

Detecting Discrimination

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Discrimination: Definition and Measurement

How Substantial is Labor Market Discrimination Against Blacks?

Table 1: Outcomes From Major Audit Studies For Blacks
(Outcome: Get Job or Not)

<i>Number of Audits</i>	<i>Pair</i>	<i>(a)</i> <i>Both Get Job</i>	<i>(b)</i> <i>Neither Gets a Job</i>	<i>Equal Treatment</i> <i>a + b</i>	<i>White Yes,</i> <i>Black No</i>	<i>White No,</i> <i>Black Yes</i>
Chicago*						
35	1	(5) 14.3%	(23) 65.7%	80.0%	(5) 14.3%	(2) 5.7%
40	2	(5) 12.5%	(25) 62.5%	75.0%	(4) 10.0%	(6) 15.0%
44	3	(3) 6.8%	(37) 84.1%	90.9%	(3) 6.8%	(1) 2.3%
36	4	(6) 16.7%	(24) 66.7%	83.4%	(6) 16.7%	(0) 0%
42	5	(3) 7.1%	(38) 90.5%	97.6%	(1) 2.4%	(0) 0%
197	Total	(22) 11.2%	(147) 74.6%	85.8%	(19) 9.6%	(9) 4.5%
Washington*						
46	1	(5) 10.9%	(26) 56.5%	67.4%	(12) 26.1%	(3) 6.5%
54	2	(11) 20.4%	(31) 57.4%	77.8%	(9) 16.7%	(3) 5.6%
62	3	(11) 17.7%	(36) 58.1%	75.8%	(11) 17.7%	(4) 6.5%
37	4	(6) 16.2%	(22) 59.5%	75.7%	(7) 18.9%	(2) 5.4%
42	5	(7) 16.7%	(26) 61.9%	77.6%	(7) 16.7%	(2) 4.8%
241	Total	(40) 16.6%	(141) 58.5%	75.1%	(46) 19.1%	(14) 5.8%

Table 1: Outcomes From Major Audit Studies For Blacks, Cont'd
(Outcome: Get Job or Not)

<i>Number of Audits</i>	<i>Pair</i>	<i>(a) Both Get Job</i>	<i>(b) Neither Gets a Job</i>	<i>Equal Treatment a + b</i>	<i>White Yes, Black No</i>	<i>White No, Black Yes</i>
Denver**						
18	1	(2) 11.1%	(11) 61.1%	72.1%	(5) 27.8%	(0) 0.0%
53	2	(2) 3.8%	(41) 77.4%	81.2%	(0) 0.0%	(10) 18.9%
33	3	(7) 21.2%	(25) 75.8%	97.0%	(1) 3.0%	(0) 0.0%
15	4	(9) 60.0%	(3) 20.0%	80.0%	(2) 6.7%	(2) 13.3%
26	9	(3) 11.5%	(23) 88.5%	100.0%	(0) 0.0%	(0) 0.0%
145	Total	(23) 15.8%	(103) 71.1%	86.9%	(7) 4.8%	(12) 8.3%

Notes: Results are percentages; figures in parentheses are the relevant number of audits.

Sources: Heckman and Siegelman (1993).

* This study was conducted by the Urban Institute.

** Denver pair numbers are for both black and Hispanic audits. For the sake of brevity, I only consider the black audits. The Denver study was not conducted by the Urban Institute but it was conducted to conform to Urban Institute practice.

