Explaining Inequalities in Women’s Mortality Between U.S. States

Jennifer Karas Montez
Anna Zajacova
Mark D. Hayward
Map: What Country Does Your State's Life Expectancy Resemble?

How California and Virginia can be as different as Liechtenstein and Brunei

OLGA KHAZAN | FEB 3 2014, 1:00 PM ET

Data from 2013-2014

Is this variation large?
Range in life expectancy across US states exceeds the range across high-income countries

<table>
<thead>
<tr>
<th></th>
<th>Range in LE at birth</th>
<th>Range in LE at age 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>States of the US</td>
<td>7.4</td>
<td>4.4</td>
</tr>
<tr>
<td>Comparable high-income countries</td>
<td>4.7</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Data from 2000

Source: Wilmoth et al 2011
High-income countries include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.
But things are improving, right?
Life expectancy has stagnated or declined* in some states, and inequalities have increased.

*among women in Wyoming and West Virginia
Two main hypotheses

People vs. place

Composition vs. context

Women’s characteristics vs. state characteristics
Why haven’t these hypotheses been tested before?

Data limitations
- Public-use data that has mortality does not have states
- Reliance on county-level or state-level data from vital stats

Generally conceptualized as a demographic phenomenon
- But geographic variation in mortality is inherently multilevel

State policies/programs can theoretically shape mortality:
- income tax policy → economic well-being
- Medicaid eligibility rules & abortion laws → access to medical care
- corporate tax incentives → employment
- tobacco control strategies → health behaviors

Federal aid to states has declined. States given more discretion over how to legislate & fund policies & programs (Conlan 1998)
Study Aims

1. How much of the inequality in women’s mortality reflects states’ characteristics, net of women’s characteristics?

2. Which state characteristics are most important?

3. Are states more important for women than men?
Data & Approach

Multilevel approach

• Individual–level dataset with state identifiers

• 2013 public-use NLMS
• Respondents surveyed in 1980s-1990s, followed 6 years
• U.S.-born women aged 30-89
• Person-quarter file with 25,850 deaths
• Focus on “fundamental” characteristics—race, education, income, employment, marital status

• Collect and merge state-level contextual data
State Characteristics (circa 1990)

1. Gross state product per capita
2. Median household income
3. % of individuals living below poverty
4. % of female householder families below poverty
5. Education expenditures per capita
6. % of tax revenue from sales tax
7. % of adults 25+ years with BS+
8. Gini coefficient of income inequality
9. Social capital index
10. Unemployment rate
11. Violent crime rate
12. % of federal EITC offered by state EITC
13. Public welfare expenditures per capita
14. % presidential elections voters favored republican
15. Medicaid program score
16. % population in SMSA
17. % of rental units costing 35%+ of household income
18. % of workers 16+ using public transportation
19. Tobacco manufacturing as % of GSP
20. State tax as % of retail price of cigarettes
21. Cigarette pack sales per capita
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Multilevel logistic regression model

\[ \ln\left(\frac{p_{ij}}{1 - p_{ij}}\right) = \beta_0 + \beta_1(\text{age}_{ij}) + u_j \]

where \( u_j \sim N(0, \sigma_u^2) \)

"i" = individual
"j" = state

State-level residual

effect of state "j"
Adjusted for age

State-level Effect
(deviation from average state on log-odds scale)

ME
Adjusted for age

State-level Effect (deviation from average state on log-odds scale)

s = 0.090
Adjusted for age & ________
Adjusted for age

State-level Effect
(deviation from average state on log-odds scale)

s = 0.090
Adjusted for age, race, ed, econ, marital status $s = 0.058$
Adjusted for age, race, ed, econ, marital status

\( s = 0.058 \)
Adjusted for age, race, ed, econ, marital status

State-level Effect
(deviation from average state on log-odds scale)

s = 0.058
Adjusted for women’s and states’ characteristics

State-level Effect
(deviation from average state on log-odds scale)

s = 0.027
Adjusted for women’s and states’ characteristics

$s = 0.027$
How much of the inequality in women’s mortality reflects states’ characteristics, net of women’s characteristics?

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<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composition</td>
<td>36%</td>
<td>38%</td>
</tr>
<tr>
<td>Composition &amp; Context</td>
<td>70%</td>
<td>49%</td>
</tr>
<tr>
<td>Context</td>
<td>57%</td>
<td>28%</td>
</tr>
</tbody>
</table>

**Economic environment**
- Social cohesion

**Tobacco environment**
Tentative conclusions

Variation in women’s mortality across states reflects differences between states in composition AND context.

States have stronger & more pernicious consequences for women.

The ways that states matter differ for women and men.

Inequalities in women’s mortality cannot be brushed aside as reflecting *individual* choices, characteristics, or behaviors.

- States appear to have played an important role.
- Will continued devolution further exacerbate the inequalities?
Issues we Plan to Address

• Age-specific analyses
  • Focus on ages 45-89
  • Some indication that states more important for older ages
• Cause of death
• Time trends
• No migration history
  • State effects may be conservative
• 3-level analyses to incorporate counties
Thank you