The Changing Relationship Between Local Income And Racial Disparities In Infant Mortality

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Pronouns: They/Them
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Background

- **Black-White infant mortality gap > twofold** (Artiga et al., 2020)
  - Also other non-white groups Native American / Native Hawaiian & Pacific Islander gaps (Artiga et al., 2020)
- **Many contributing factors: healthcare, environmental, and other socioeconomic inequities** (Artiga et al., 2020)
- **Gap has closed over time as Black infant mortality has fallen faster than white infant mortality** (Riddell, Harper, Kaufman, 2017)
- **Black infant mortality declines have recently stagnated** (Riddell, Harper, Kaufman, 2017)
Introduction: Research Questions

● How are changes in local infant mortality over time associated with changes in local incomes?
● Are there different associations by race?
● Do these associations change over time?
Introduction: Approach

- 1962-2016
- Fixed effects by county and year
- Demographic controls
- 15 year windows / rolling windows to capture changes over time
Introduction: Key Questions and Results

● How are changes in local infant mortality over time associated with changes in local incomes?
● Are there different associations by race?
  ○ Higher income ~ lower non-white infant mortality
  ○ $1000 1967 ~ 2 fewer non-white infant deaths
● Do these associations change over time?
  ○ Attenuate mid-1960s; period of key policy changes
  ○ $1000 1967 ~ 4 fewer non-white infant deaths → 1-2 fewer
Introduction: Key features

- **Time Period:** 1962-2016
- **County level infant mortality data (white / non-white)**
- **White and Non-White state average per capita incomes**
  - From individual level with additional demographics
- **Overall state and county average per capita incomes**

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Introduction: Key Contributions

- Extending time frame
- Focusing on income
- Considering different levels of aggregation
  - County level infant mortality
  - State income by white/non-white
  - State and county income
Data

- Deaths in first year per thousand live births
- 1942 – 1959 Vital Statistics of the United States
- 1999 – 2016 National Center for Health Statistics
Data

- Individual personal income data was collected from the annual Current Population Surveys (CPS) for the years 1962 through 2017, aggregated to state.
- Additional information on specific race, ethnicity, education, age from CPS also aggregated to state.
Data

- Personal Income Summary data from the Bureau of Economic Analysis
- Data extends further back in time
- All incomes adjusted for inflation based on the CPI to 1967 real dollars (McCulloch 2022)
Methods

\[
M_{cyr} = \beta_1 I_{syr} + \beta_2 R_{sy} + \beta_3 I_{syr} \times R_{sy} + \beta_4 X_{syr} + \beta_5 Z_{sy} + \beta_6 X_{syr} \times R_{sy} + \gamma_y + \gamma_c + \varepsilon_{cyr}
\]

- \( M \) - infant mortality per thousand live births
- \( I \) - average real personal income per capita
- \( R \) - non-white indicator
- \( X \) - Demographic controls by white/non-white
- \( Y \) - Racial demographic controls
- \( r \) - race (white/non-white)
- \( c \) - county
- \( s \) - state
- \( y \) - year

Selected Alternate Specifications
- Base model without demographic controls
- Separate regional analysis
- Income only by state and year
- Income by county and year
Demographic Controls

● Share of income held by the bottom quintile
● Share of reproductive population below a high school education
● Share of population between the ages of 15 and 18
● Share of population above 65
● Share of population Black
● Share of population Hispanic
### Results: Income Disaggregated by Race

<table>
<thead>
<tr>
<th></th>
<th>1962-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>-0.0001</td>
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<tr>
<td></td>
<td>0.0002</td>
</tr>
<tr>
<td>Non-White</td>
<td>9.3278*</td>
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<td>Non-White *Income</td>
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**Note:**
- * indicates significance at the 0.05 level
- ** indicates significance at the 0.01 level

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<td>Gap if at White Mean Income for Both</td>
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<td>9.3278*</td>
<td>11.0469*</td>
<td>3.8327</td>
<td>12.7102****</td>
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<tr>
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<td>5.7969</td>
<td>2.2495</td>
<td>2.6968</td>
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<td>*<em>Non-White <em>Income</em></em></td>
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<td>-0.0020*</td>
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| **N**            | 165,181   | 43,112    | 54,742    | 38,763    |

| Gap at Means     | 3.2       | 5.3       | 1.9       | 6.3       |

| Gap if at White Mean Income for Both | 1.4 | 3.4 | 0.4 | 4.7 |
Results: Income Disaggregated by Race

Combined Income Coefficient
Association between Income and Non-White Infant Mortality
Results: Income Disaggregated by Race

Combined Income Coefficient
Association between Income and Non-White Infant Mortality
Results: Income Disaggregated by Race

- Living in a state with higher average non-white incomes is associated with lower non-white infant mortality
- Sign on non-white dummy variable consistently positive
- Sign on income varies around null over time
Results: Income Disaggregated by Race

- Relationship attenuates; significant level change in mid 60s
- Higher income does not fully close mortality gaps
- Income gaps associated with a share of mortality gaps
- Increasing incomes associated with a share of decline in non-white infant mortality
Results: Additional Specifications

- Patterns in results are consistent with and without demographic controls
- Results are not only driven by one region
- State average income overall shows similar associations as average income disaggregated by race
- County average income shows slightly more attenuated results, likely due to missing spillover effects
- Similar patterns over time
Key Questions and Results

- How are changes in local infant mortality over time associated with changes in local incomes?
- Are there different associations by race?
  - Higher income ~ lower non-white infant mortality
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- Do these associations change over time?
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Conclusions

- Results do not appear to suggest non-white infants miss all benefits associated with residence in a higher income area.
- Increasing incomes over time has been associated with a significant share of declines in infant mortality.
- Key changes from the mid 1960s.
Further Steps

- Unemployment by white/non-white
- Shift-Share Instrument (employment) - started
- Income distribution - started
- Distribution of hospitals - started
Thank You!

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