Worlds Apart:
How Can We Reduce the Gaps in Life Expectancy Across Communities of the Indy Metro Area?

TESS WEATHERS, M.P.H.
LISA K. STATEN, PH.D.
SEPTEMBER 15, 2016
Why is it important to look at life expectancy?

Life expectancy...

- Reflects how well a society is promoting the **collective wellbeing** of its members
- Is a number **compared around the world** as a measure of population health
- Identifies communities where gains in life expectancy have **not been realized**
- Is **alterable** by societal actions
Gains in U.S. life expectancy have been outpaced by many other wealthy, developed nations. The **U.S. ranks 43rd** in the world for life expectancy at birth (CIA World Factbook, 2015).

**Indiana ranks 39th** among the states for life expectancy (The Measure of America, 2013-14).
Context

Other U.S. metro areas have found big differences among communities a short distance apart:

- Washington, DC
- Kansas City
- Minneapolis/St. Paul
- San Joaquin Valley
What is life expectancy and how did we calculate it?
Life expectancy is...

- A *prediction* of the number of years people of a certain age living in a certain area can expect to live
- Based on the *rates of death and survival* by age group in the area during the time of study
- Most often reported as *life expectancy at birth*, but can apply to any age group
Shorter life expectancy...

- In a community, reflects people of any age dying too soon, perhaps in infancy or early adulthood

- These premature deaths have a larger influence on a community’s LE than do deaths at older ages
How did we do this?

• Calculated abridged life tables for the 11 counties and >100 ZIP codes in the Indianapolis-Carmel-Anderson Metropolitan Statistical Area (MSA)
  • Count of deaths by age group – from Indiana State Department of Health
  • Estimated population size - from the American Community Survey
  • For five-year period from 2009-2013
• SAVI partners visualized results by mapping
So what did we **learn** about life expectancy in the Indy metro?
Take a guess?

Which of the 11 counties in the Indianapolis MSA, which has the highest life expectancy?

Which has the lowest?
6 year gap by county
28 miles.
14 years.
Worlds apart.

This was U.S. LE 60 years ago!

Japan or Switzerland

Uzbekistan, Bangladesh, Iraq
What contributes to this UNEQUAL life expectancy?

"Leading Causes" of Death

Table 1. Leading Causes of Death in the United States in 2000*

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>No. of Deaths</th>
<th>Death Rate per 100 000 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart disease</td>
<td>710 760</td>
<td>258.2</td>
</tr>
<tr>
<td>Malignant neoplasm</td>
<td>553 091</td>
<td>200.9</td>
</tr>
<tr>
<td>Cerebrovascular disease</td>
<td>167 661</td>
<td>60.9</td>
</tr>
<tr>
<td>Chronic lower respiratory tract disease</td>
<td>122 009</td>
<td>44.3</td>
</tr>
<tr>
<td>Unintentional injuries</td>
<td>97 900</td>
<td>35.6</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>69 301</td>
<td>25.2</td>
</tr>
<tr>
<td>Influenza and pneumonia</td>
<td>65 313</td>
<td>23.7</td>
</tr>
<tr>
<td>Alzheimer disease</td>
<td>49 558</td>
<td>18</td>
</tr>
<tr>
<td>Nephritis, nephrotic syndrome, and nephrosis</td>
<td>37 251</td>
<td>13.5</td>
</tr>
<tr>
<td>Septicemia</td>
<td>31 224</td>
<td>11.3</td>
</tr>
<tr>
<td>Other</td>
<td>499 283</td>
<td>181.4</td>
</tr>
<tr>
<td>Total</td>
<td>2 403 351</td>
<td>873.1</td>
</tr>
</tbody>
</table>

