Causes of Gains and Losses in Life Expectancy in OECD Countries

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Life Expectancy Gains Since 2010

Life Expectancy at Birth, 2010

Source: Ho (2019a)
Life Expectancy Gains, 2000-2010

Source: Ho (2019a)
Life Expectancy Gains Since 2010

- Life Expectancy at Birth, 2010

Source: Ho (2019a)
Life Expectancy Gains Since 2010, Men

Source: Ho (2019a)
Life Expectancy Gains Since 2010, Women

Life Expectancy at Birth, 2010

Source: Ho (2019a)
Topics

I. Age Groups
II. Causes of Death
III. Smoking
IV. Implications for CVD Monitoring
Two Comparisons

1. Between groups, 2010-Present:
   ➢ High vs. Low
   ➢ High vs. Medium

2. Within groups across time:
   ➢ 2000-2010 vs. 2010-Present
Topics

I. Age Groups
II. Causes of Death
III. Smoking
IV. Implications for CVD Monitoring
Age Group Contributions, 2010-Present

Contribution to Life Expectancy Gain, 2010-Present

Source: Ho (2019a)
Contribution to Life Expectancy Gains

Source: Ho (2019a)
Contribution to Life Expectancy Gains

High

Medium

Low

Source: Ho (2019a)
Source: Ho (2019a)
Source: Ho (2019a)
Topics

I. Age Groups
II. Causes of Death
III. Smoking
IV. Implications for CVD Monitoring
Decreases Since 2010

1. Cardiovascular Disease
2. Diabetes
3. Cancer
4. Other Respiratory Diseases (Men only)
5. Digestive Diseases
6. Genitourinary Diseases
7. Homicide
8. Suicide
9. Motor Vehicle Accidents
10. Other External Causes
11. Influenza & Pneumonia
12. Infectious Diseases (Men only)
13. Residual
Increases Since 2010

1. Accidental Poisoning
2. Mental and Nervous System Diseases
3. Other Respiratory Diseases (Women only)
4. Perinatal Conditions
5. Infectious Diseases (Women only)
## Countries Experiencing Mortality Increases

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>MEN</th>
<th></th>
<th>WOMEN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>Accidental Poisoning</td>
<td>14</td>
<td>58%</td>
<td>17</td>
<td>71%</td>
</tr>
<tr>
<td>Mental and Nervous System Diseases</td>
<td>23</td>
<td>96%</td>
<td>23</td>
<td>96%</td>
</tr>
<tr>
<td>Other Respiratory Diseases</td>
<td>4</td>
<td>17%</td>
<td>15</td>
<td>63%</td>
</tr>
<tr>
<td>Perinatal Conditions</td>
<td>10</td>
<td>42%</td>
<td>11</td>
<td>46%</td>
</tr>
<tr>
<td>Infectious Diseases</td>
<td>9</td>
<td>38%</td>
<td>11</td>
<td>46%</td>
</tr>
</tbody>
</table>

*Source: Ho (2019a)*
More Favorable Since 2010 vs. 2000-2010

1. Diabetes (Men only)
2. Lung Cancer
3. Preventable Cancers (Men only)
4. Genitourinary Diseases
5. Homicide
6. Suicide
7. Other External Causes
8. Infectious Diseases
9. Residual
Less Favorable Since 2010 vs. 2000-2010

1. Cardiovascular Disease
2. Diabetes (Women only)
3. Other Respiratory Diseases*
4. Preventable Cancers (Women only)
5. Other Cancers
6. Digestive Diseases
7. Mental and Nervous System Diseases**
8. Accidental Poisoning**
9. Motor Vehicle Accidents
10. Perinatal Conditions*
11. Influenza & Pneumonia
Trends in CVD Mortality, 1995-Present

Men

Source: Ho (2019a)
Progress in Reducing CVD Mortality Relative to 1995 Men

Source: Ho (2019a)
Cause of Death Contributions to Life Expectancy Changes 2010-Present
High
Medium
Low

Cardiovascular Disease
Cancer
Mental and Nervous System Disorders
Other Chronic Disease
Accidental Poisoning
External Causes
Influenza and Pneumonia
Residual

