Impact of Public Housing Relocations: Are changes in neighborhood conditions related to STIs among relocating residents?

No relationships to disclose
Background

- STIs are a significant problem among poor African Americans

- CDC surveillance data show that disparities exist between STI rates in African Americans and Whites.


Rate (per 100,000 population)

- American Indian/AK Native
- Asian/Pacific Islander
- Black
- Hispanic
- White
Why STI Disparities?

- Multiple factors have been implicated as contributors to this phenomenon including **poverty and social conditions**

- New Orleans, LA study from 1990s
  - Broken window index and Gonorrhea
    - Housing quality, Abandoned cars, Graffiti, Trash, Public School deterioration
  - Limitation: Cross sectional study

Environmental Influences on Health

Socio-economic status

Physical structures
- Housing
- Parks
- Urban/suburban design
- Cars
- Mass transit
- Markets

Social structures
- Schools
- Jobs
- Voluntary organizations
- Legal enforcement

Situational opportunities and exposures

Health behaviors

Health outcomes
HOPE VI

- Housing
- Opportunities for
- People
- Everywhere
HOPE VI

HOPE VI created in 1992 to

- Demolish, rehabilitate, or replace severely distressed public housing projects
- Revitalize sites on which distressed public housing projects are located and improve the neighborhood
- Decrease concentration of very low income families
- Improve economic status of relocating residents
HOPE VI in Atlanta

- Atlanta at the forefront of HOPE VI nationally
  - Began here in preparation for the 1996 Olympics

- Completed the final wave of relocations
  - Residents of severely distressed complexes have been relocated
  - 98% are African-American

- Natural experiment:
  - Opportunity to see if changes in social conditions associated with improved health
Hypothesis

- Adults who experienced greater post-relocation economic improvements in neighborhood conditions had a lower probability of testing positive for an STI
Sample (n=172)

- Inclusion criteria were:
  - African American,
  - resident of public housing complex scheduled for emptying,
  - 18 years of age or older,
  - sexually active within the past year, and
  - not living with an individual already in the study.
  - Over-sampled alcohol and other drug abusers (AOD) abusers
Recruitment and data collection

- **Recruitment methods**
  - Staff outreach at neighborhoods, posted flyers in neighborhoods, CBOs, and clinics, word of mouth

- **Data collection**
  - Baseline data collected before relocations occurred (w1)
  - three additional waves of post-relocation data were collected every 6 months thereafter. (w2-w4)
Measures

- Dependent variable: testing positive for one of three STI by urine testing
  - N. gonorrhoea and C. trachomatis – Becton Dickinson Probe Tec Tec Amplified DNA Assay
  - T. vaginalis – Taq-Man PCR
Methods: Measures

- Independent variables: personal and neighborhood characteristics
  - Computer-Assisted Personal Interview (CAPI), Audio Computer-Assisted Self Interview (ACASI) for drug use and sexual activity portions
  - Data from the US Census Bureau used to describe tract-level characteristics at each wave
Methods: Analysis

- Descriptive statistics to capture distribution
- Multilevel models to test hypotheses
  - account for nesting of people within tracts at baseline and for
  - nesting of observations within people across time
- Tract-level poverty rates, median income, and educational attainment highly correlated
  → “tract-level economic conditions” component/factor
Results
Atlanta Housing Authority
Relocating Communities
Atlanta, Georgia 2008-2010

Legend:
- Purple hexagons: AHA Locations
- Blue lines: Major Freeways
- Gray areas: Census Tracts

Map showing locations of relocated communities in Atlanta, Georgia.
## Results

Table 1. Characteristics of individual participants at baseline (N=172)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>% (N) or Median (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>57% (97)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>42 (18, 71)</td>
</tr>
<tr>
<td>Annual household income</td>
<td>$7,500 (2,500, $50,000)</td>
</tr>
<tr>
<td>Employed</td>
<td>13% (23)</td>
</tr>
<tr>
<td>Graduated high school/earned GED</td>
<td>60% (103)</td>
</tr>
<tr>
<td>HIV positive</td>
<td>9% (15)</td>
</tr>
</tbody>
</table>
Table 2. Percent of participants testing positive for a sexually-transmitted infection (STI) at each wave, by sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>35%</td>
<td>24%</td>
<td>28%</td>
<td>15%</td>
</tr>
<tr>
<td>Male</td>
<td>12%</td>
<td>7%</td>
<td>8%</td>
<td>6%</td>
</tr>
</tbody>
</table>
## Results