*Data are from Minino et al.4

“Actual Causes” of Death

<table>
<thead>
<tr>
<th>Actual Cause</th>
<th>No. (%) in 1990*</th>
<th>No. (%) in 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>400 000 (19)</td>
<td>435 000 (18.1)</td>
</tr>
<tr>
<td>Poor diet and physical inactivity</td>
<td>300 000 (14)</td>
<td>400 000 (16.6)</td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td>100 000 (5)</td>
<td>85 000 (3.5)</td>
</tr>
<tr>
<td>Microbial agents</td>
<td>90 000 (4)</td>
<td>75 000 (3.1)</td>
</tr>
<tr>
<td>Toxic agents</td>
<td>60 000 (3)</td>
<td>55 000 (2.3)</td>
</tr>
<tr>
<td>Motor vehicle</td>
<td>25 000 (1)</td>
<td>43 000 (1.8)</td>
</tr>
<tr>
<td>Firearms</td>
<td>35 000 (2)</td>
<td>29 000 (1.2)</td>
</tr>
<tr>
<td>Sexual behavior</td>
<td>30 000 (1)</td>
<td>20 000 (0.8)</td>
</tr>
<tr>
<td>Illicit drug use</td>
<td>20 000 (&lt;1)</td>
<td>17 000 (0.7)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1 060 000 (50)</strong></td>
<td><strong>1 159 000 (48.2)</strong></td>
</tr>
</tbody>
</table>

*Data are from McGinnis and Foege. The percentages are for all deaths.

Leading Causes of Death

Actual Causes of Death
Deaths Related to Social Factors

- Low Education
- Racial segregation
- Low Social Support
- Poverty
- Income inequality
- Area-level poverty


- Acute MI
- Cerebrovascular
- Lung cancer
Leading Causes of Death

Actual Causes of Death

Social/Root Causes of Death
Root Causes=Social Determinants

“...economic and social conditions that influence the health of people and communities. These conditions are shaped by the amount of money, power, and resources that people have, all of which are influenced by policy choices.”  -Centers for Disease Control & Prevention

“The social determinants of health are mostly responsible for health inequities - the unfair and avoidable differences in health status seen within and between countries.”  - World Health Organization

http://www.cdc.gov/socialdeterminants/FAQ.html
http://www.who.int/social_determinants/sdh_definition/en/
How much do social determinants matter?

Genes, biology and health behaviors \(\rightarrow\) \(~25\%

Social determinants \(\rightarrow\) \(~75\%

http://www.cdc.gov/nchhstp/socialdeterminants/faq.html
Examples of root factors

• Availability of resources to meet daily needs (e.g., safe housing and local food markets)

• Access to educational, economic, and job opportunities

• Access to health care services

• Quality of education and job training

• Availability of community-based resources in support of community living and opportunities for recreational and leisure-time activities

• Transportation options

• Public Safety

http://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health
More examples

• Social Support

• Social norms and attitudes (e.g., discrimination, racism and distrust of government)

• Exposure to crime, violence, and social disorder (e.g., presence of trash and lack of cooperation in a community)

• Socioeconomic conditions and the stressful conditions that accompany it

• Residential segregation

• Language/Literacy

• Access to mass media and emerging technologies (e.g., cell phones, the Internet, and social media)

• Culture

http://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health
Educational attainment → Health knowledge, literacy, & behaviors → Health
- Nutrition
- Exercise
- Drugs & alcohol
- Health/disease management

HEALTH
Childhood Obesity

Limited Physical Activity

Education Policy

Unsafe neighborhood streets
What can we DO to reduce these gaps in life expectancy?
<table>
<thead>
<tr>
<th>Roots (Upstream Interventions)</th>
<th>Branches (Midstream Interventions)</th>
<th>Leaves (Downstream Interventions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seek to reform the fundamental social and economic structures that distribute wealth, power, opportunities, and decision-making.</td>
<td>Seek to reduce exposure to hazards by improving material working and living conditions, or to reduce risk by promoting healthy behaviors.</td>
<td>Seek to increase equitable access, at an individual or family level, to health and social services.</td>
</tr>
<tr>
<td>These changes generally happen at the macro policy level: national and transnational.</td>
<td>These changes generally occur at the micro policy level: regional, local, community, or organizational.</td>
<td>These changes generally occur at the service or access to service level.</td>
</tr>
<tr>
<td>They are about diminishing the causes of the causes.</td>
<td>They are about changing the causes.</td>
<td>They are about changing the effects of the causes.</td>
</tr>
</tbody>
</table>

A 14 year gap in life expectancy should not exist in the heartland of America.
Individual changes will not significantly change a society’s life expectancy, but *collective action* on the *social determinants* of health can.
Acknowledgments

Thank you to...

• The Polis Center and SAVI Community Information System
• Indiana State Department of Health

Photographs of Indy neighborhoods were taken by IUPUI Community Health students.
Questions?

Access the full report online at www.savi.org/worlds-apart/