
Figure 1: Response Rates CBSAs



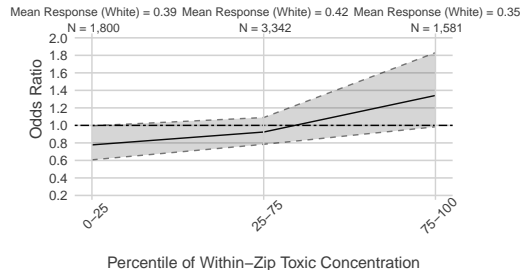
Results: Discrimination by RSEI Concentration

Christensen, Sarmiento-Barbieri, Timmins (2022) *RESTAT*

Figure 2: Odds Ratio by Within-ZIP Toxic Concentration



(a) African American

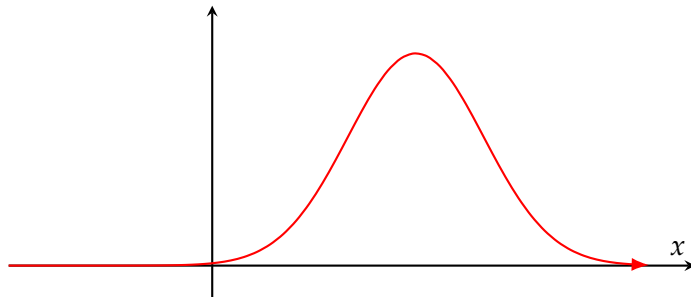


(b) Hispanic/LatinX

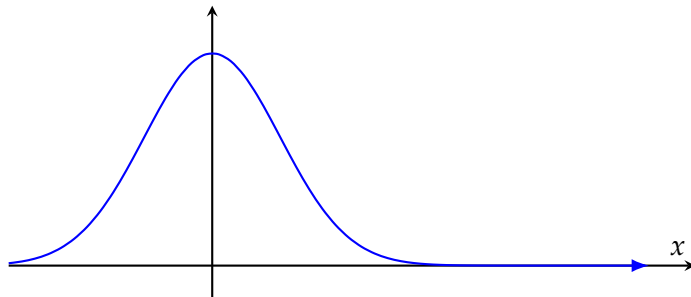
Experiment Design: Power Analysis

- ▶ We want to separate signal from noise.
- ▶ Power = probability of rejecting null hypothesis, given true effect $\neq 0$.
- ▶ In other words, it is the ability to detect an effect given that it exists.
- ▶ Power analysis is something we do **before** we run a study.
 - ▶ Helps you figure out the sample you need to detect a given effect size.
 - ▶ Or helps you figure out a minimal detectable difference given a set sample size.
 - ▶ May help you decide whether to run a study.

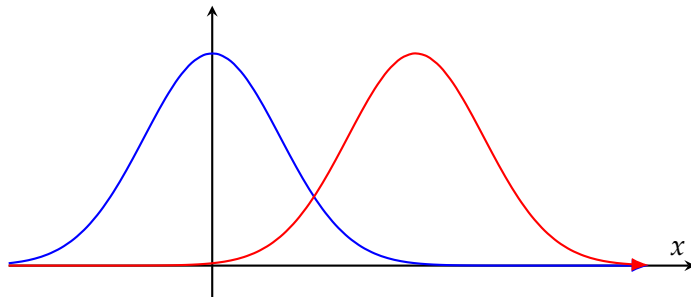
Many Experiments: a distribution of Estimates



Distribution of Estimates if true effect is 0



Two distributions under two hypothesis



Four results from hypothesis testing

What we really want to know but cannot observe
→ **Reality/underlying truth**

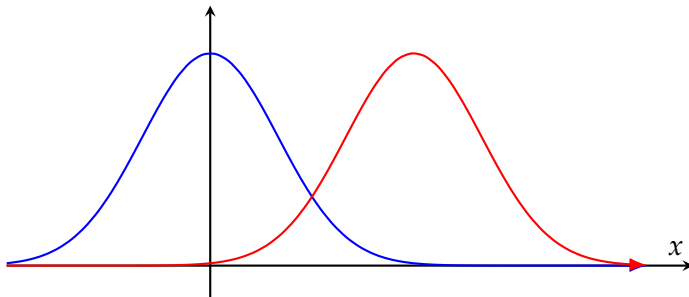
What we actually measure/learn
→ **Evaluation results**

	No impact	Impact
No impact detected		
Impact detected		

Four results from hypothesis testing

		Reality/underlying truth	
		No impact	Impact
Evaluation results	No impact detected	GREAT!	False negative: you conclude there is NO impact when there is Mismatch!
	Impact detected	False positive: you conclude there is impact when there is not Mismatch!	GREAT!

What influences power?



Approaches to power calculation

- ▶ Analytical calculations of power
- ▶ Simulation

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