Disparity Measures

Disparity measures were calculated as follows:

**Black and White Rate Difference:**

\[ \text{Rate}_B - \text{Rate}_W, \]
where \( \text{Rate}_B \) is the number of Black cases divided by the Black population multiplied by 100,000 and \( \text{Rate}_W \) was calculated equivalently for White cases and population.

**Black to White Rate Ratio:**

\[ \frac{\text{Rate}_B}{\text{Rate}_W}, \]
where \( \text{Rate}_B \) and \( \text{Rate}_W \) are as described above.

**Weighted Index of Disparity:**

\[
\left( \frac{\sum_{i=1}^{5} |\text{Rate}_i - \text{Rate}_\text{All}| \times \text{Population}_i}{\sum_{i=1}^{5} \text{Population}_i} \right) / \text{Rate}_\text{All}
\]

where \( i \) indicates racial group and \( \text{Rate}_\text{All} \) indicates the rate across all racial groups.

**Absolute Weighted Index of Disparity:**

\[
\left( \frac{\sum_{i=1}^{5} |\text{Rate}_i - \text{Rate}_\text{All}| \times \text{Population}_i}{\sum_{i=1}^{5} \text{Population}_i} \right)
\]

The only difference between the relative and absolute versions of WID is the final division by the overall rate. The Absolute WID is analogous to a population weighted version of the more commonly used Between Group Variation (BGV) measure:

\[
\left( \frac{\sum_{i=1}^{5} (\text{Rate}_i - \text{Rate}_\text{All})^2 \times \text{Population}_i}{\sum_{i=1}^{5} \text{Population}_i} \right)
\]

We used the WID measurement since it is more consistent with our relative measure of all-race disparity. Using the BGV measure did not meaningfully alter the results. All measures are increasing in disparity.
Examples of calculations of disparity measures

We next used a representative state to demonstrate how these variables were calculated using actual data. Oklahoma was chosen because it had the median WID value. The table below presents gonorrhea cases, gonorrhea rates, and population for each racial group.

<table>
<thead>
<tr>
<th>Table A1: Oklahoma Summary Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oklahoma</strong></td>
</tr>
<tr>
<td>Black</td>
</tr>
<tr>
<td>White</td>
</tr>
<tr>
<td>Hispanic</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
</tr>
<tr>
<td>American</td>
</tr>
<tr>
<td>Indian/Alaskan Native</td>
</tr>
<tr>
<td>Overall</td>
</tr>
</tbody>
</table>

Cases and Population are added over the years 2007 to 2011. Rate is cases per 100,000 population.

**Oklahoma Black and White Rate Difference:**

850.09 - 45.78 = 804.31

**Oklahoma Black to White Rate Ratio:**

850.09/45.78 = 18.57

**Oklahoma WID:**

A) \( (|850.09-117.64|*1525020 + |45.78-117.64|*13434814 + |64.53-117.64|*1521722 + \\
|34.46-117.64|*359806 + |92.89-117.64|*1648224) = 2233967495.54 \)

B) \( 2233967495.54/(18489586)/117.64 = 1.027 \)

**Oklahoma Absolute WID:**

\( 2233995752/(18489586)= 120.823 \)

After repeating these calculations for all project areas, we take the median measure and divide areas into high disparity (above the median) and low disparity (equal to or less than the median) categories.
**Funding Measure Calculation:**

For each project area $j$

$$\frac{(Funding_j/Population_j)}{\frac{1}{J}\sum_{j=1}^{J}(Funding_j/Population_j)}$$

A convenient feature of dividing by average per capita funding across all areas (the denominator) is that values greater than 1 indicate higher than average funding and vice versa. As mentioned in the main text, this also accounts for changes in overall funding over time.