SOCIAL DETERMINANTS OF HEALTHY LIFE EXPECTANCY: A GLOBAL PERSPECTIVE

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National Academy of Medicine
Washington DC, November 6, 2019
POPULATION IN DEVELOPED VS. DEVELOPING COUNTRIES BY AGE AND SEX (1960, 2000, 2040)

Figure 2-1. Young Children and Older People as a Percentage of Global Population: 1950 to 2050

Source: United Nations Department of Economic and Social Affairs, 2007b.
GLOBAL DECLINES IN FERTILITY

Trends in Total Fertility Rates

- **World**
- **More developed regions**
- **Less developed regions**

*Source: UN, World Population Prospects, 2004.*
China’s Declining Ratio of Covered Workers to Pensioners (1980 to 2005)

The Speed of Population Aging
Time required or expected for percentage of population aged 65 and over to rise from 7 percent to 14 percent

HEALTHY LIFE EXPECTANCY: MORTALITY PLUS MORBIDITY PLUS????
LIFE TABLE DEATHS BY AGE AND YEAR: US LIFE TABLES


Number of male life table deaths by age. Source of data: Bell & Miller (2005).
High blood pressure and high cholesterol (measured + medication), measured high blood pressure and high cholesterol, antihypertensive and cholesterol lowering medication use for older adults aged 65 and older. (A) Blood pressure, (B) total cholesterol. Source: NHANES.
SOCIAL DETERMINANTS OF HEALTHY AGING: SOCIOECONOMIC CONDITIONS, SOCIAL ISOLATION AND EXCLUSION AND RELATED POLICIES

Exposures in early and midlife will determine patterns of healthy life expectancy and healthy aging.
LIFE EXPECTANCY AT BIRTH IN 22 OECD COUNTRIES; 1980 – 2008; MALES

National Research Council (US) Panel on Understanding Divergent Trends in Longevity in High-Income Countries;
Editors: Crimmins, Preston, Cohen. 2011
LIFE EXPECTANCY AT BIRTH IN 22 OECD COUNTRIES; 1980 – 2008; FEMALES

Crimmins, Preston, Cohen: Explaining divergent levels of longevity in high income countries. NRS 2011
INEQUALITIES ARE WIDENING

PREDICTED LIFE EXPECTANCY FOR MEN BORN IN 1920 – 1940 AND CHANGE IN LE BETWEEN THE TWO BIRTH Cohorts, By Rank In Mid-career Income Distribution (Bosworth, Burtless, Zhang, Brookings)
LIFE EXPECTANCY AT AGE 50 FOR WOMEN BORN IN 1920 - 1940 AND CHANGE IN LIFE EXPECTANCY BETWEEN THE TWO BIRTH COHORTS
(Bosworth, Burtless, Zhang, 2016)
MORTALITY RATE PER 100,000 BY EDUCATION, WOMEN 30-74

Van Hedel, Avendano, Berkman et al, Am J of Pub Health 2015
SOCIAL INTEGRATION, ISOLATION AND EXCLUSION

Durkheim argues that individuals are bonded to society by two forms of integration:

• Attachment (maintains ties to others)
• Regulation (held in fabric of society by norms, values, beliefs)
SOCIAL INTEGRATION AND ALL CAUSE MORTALITY:
ALAMEDA COUNTY 1965-74
(BERKMAN AND SYME AJE, 1979)
SOCIAL INTEGRATION AND MORTALITY FROM ALL CAUSES IN FRENCH GAZEL
(BERKMAN, MELCHIOR, CHASTANG, NIEDHAMMER, LECLERC, GOLDBERG AJE 2004)

RR adjusted for age, tobacco and alcohol consumption, depressive and self perceived health
SOCIAL TIES AND CAUSE-SPECIFIC MORTALITY IN US MALE HEALTH PROFESSIONALS
(ENG ET AL AJE, 2002)
SOCIAL INTEGRATION PREDICTS THE PRESERVATION OF MEMORY IN US ELDERLY:
FINDINGS FROM THE HEALTH AND RETIREMENT STUDY

POLICIES IN MIDLIFE PROMOTE WORKING LONGER: THE LONG-ISH ARM OF EARLY & MIDLIFE EXPERIENCES

• Family leave, sickness absence, schedule control
• EITC, unemployment protection during recessions
• Employer-Provided Vocational Training and Education Benefits
• Attention to lower and middle wage earners
• Long run benefits are not accounted for in cost-benefit equations
REASONS FOR TIME AWAY FROM WORK AND COGNITION: HRS, SHARE, ELSA
ADJUSTED ORS FOR COGNITIVE IMPAIRMENT BY ECONOMIC INACTIVITY SPELLS


<table>
<thead>
<tr>
<th>Time away</th>
<th>#1 OR</th>
<th>95% CI</th>
<th>#2 OR</th>
<th>95% CI</th>
<th>#3 OR</th>
<th>95% CI</th>
</tr>
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<tbody>
<tr>
<td>unemployment</td>
<td>1.2</td>
<td>1.0-1.3</td>
<td>1.2</td>
<td>1.0-1.4</td>
<td>1.2</td>
<td>1.0-1.4</td>
</tr>
<tr>
<td>sickness</td>
<td>2.3</td>
<td>2.0-2.7</td>
<td>1.8</td>
<td>1.5-2.1</td>
<td>1.1</td>
<td>1.0-1.4</td>
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<tr>
<td>homemaker</td>
<td>1.6</td>
<td>1.4-1.8</td>
<td>1.2</td>
<td>1.0-1.4</td>
<td>1.1</td>
<td>1.0-1.3</td>
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<tr>
<td>training</td>
<td>.5</td>
<td>.3-.6</td>
<td>.7</td>
<td>.5-1.0</td>
<td>.8</td>
<td>.6-.9</td>
</tr>
<tr>
<td>maternity</td>
<td>.6</td>
<td>.5-.7</td>
<td>.7</td>
<td>.5-.8</td>
<td>.7</td>
<td>.6-.9</td>
</tr>
</tbody>
</table>
FORMAL SOCIAL PROTECTION POLICIES LACKING IN US