Table 3: Changes in census tract characteristics over time

<table>
<thead>
<tr>
<th>Tract Characteristics</th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD) poverty rate</td>
<td>0.46 (0.09)</td>
<td>0.29 (0.14)</td>
<td>0.28 (0.14)</td>
<td>0.28 (0.14)</td>
</tr>
<tr>
<td>Mean (SD) % adults high-school degree/GED or less</td>
<td>0.67 (0.13)</td>
<td>0.51 (0.18)</td>
<td>0.49 (0.19)</td>
<td>0.49 (0.19)</td>
</tr>
<tr>
<td>Mean (SD) of the median household income</td>
<td>15809 (4482)</td>
<td>34559 (17612)</td>
<td>36946 (20471)</td>
<td>37288 (21470)</td>
</tr>
<tr>
<td>Mean (SD) of the economic conditions factor</td>
<td>0.83 (0.52)</td>
<td>-0.24 (0.90)</td>
<td>-0.35 (0.98)</td>
<td>-0.34 (1.02)</td>
</tr>
<tr>
<td>Mean (SD) male:female sex ratios among Black adults</td>
<td>0.69 (0.15)</td>
<td>0.96 (0.38)</td>
<td>0.95 (0.42)</td>
<td>0.91 (0.40)</td>
</tr>
</tbody>
</table>
### Table 4. Bivariate regressions of each predictor on STI status

<table>
<thead>
<tr>
<th>Tract-level predictors</th>
<th>Odds ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline economic conditions</td>
<td>3.25</td>
<td>0.04</td>
</tr>
<tr>
<td>Change in economic conditions since baseline</td>
<td>1.57</td>
<td>0.09</td>
</tr>
<tr>
<td>Baseline m:f sex ratios</td>
<td>0.62</td>
<td>0.82</td>
</tr>
<tr>
<td>Change in sex ratios since baseline</td>
<td>1.88</td>
<td>0.29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Individual-level predictors</th>
<th>Odds Ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.94</td>
<td>0.005</td>
</tr>
<tr>
<td>Gender</td>
<td>0.07</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Graduated high school/earned GED</td>
<td>0.42</td>
<td>0.14</td>
</tr>
<tr>
<td>Employed</td>
<td>0.66</td>
<td>0.62</td>
</tr>
<tr>
<td>Household income</td>
<td>0.82</td>
<td>0.24</td>
</tr>
<tr>
<td>Sexually active in past 6 months</td>
<td>2.39</td>
<td>0.15</td>
</tr>
<tr>
<td>HIV positive</td>
<td>1.05</td>
<td>0.96</td>
</tr>
<tr>
<td>Dependent on alcohol or other drugs</td>
<td>1.38</td>
<td>0.54</td>
</tr>
</tbody>
</table>
Results

Table 5. Results of multilevel regression of the probability of testing positive for an STI on tract-level economic conditions

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Odds Ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>0.70</td>
<td>0.02</td>
</tr>
<tr>
<td>Gender</td>
<td>0.08</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Baseline economic component</td>
<td>3.25</td>
<td>0.04</td>
</tr>
<tr>
<td>Change in economic component since baseline</td>
<td>1.57</td>
<td>0.09</td>
</tr>
<tr>
<td>Baseline male:female sex ratio for Black adults</td>
<td>0.62</td>
<td>0.82</td>
</tr>
<tr>
<td>Change in male:female sex ratio since baseline</td>
<td>1.88</td>
<td>0.92</td>
</tr>
</tbody>
</table>
Discussion

- Racial and ethnic health disparities in STIs as in many diseases are driven by differentials in socioeconomic conditions.
- Our preliminary data suggests prospectively that an intervention targeting tract-level economic conditions may help decrease prevalence rates of STI.
Other variables to be explored:

- Behavioral characteristics
- Violent crime rates
- Alcohol outlet density
- Network characteristics
- Mechanisms through which changes in tract-level economic conditions relate to STIs.
Limitations

- Generalizability
  - Convenience sample
- Participants who tested positive were referred for treatment, which may explain declines in prevalence over time in the study
  - But would not explain specific association found here between improvements in economic conditions and reduced STIs.
Conclusion

- STIs plague poor African Americans disproportionately
- Residential tract-level improvements can lead to declines in STI prevalence in poor African Americans
Acknowledgements

- Atlanta Housing Authority residents who participated in the study
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- NIDA grant “Public Housing Relocations: Impact on HIV risk, drug use and healthcare access” (R01 DA029513)