SOCIO–SPATIAL INEQUALITIES IN HEALTH: A NORTH AMERICAN PICTURE

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Outline

• Broad Canada–US comparison: infant mortality, life expectancy

• Results from a “natural experiment”: Canada–US inequality–mortality comparison

• Temporal and spatial trends in health inequalities in Canada
Canada – US Infant Mortality Comparison

- Infant mortality rate ratios
- Difference largely due to faster declines in Canada over the period

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>1.06</td>
</tr>
<tr>
<td>1975</td>
<td>1.18</td>
</tr>
<tr>
<td>1980</td>
<td>1.21</td>
</tr>
<tr>
<td>1985</td>
<td>1.34</td>
</tr>
<tr>
<td>1990</td>
<td>1.35</td>
</tr>
<tr>
<td>1996</td>
<td>1.39</td>
</tr>
</tbody>
</table>

Canada–US Life Expectancy Comparison

- In fewer than 20 years, the life expectancy gap more than doubled

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>1.2</td>
<td>0.9</td>
<td>1.05</td>
</tr>
<tr>
<td>1981</td>
<td>1.5</td>
<td>1.3</td>
<td>1.40</td>
</tr>
<tr>
<td>1986</td>
<td>2.1</td>
<td>1.8</td>
<td>1.95</td>
</tr>
<tr>
<td>1991</td>
<td>2.6</td>
<td>2.0</td>
<td>2.30</td>
</tr>
<tr>
<td>1996</td>
<td>3.0</td>
<td>2.0</td>
<td>2.50</td>
</tr>
</tbody>
</table>

Exposure to, ability to cope with and resilience from ‘stress’ implicated at all levels.

Source: Hertzman
Working-Aged Male (25-64) Mortality by Median Share
U.S. States and Canadian Provinces

Mortality Rates Standardized to the Canadian Population in 1991

U.S. States with weighted linear fit (from Kaplan et al., 1996)

Canadian Provinces with weighted linear fit (slope not significant)
Working Age (25-64) Mortality by Median Share
U.S. and Canadian Metropolitan Areas

Mortality Rates Standardized to the Canadian Population in 1991

- U.S. cities (n=282) with weighted linear fit (from Lynch et al. 1998)
- Canadian cities with weighted linear fit (n=53) (slope not significant)
Income Inequality and Working Age Mortality for USA, Canadian, Swedish and Australian Metropolitan Areas 1990/91

Working-Age (25-64) Mortality Rates per 100,000

Source:
Canada: Ross, Dunn, Wolfson
USA: Lynch and Kaplan
Australia: Glover
Sweden: Henriksson

Mortality rates standardized to the Canadian population in 1991
Thinking About the Difference

• It’s Canada’s universal health insurance

• It’s that inequality has been trending differently

• It’s something more subtle about the character of Canadian urban environments

Adapted from Wolfson and Murphy, 2000
How is the Urban Environment Implicated?

- Neighbourhood segregation and concentrated poverty restrict life and “health chances”

- Urban public goods (e.g., schools) improve life and health chances

- Urban governance structures can exacerbate inequalities (e.g., restrictive zoning, crisis in the production of local public goods)
Increase Across All Dimensions of Segregation
In Canadian Cities 1991–1996

98 percent of cities showed decline in exposure

68 percent of cities showed more unevenness

73 percent of cities showed increased concentrations of poor

72 percent showed increased clustering

Poor became more centralized in 90 percent of cities
How Can Inequality be Related to Mortality?

• It’s about our appraisal of place in the social order – the psychosocial hypothesis.
• social position affords an increased ‘host defence’ (Whitehall)
• hassles and frustrations of daily living more likely to become pathological when assessed against others’ more enviable situations
• poverty feels worse in areas where others around you have more
How Can Inequality be Related to Mortality?

- It’s about exposure to the material conditions within jurisdictions: the neo-material hypothesis.
- Systematic underinvestment in human capital $\Rightarrow$ low spending on public goods/infrastructure
- Poor social relationships (weak social capital) in areas of high inequality (Kawachi et al., 1997)
Children < 12 Reported to Have Excellent or Very Good Health, by Household Income Group

National Population Health Survey, 1996/7

- Lowest: 82
- Lower Middle: 83
- Middle: 88
- Upper Middle: 91
- Highest: 95
Life Expectancy at Birth

Source: Wilkins et al., 2001
Q5/Q1 Mortality Ratios

Source: Wilkins et al., 20XX
Lung Cancer, Males

Source: Wilkins et al., 2001
Lung Cancer, Females

ASMR x 100,000

Source: Wilkins et al., 2001
Uterine Cancer

Source: Wilkins et al., 2001
Prostate Cancer

ASMR x 100,000

Source: Wilkins et al., 2001
Breast Cancer, Females

ASMR x 100,000

Source: Wilkins et al., 2001
Patterns of DFLE
By Health Region
Canada, 1996

DFLE at birth by quartile
Both Sexes

Legend:
- Red: 63.99 to 66.25
- Pink: 66.26 to 67.57
- Light green: 67.58 to 68.33
- Dark green: 65.34 to 72.75
## Disability-free life expectancy, estimated coefficients by health indicator†, both sexes, Canada, 1996

<table>
<thead>
<tr>
<th>Health Indicator</th>
<th>Estimated Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote</td>
<td>-0.72 (&lt;0.01)</td>
</tr>
<tr>
<td>Prosperous</td>
<td>0.33 (0.02)</td>
</tr>
<tr>
<td>Cosmopolitan</td>
<td>0.87 (&lt;0.01)</td>
</tr>
<tr>
<td>Disadvantaged</td>
<td>-0.84 (&lt;0.01)</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.46</td>
</tr>
</tbody>
</table>


†Summarizing 21 demographic and socio-economic variables.

Note: The estimated value of a coefficient indicates the degree of association between the synthetic variable and the relevant health indicator. The sign of the coefficient indicates the direction of the association between those two variables. The numbers in parentheses represent the probability that the true value of the coefficient is significantly different from zero (two-sided test).
Self-perceived Health by Health Region, age-standardized, 2000–
Proportion of the population, 18+ years, with fair or poor health, age-standardized

Difference from National Average (percentage points)
- < -5 (2)
- -5 to -3 (4)
- -3 to -1 (24)
- -1 to 1 (54)
- 1 to 3 (22)
- 3 to 5 (20)
- > 5 (10)
- Data not available (2)
Self-perceived Health by Health Region, adjusted 2000-01
Proportion of the population, 18+ years, with fair or poor health, adjusted for individual risk factors

Difference from National Average (percentage points)

-5 to -3  (6)
-3 to -1  (30)
-1 to 1  (53)
1 to 3  (37)
3 to 5  (10)
Data not available  (2)
What To Do

- Inequalities in health are complex, policy responses not obvious

“It’s everything, all of the time.” (Evans, 2002)