

Reduction of Healthcare Disparities with Market Competition: The Case of Cardiac Angiography in New Jersey

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Background

- Extension of prior work on racial disparities in use of cardiac angiography (CA)
- NJ CON reform, 1996
 - Expand CA capacity
 - Expand access to CA for underserved populations
- Trend analysis ==> reform eliminated black-white CA disparity
- Mechanisms remain unknown

CA providers

1. Incumbents

- Existed pre-reform

- Full range of CA services

- Large inner city hospitals

2. Low risk facilities

- Created by 1996 reform

- Patients @ low risk of complications

- Outreach plans

- Suburban

3. Graduates

- Additional reform in 2001

- LR can “graduate” to full service w/new CON

Theory: Incumbent behavior changes the CA disparity

- New entrants

Small, suburban

Outreach plans – pro forma, not enforced

- Incumbents

Old CON rules ==> constrained capacity ==> excess demand
==> incentive & ability to emphasize service to “favored”
patients (well-insured, white, suburban)

Some blacks may be well-insured & profitable

Identification is costly

NJ reform ==> Expanded capacity ==> more options for whites
==> incumbents must focus on underserved

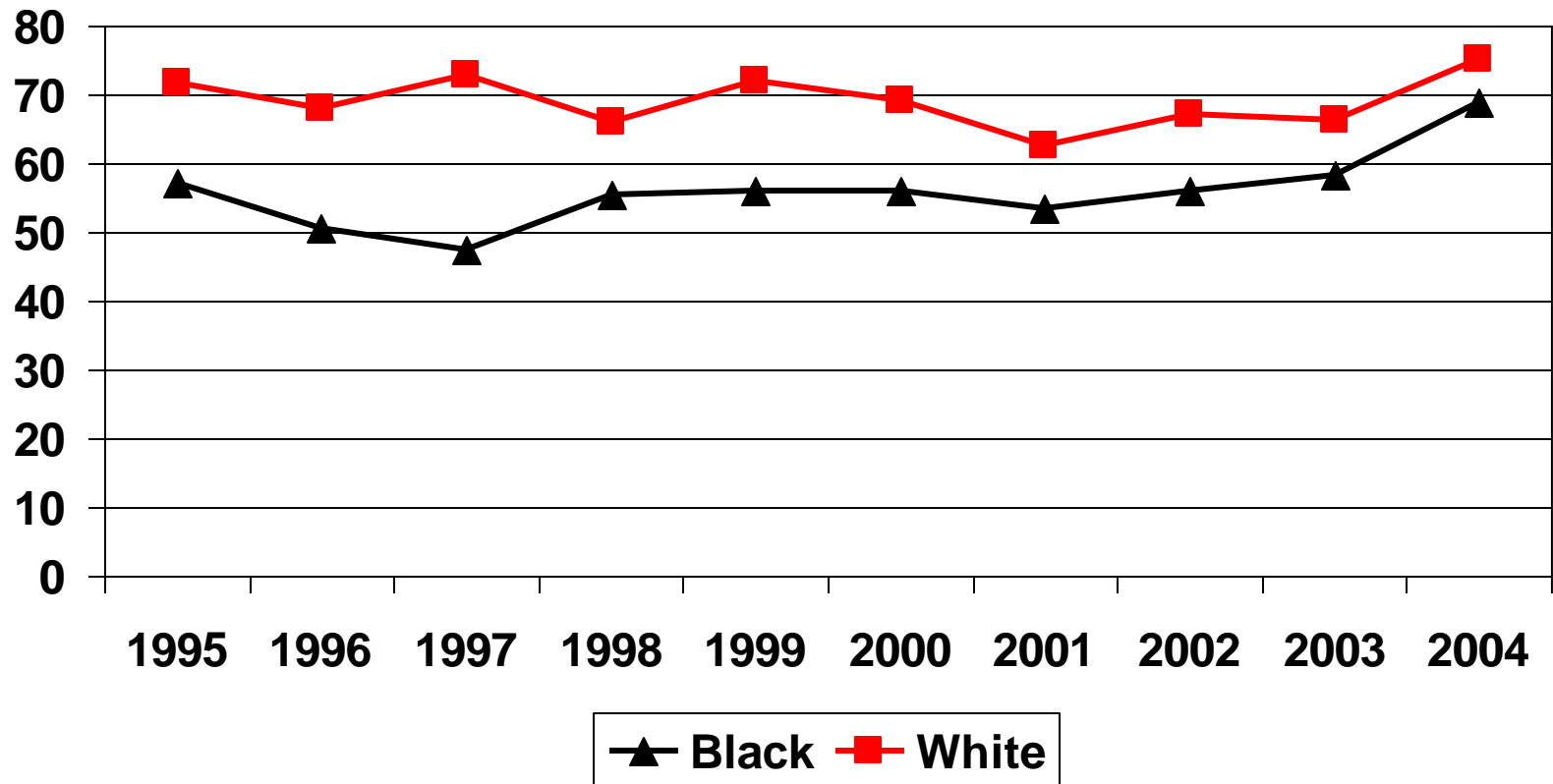
Testing the theory

- Hospital UB & U.S. Census data, 1995-2004
- Post reform = 1998-2004
- White CA rate minus black CA rate for NJ zip codes (per 10,000; age-sex adjusted, log form)
- Hospital choice set ==> CA providers by type: Incumbent, LR, graduate, NYC, Phila

$$Y_{it} = \alpha + \beta_1 LR_{it} + \beta_2 GR_{it} + \beta_3 IN_{it} + \beta_4 IN_{it} POST_{it} + \beta_5 HHI_{it} + \beta_6 TH_{it} + \beta_7 PH_{it} + \beta_8 NY_{it} + \beta_9 t + \varepsilon_{it}$$

- Theory: $\beta_3 > 0$, $\beta_3 + \beta_4 < \beta_3$
- Fixed effects models
- Sparsely populated zips ==> Weighted & non-weighted models

Average age-sex adjusted CA rate per 10,000 (Unit of analysis = zip code)