Source: Ho (2019a)
High

Medium

Low

Women

Men

Source: Ho (2019a)
Source: Ho (2019a)
Cause of Death Contributions to the Slowdown in Life Expectancy Improvements

2000-2010 vs. 2010-Present
This image presents a bar chart illustrating the leading causes of death for men in different socioeconomic groups (Low, Medium, High) during two periods: 2000-2010 and 2010-Present. The chart indicates changes in death rates across various causes of death, such as Cardiovascular Disease, Cancer, Mental and Nervous System Disorders, Other Chronic Disease, Accidental Poisoning, External Causes, Influenza and Pneumonia, and Residual. The data is sourced from Ho (2019a).
Men

Source: Ho (2019a)
Topics

I. Age Groups
II. Causes of Death
III. Smoking
IV. Implications for CVD Monitoring
Deaths Attributable to Smoking, Ages 50+
Deaths Attributable to Smoking, Ages 50+

Men

Source: Ho (2019a)
Deaths Attributable to Smoking, Ages 50+

Men

Women

Source: Ho (2019a)
Reductions in Smoking-Related Mortality are Drivers of Gains in Life Expectancy at Age 50

Men 2010-Present

Source: Ho (2019a)
Increases in Smoking-Related Mortality Partly Explain Slowdowns in Life Expectancy Gains at Age 50

Women 2010-Present

Source: Ho (2019a)
Gain in Life Expectancy at Age 50

Source: Ho (2019a)
Gain in Life Expectancy at Age 50

Most  Moderate  Least

Gain, 2000-2010  Gain, 2010-Present Without Smoking

Source: Ho (2019a)
Topics

I. Age Groups
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Key Points

- Importance of timely vital statistics data releases
- Influenza and pneumonia
- Drug overdose
Influenza & Pneumonia and Cardiovascular Disease

- Series of bad influenza years since 2010
- The majority of high-income countries experienced life expectancy declines between 2014 and 2015

Source: Ho and Hendi (2018)
Fig 4 | Contribution of broad cause of death categories to changes in life expectancy at birth for women during 2014-15 in 17 high income countries. Countries are ordered by change in life expectancy at birth during 2014-15, from largest decline to largest gain. Countries to left of dashed line experienced a decline in life expectancy during 2014-15, and countries to right of dashed line experienced a life expectancy gain during 2014-15. Cause of death categories for Portugal differ from those for the other countries (see supplementary table A2). See supplementary figure A2 for a more detailed version of this figure with 22 cause of death categories.

Source: Ho and Hendi (2018)
Influenza & Pneumonia and Cardiovascular Disease

- Influenza and pneumonia may precipitate cardiovascular events such as acute myocardial infarction and consequently mortality from cardiovascular disease.
- Individuals with CVD may be more susceptible to dying from influenza and pneumonia.
- Influenza often goes undetected owing to lack of diagnostic testing.
- Deaths may potentially be coded as due to influenza, cardiovascular diseases, or other respiratory diseases on death certificates.
Drug Use and Cardiovascular Disease

- Cardiovascular disease is a leading cause of death among users of illicit drugs.
- Illicit drug use increases the risk of several cardiovascular conditions including:
  - Atrial fibrillation
  - Cardiomyopathy
  - Cerebral infarction
  - Cardiac arrest and sudden cardiac death
  - Cardiac arrhythmia
  - Endocarditis
  - Myocardial infarction
  - Stroke
Men

Source: Ho (2019b)
Women

Source: Ho (2019b)
Data and Methods
Data

- **Human Mortality Database (HMD)**
  - All-cause life table death rates by age, sex, year, and country
  - Supplemented by data from individual countries’ vital statistics agencies

- **World Health Organization (WHO) Mortality Database**
  - Deaths by age, sex, year, and cause of death
Methods

I. Combine the HMD all-cause death rates with cause-specific proportions from the WHO to generate death rates by age, sex, year, country, and broad cause of death category

II. Arriaga’s decomposition
   ➢ Age and cause of death contributions to changes in life expectancy at birth between 2010 and Present and 2000 and 2010 for each country

III. Indirect estimation of smoking-attributable mortality at ages 50+ (Preston, Glei, and Wilmoth 2010, 2011)
   ➢ Contribution of smoking to changes in life expectancy at age 50 between 2010 and Present for each country