The Implicit Assumptions Behind the Audit Method

The Becker Model

Appendix

Implicit Identifying Assumptions In The Audit Method

- Define the productivity of a person of race $r \in \{1, 0\}$, at firm f , with characteristics $\tilde{X} = (X_1, X_2)$ as $P(\tilde{X}, r, f)$.
- $r = 1$ corresponds to black; $r = 0$ corresponds to white.
- Assume that race does not affect productivity so we may write $P = P(\tilde{X}, f)$.
- The treatment at the firm f for a person of race r and productivity P is $T(P(\tilde{X}, f), r)$.
- Racial discrimination exists at firm f if

$$T(P(\tilde{X}, f), r = 1) \neq T(P(\tilde{X}, f), r = 0).$$

- If $P_0^* = P_1^*$,

$$T(P_1^*, 1) - T(P_0^*, 0) = \gamma.$$

- $P_1^* = |X_1^* + X_2^1$ where X_2^1 is the value of X_2 for the $r = 1$ member and $P_0^* = X_1^* + X_2^1$. In this case

$$T(P_1^*, 1) - T(P_0^*, 0) = X_2^1 - X_2^0 + \gamma.$$

- However, the decision rule to offer a job or extend credit often depends on whether or not the perceived productivity P exceeds a threshold c :

$$T = 1 \text{ if } P \geq c$$

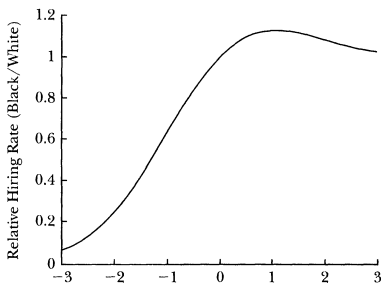
$$T = 0 \text{ otherwise.}$$

- Suppose that $P = X_1 + X_2$.
- X_2 is uncontrolled.
- Then assuming no discrimination ($\gamma = 0$)

$$T(P^*, 1) = 1 \text{ if } X_1^* + X_2^1 + f \geq c \\ = 0 \text{ otherwise}$$

$$T(P_0^*, 0) = 1 \text{ if } X_1^* + X_2^0 + f \geq c \\ = 0 \text{ otherwise.}$$

Figure 1: Relative Hiring Rate as a Function of the Level of Standardization



X_1^* = level of standardization

X_2^1, X_2^0 normal

$E(X_2^1) = E(X_2^0) = 0; \text{Var}(X_2^1) < \text{Var}(X_2^0)$

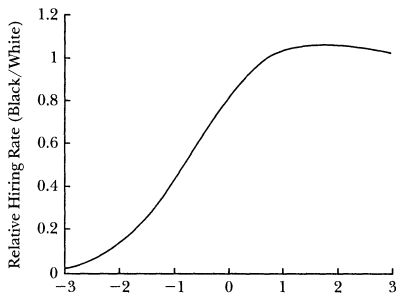
Relative Hiring Rate = $\frac{\Pr(T(P_1^*, 1) = 1)}{\Pr(T(P_0^*, 0) = 1)}$

$\text{Var}(X_2^0) = 2.25 \text{Var}(X_2^1) = 1$

$c_1 = c_0 = 0$

Notes: Blacks Have More Dispersion. Threshold Hiring Rule: No Discrimination Against Blacks Normally Distributed Unobservables.

Figure 2: Relative Hiring Rate as a Function of the Level of Standardization



X_1^* = level of standardization

X_2^1, X_2^0 normal

$E(X_2^1) = E(X_2^0) = 0; \text{Var}(X_2^1) < \text{Var}(X_2^0)$

Relative Hiring Rate = $\frac{\Pr(T(P_1^*, 1) = 1)}{\Pr(T(P_0^*, 0) = 1)}$

$\text{Var}(X_2^0) = 2.25 \text{Var}(X_2^1) = 1$

$c_1 = 0.25, c_0 = 0$

Notes: Blacks Held to Higher Standard; Blacks Have More Dispersion. Threshold Hiring Rule: No Discrimination Against Blacks Normally Distributed Unobservables.

- Then depending on the right tail area of X_2^1 and X_2^0 the values of c_1 and c_0 , and the level of standardization X_1^* ,

$$Pr(T(P_1^*, 1) = 1) \begin{matrix} \geq \\ \leq \end{matrix} P(T(P_0^*, 0) = 1).$$