Baby’s Gone: 
The Effects of Increased Sentencing Severity on Fertility and Family Formation

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Societal Impacts of Policing and Incarceration

January 5, 2019
Figure: United States incarceration rate per 100,000 population, 1925-2010
Research Question: How does increased sentencing severity affect fertility, partner choice, marriage?

Variation: North Carolina Sentencing Reform.

Assumption: Observed changes are caused by policy.
Previous work

  - Lundberg, Pollak, and Stearns (2016)

- Empirical work
  - Incarceration: Charles and Luoh (2010); Mechoulan (2011)

★ My contribution: Different policy variation; focus on fertility as main outcome
INCARCERATION RATES, 1985-2005

Figure: Prisoners per 100,000 population: North Carolina and Nationally

[Graph showing the incarceration rates from 1985 to 2005 for North Carolina and nationally, with a steady increase over the years.]
North Carolina Structured Sentencing Act

▶ Goes into effect October 1, 1994.

▶ The Act...

1. Created a detailed sentencing grid which greatly reduced judicial discretion; defined a maximum and minimum sentence.

2. Changed the earned time system to make it less generous to inmates.

3. Abolished discretionary parole.
Figure: North Carolina prison population, entry, and exit
**Data Sources**

- **Incarceration Data**
  - Public offender data (Conviction based)
    - 1972-2017
    - Very detailed

- North Carolina Statistical Birth File

- 1990 and 2000 IPUMS Census Samples

- Surveillance, Epidemiology, and End Results Program (SEER)

  - Supplemented with data from IPUMS, BLS, BJS, and the FBI

*Summary*
FERTILITY SPECIFICATION

- Intensity of treatment based on pre-period partner market (age-race-CZ) incarceration rates
  - Similar to Acemoglu and Johnson (2007), Bleakley (2007), and Lucas (2010)

\[
Y_{\rho t} = f(\beta Post_t \times \ln(\overline{IR}^{9093})_{\rho}, \thetaX_{\rho t}, \lambda_{\rho}, \gamma^A_t) + \varepsilon_{\rho t}
\]

- \( Y_{\rho t} = \)
  - Number of births (Poisson)
  - Average reported paternal/maternal characteristics (linear)

- \( \rho = \)partner market, \( t = \)conception time
FERTILITY: ALL BIRTHS
FERTILITY: UNMARRIED WOMEN

The diagram illustrates the birth rate elasticity across different ages for unmarried women, categorized by race: pooled effect, Black, and White. The y-axis represents birth rate elasticity, while the x-axis represents age. The data points are marked with symbols: black circles for pooled effect, blue triangles for Black, and red squares for White. The error bars indicate the variability in the data at each age point.
Father Characteristics

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age diff</td>
<td>Has less education</td>
<td>Missing</td>
</tr>
<tr>
<td><strong>A: Black women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post*9093 IR</td>
<td>0.280*</td>
<td>0.023*</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td>(0.102)</td>
<td>(0.011)</td>
<td>(0.023)</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.587</td>
<td>0.730</td>
<td>0.906</td>
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<tr>
<td>Cells</td>
<td>2188</td>
<td>2187</td>
<td>2267</td>
</tr>
<tr>
<td><strong>B: White women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post*9093 IR</td>
<td>0.023</td>
<td>-0.000</td>
<td>0.020***</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td>(0.004)</td>
<td>(0.004)</td>
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<tr>
<td>R-Squared</td>
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<td>0.725</td>
<td>0.932</td>
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</table>

Notes: Observations collapsed into race-CZ-age group-halfyear cells. Includes years 1990-2000. Dependent variable is the cell average of the measure noted in the first row of the table. Regressions weighted by number of births in the cell. Standard errors clustered by CZ. * p < 0.05, ** p < 0.01, *** p < 0.001.
Modify the first difference specification from Charles and Luoh (2010):

$$\Delta Y_\rho = \beta \ln(\overline{IR}^{9093})_\rho + \theta \Delta X_\rho + \epsilon_\rho$$

- $\Delta Y_\rho = 1990$-$2000$ change in married, divorced, never married, or cohabiting women in the partner market
- $\rho = \text{partner market}$
## Marriage: 1990-2000 Difference

<table>
<thead>
<tr>
<th></th>
<th>Married</th>
<th>Divorced</th>
<th>Never Married</th>
<th>Cohabiting</th>
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<td><strong>A: Black women</strong></td>
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<td>0.001</td>
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<td>0.002</td>
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<td>(0.008)</td>
<td>(0.017)</td>
<td>(0.006)</td>
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<td>0.038</td>
<td>0.130</td>
<td>0.158</td>
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<td>114</td>
<td>114</td>
<td>114</td>
</tr>
<tr>
<td><strong>B: White women</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post*9093 IR</td>
<td>-0.014*</td>
<td>-0.002</td>
<td>0.027***</td>
<td>0.021***</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.004)</td>
<td>(0.005)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>R-Squared</td>
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<td>0.068</td>
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</tbody>
</table>

Notes: Observations collapsed into race-CZ-age group cells. Dependent variable notes in the table. Standard errors clustered by CZ. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. 

O’Keefe (Davidson)
CONCLUSION

- Partner markets most at risk of increased incarceration see reduced fertility, particularly for
  - Black women under age 25
  - Unmarried women
  - Shift in composition

- Is this a permanent change? Or a delay?
  - Find no evidence of a reduction in total fertility by ages 35 or 40
  - [Details]

- Find evidence of changes to assortative matching patterns for fathers

- Decrease in marriage for white women
Thank you!

Comments welcome: siokeefe@davidson.edu