Weeks of paid and unpaid maternity leave, by country

<table>
<thead>
<tr>
<th>Country</th>
<th>Paid Leave</th>
<th>Unpaid Leave</th>
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</thead>
<tbody>
<tr>
<td>France</td>
<td>20</td>
<td>142</td>
</tr>
<tr>
<td>Germany</td>
<td>42</td>
<td>120</td>
</tr>
<tr>
<td>Spain</td>
<td>16</td>
<td>140</td>
</tr>
<tr>
<td>Austria</td>
<td>16</td>
<td>96</td>
</tr>
<tr>
<td>Norway</td>
<td>38</td>
<td>52</td>
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<td>Sweden</td>
<td>40</td>
<td>45</td>
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<tr>
<td>UK</td>
<td>12</td>
<td>53</td>
</tr>
<tr>
<td>Japan</td>
<td>26</td>
<td>32</td>
</tr>
<tr>
<td>Ireland</td>
<td>22</td>
<td>34</td>
</tr>
<tr>
<td>Australia</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>29</td>
<td>23</td>
</tr>
<tr>
<td>New Zealand</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>Denmark</td>
<td>19</td>
<td>31</td>
</tr>
<tr>
<td>Italy</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td>Greece</td>
<td>34</td>
<td>13</td>
</tr>
<tr>
<td>Finland</td>
<td>29</td>
<td>14</td>
</tr>
<tr>
<td>Portugal</td>
<td>17</td>
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<td>15</td>
<td>13</td>
</tr>
<tr>
<td>Switzerland</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>United States</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Source: Center for Economic and Policy Research, 2008

This work was supported by NIA.
• Multidisciplinary, cross-country panel survey representative of 50+ population across Europe
• 30,000 men and women over 13 European countries
• Wave 3 (SHARELIFE 2008) collected detailed retrospective data on life histories:
  • Complete working history
  • Complete fertility history
• Mental Health in wave 1 (2004) and wave 2 (2006): Euro-D Scale
• Extensive measures of physical health, demographics, labour market behaviour, pensions
• The database contains the following variables:
  • ML_WKS: total number of weeks of maternity leave
  • ML_PAY: cash benefits paid during maternity leave (as a percent of female wages in manufacturing)

• We use \( FWW = ML\_WKS \times ML\_PAY \), the number of full wage weeks (Ruhm, 1998, 2000, 2011; Tanaka 2005)
Anne Gauthier (2011): comprehensive “Family Policy Database” on:

- Maternity, parental, and childcare leave policies
- Cash benefits

The database covers the period 1960-2010 and all SHARE countries

**Maternity leave**: leave granted (only) to mothers in connection with childbirth, and which usually includes a period of leave prior and after childbirth

Policies influence a wide range of labor market outcomes, maternal and child health
## Women’s Depression Score at Older Ages by Full Wage Weeks of Maternity Leave

### Table: Full-wage Week of Maternity Leave Benefits

<table>
<thead>
<tr>
<th></th>
<th>Full-wage week of maternity leave benefits</th>
<th>Difference high-low</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>working</td>
<td>2.64</td>
<td>2.51</td>
<td>-0.13</td>
</tr>
<tr>
<td>not working</td>
<td>2.52</td>
<td>2.82</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>DiD</td>
<td></td>
<td>-0.43</td>
</tr>
</tbody>
</table>

**Interpretation:** 16.2% difference in depression score between low vs. high country-specific cut-offs for full-wage weeks, with respect to mean value among European women working at childbirth.
Depression in old age is linked to maternity leave policies during the critical period of the birth of a first child:

- Moving from a maternity leave with limited coverage to one with comprehensive coverage at the birth of a first child reduces depression scores by 16% in older ages

Depression is costly:

- Older people with depression use more health services, homecare and assisted living than older people without depression
- Mean direct health care costs in old age per patient were €5241 per year for depressed individuals, as compared to €3648 per year for non-depressed individuals, corresponding to a 30% difference
- Cost-benefit analyses should take into account the potential loss in women’s welfare in old age resulting from diminishing the comprehensiveness of maternity leave benefits
Incarceration

Job discrimination
Housing “the Color of the Law”
MASS INCARCERATION, PUBLIC HEALTH AND WIDENING INEQUALITY IN USA
WILDEMAN AND WANG, LANCET 389, 2017
MASS INCARCERATION, PUBLIC HEALTH AND INEQUALITY WILDEMAN CONT

Men born 1945-49, risk of imprisonment

Risk of imprisonment (%)

White
Black

Men born 1965-69, risk of imprisonment

Risk of imprisonment (%)

White
Black

Children born 1978, risk of paternal imprisonment

Risk of paternal imprisonment (%)

White
Black

Total
High school dropout

Children born 1990, risk of paternal imprisonment

Risk of paternal imprisonment (%)

Total
High school dropout
MASS INCARCERATION, PUBLIC HEALTH
AND WIDENING INEQUALITY WILDEMAN CONT

![Graphs showing proportions of people knowing imprisoned individuals, imprisoned family members, imprisoned neighbours, and trusting imprisoned individuals by race and gender.](image)
• Environmental impact assessment model has been done for health impact, could be extended to healthy life expectancy and aging population productivity.
DEMOGRAPHY IS NOT DESTINY-IT IS OUR RESPONSE TO IT THAT WILL DETERMINE OUR SOCIETAL RESILIENCE