Sources: NJ Uniform Billing (UB-92) Records, U.S. Census Bureau

Model 1: Non-weighted observations

$n = 5,953$ $R^2 = 0.32$,

Variable	Coefficient	P-value
Low risk	0.0013	0.04
Graduates	0.0013	0.27
Incumbents	0.0015 (= β_3)	0.04
Incumbents, 98-04	-0.0011 (= β_4)	0.02
HHI	0.0006	0.87
Teaching	-0.0005	0.43
Phila CA	-0.0001	0.93
NYC CA	-0.0003	0.64
Time	-0.0001	0.87
Constant	8.4218	0.00

$\beta_3 > 0$

$\beta_3 + \beta_4 = 0$ (Statistically)

Model 2: Observations weighted by combined black & white population

$n = 5,493$ $R^2 = 0.40$

Variable	Coefficient	P-value
Low risk	0.0022	0.06
Graduates	0.0039	0.07
Incumbents	0.0032(= β_3)	0.06
Incumbents, 98-04	-0.0016(= β_4)	0.04
HHI	0.0170	0.04
Teaching	-0.0007	0.35
Phila CA	-0.0005	0.46
NYC CA	-0.0003	0.63
Time	-0.0006	0.25
Constant	9.4941	<0.01



$\beta_3 > 0$

$\beta_3 + \beta_4 = 0$ (Statistically)

Model 3: Observations weighted by black population only

$n = 5,391$ $R^2 = 0.57$

Variable	Coefficient	P-value
Low risk	0.0097	0.09
Graduates	0.0182	0.08
Incumbents	0.0091(= β_3)	0.02
Incumbents, 98-04	-0.0086(= β_4)	<0.01
HHI	0.0312	0.33
Teaching	-0.0041	0.23
Phila CA	-0.0007	0.68
NYC CA	-0.0036	0.21
Time	-0.0028	0.21
Constant	13.8434	<0.01



$\beta_3 > 0$

$\beta_3 + \beta_4 = 0$ (Statistically)

Summary

- Before reform, incumbent CA providers associated with larger disparities
- After reform, this association disappears
- Results are strongest when greater weight is given to areas w/large black populations
- Areas w/new CA facilities experienced no decrease in disparity
- Disparity reduction from change in incumbent behavior

Implications

- CON viewed as support for urban safety net hospitals
- Monopoly profits ==> cross subsidize underserved populations
- Findings imply the opposite ==> monopoly power used to favor certain types of CA patients
- Competition from new entrants ==> incentive to serve minorities
- Disparity reduction is positive
 - Cost effectiveness
 - Inappropriate use
 - Health outcomes