Income Inequality, Trust, and Population Health

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“What matters in determining mortality and health in a society is less the overall wealth of that society and more how evenly wealth is distributed.”

Source: The big idea [Editor’s Choice]. BMJ 1996;312. (20 April.)
Among rich countries, income inequality correlates with international differences in:

- Life expectancy \( (r = -0.44) \)
- Infant mortality \( (r = 0.42) \)
- Obesity \( (r = 0.57) \)
- Mental illness \( (r = 0.73) \)
- Teenage births \( (r = 0.73) \)
- Homicides \( (r = 0.47) \)
- Imprisonment \( (r = 0.75) \)
- Social mobility \( (r = 0.93) \)
- Drug addiction \( (r = 0.63) \)
- Caloric intake \( (r = 0.46) \)
- Overweight children \( (r = 0.59) \)
- Child well-being \( (r = -0.64) \)
Inequality and mortality in the USA and Canada

Inequality, trust and mortality in the USA

FIGURE 1—The relationship between income inequality, as measured by the Robin Hood Index, and lack of social trust.

FIGURE 2—The relationship between age-adjusted mortality rates and lack of social trust.

Income Inequality in Canada, 1976 to 2009

How does inequality relate to health?

- Income Inequality
- Psychosocial path?
- Neomaterial path?
- Population Health
Data Sources

- International Social Survey Programme (www.issp.org)
  - Data on trust collected from 48,641 adults in 33 countries
    “There are only a few people I can trust completely”
    “If you are not careful, other people will take advantage of you”
    (1 = strongly agree, 5 = strongly disagree)
Data Sources

• WHO Statistical Information System
  • Adult mortality
  • Healthy life expectancy
  • Homicides per 100,000 population
  • Government expenditures on health and education (% GDP)
• World Bank World Development Indicators
  • Gross National Income per capita (2007 USD, PPP)
  • Income inequality (Gini Index)
• Standardized World Income Inequality Database (SWIID)
• WHO Health Behaviour in School-aged Children study
  • School bullying
Inequality and trust

### TABLE 1—Correlations Among Income Inequality, Trust, Public Health Expenditures, and Population Health: 33 Countries, 2005–2008

<table>
<thead>
<tr>
<th></th>
<th>Income Inequality</th>
<th>Trust</th>
<th>Public Health Expenditures</th>
<th>Healthy Life Expectancy</th>
<th>Adult Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income inequality</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>-0.51**</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public health expenditures</td>
<td>-0.45*</td>
<td>0.12</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy life expectancy</td>
<td>-0.74**</td>
<td>0.48**</td>
<td>0.34</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Adult mortality</td>
<td>0.55**</td>
<td>-0.47**</td>
<td>-0.13</td>
<td>-0.92</td>
<td>NA</td>
</tr>
</tbody>
</table>

*Note.* Partial correlations shown, with control for country differences in per capita income. The 33 countries that provided the sample population are Australia, Canada, Chile, Croatia, Czech Republic, Denmark, Dominican Republic, Finland, France, Germany, Hungary, Ireland, Israel, Japan, Latvia, the Netherlands, New Zealand, Norway, the Philippines, Poland, Portugal, Russian Federation, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, United Kingdom, United States, Uruguay, and Venezuela.

*P<.05; **P<.01.
Trust mediates the link between inequality and health

<table>
<thead>
<tr>
<th></th>
<th>Income Inequality</th>
<th>Healthy Life Expectancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust</td>
<td>-.48</td>
<td>.38</td>
</tr>
<tr>
<td>-.51 (-.56)</td>
<td></td>
<td>Z_{ab} = -2.71*</td>
</tr>
</tbody>
</table>

Health expenditures do not

<table>
<thead>
<tr>
<th></th>
<th>Income Inequality</th>
<th>Healthy Life Expectancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Spending</td>
<td>-.25</td>
<td>.46</td>
</tr>
<tr>
<td>-.56 (-.56)</td>
<td></td>
<td>Z_{ab} = 1.62</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Income Inequality</th>
<th>Adult Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust</td>
<td>-.48</td>
<td>-.41</td>
</tr>
<tr>
<td>.35 (.46)</td>
<td></td>
<td>Z_{ab} = -2.20*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Income Inequality</th>
<th>Adult Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Spending</td>
<td>-.25</td>
<td>-.19</td>
</tr>
<tr>
<td>.51 (.46)</td>
<td></td>
<td>Z_{ab} = .68</td>
</tr>
</tbody>
</table>

Inequality, trust and homicides

Trust mediates the link between inequality and homicide.

Expenditures on health and education do not

\[
\begin{align*}
\text{Income Inequality} & \quad 0.82 (0.75) & \quad \text{Homicide} \\
\text{Trust} & \quad 0.58 \\
\end{align*}
\]

\[
Z_{ab} = -2.97^* 
\]

\[
\begin{align*}
\text{Health & Educ. Spending} & \quad 0.82 (0.83) & \quad \text{Homicide} \\
\text{Income Inequality} & \quad 0.09 \\
\end{align*}
\]

\[
Z_{ab} = 1.62 
\]

Inequality and UNICEF Index of Child Wellbeing

Inequality and school bullying

- Multilevel analysis of income inequality and bullying by 11-year-olds in 37 countries.
- Each SD increase in inequality increased likelihood of bullying by males (OR = 1.17) and females (OR = 1.24).

Inequality and school bullying

Regression analysis of school bullying by income inequality in HBSC countries (1994 to 2006), controlled for mean family affluence: standardised slope betas and standard errors.

<table>
<thead>
<tr>
<th></th>
<th>11-year-olds</th>
<th>13-year-olds</th>
<th>15-year-olds</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>Bullied others</td>
<td>.26 (.11)*</td>
<td>.35 (.11)**</td>
<td>.16 (.12)</td>
<td>.34 (.12)**</td>
</tr>
<tr>
<td>Victimised</td>
<td>.25 (.11)*</td>
<td>.26 (.11)*</td>
<td>.41 (.10)**</td>
<td>.36 (.11)**</td>
</tr>
<tr>
<td>Bully/Victims</td>
<td>.26 (.11)*</td>
<td>.35 (.11)**</td>
<td>.34 (.11)**</td>
<td>.36 (.11)**</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01.

Partial mediation by homicides per 100,000 population

! Homicides! ! .30**! ! .33**!

Income! ! ! ! Victimised! by!bullying!

inequality! .26*!(.29**)!

Partially mediated path, Sobel $Z_{ab} = 2.03$, $p < .05$. Shown are standardised regression coefficients. Value in parentheses represents direct (unmediated) path.

*p < .05; **p < .01.

Conclusions

• Income inequality relates population health due, in part, to societal differences in trust.
  • Societies with low levels of trust may lack the capacity to create social supports and connections that promote health, successful aging and safe communities

• Income inequality relates to health early in life
  • Unequal societies have worse child well-being and more school bullying
  • Link may be mediated to social milieu of violence
  • Inequality may intensify class competition, causing more teasing, shame and retaliation.
The “Bicycling Reaction”

“There is a widespread tendency for those who have been most humiliated, who have had their sense of selfhood most reduced by low social status, to try to regain it by asserting their superiority over any weaker or more vulnerable group.”
- The Spirit Level, p. 225.
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