Is mortality variation by region of birth an issue for mortality projections? The case of Sweden

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BACKGROUND
Swedish population projections

- Fertility, immigration and emigration are estimated by age, sex and by country of birth (7 groups)
- Mortality estimated by age and sex only
- It has been discussed whether assumptions on future mortality should also include the same groups of foreign-born and native-born
Arguments for including groups of foreign-born in mortality projections

- The proportion foreign-born in the Swedish population has increased steadily, from 6 percent in 1970 to 16 percent in 2014
- The foreign-born group is projected to become 22 percent in 2060
- The interest has increased as regards all demographic events in relation to various groups of foreign-born
Aim and questions

- One aim of various demographic analyses made by Statistics Sweden is to develop the population projections.
- Are there differences in longevity between various groups of native and foreign-born?
- If there are differences in mortality between groups, are there any changes over time?
- Are differences between various groups large enough to be considered for mortality assumptions in the Swedish population projections in the future?
Classification based on country of birth

- Sweden
- Nordic countries
- EU countries, except Nordic countries
- Other European countries

Non-European countries based on Human Development Index (United Nations):

- High (Iran, Chile, Lebanon)
- Medium (Iraq, Thailand, Syria)
- Low (Somalia, Afghanistan, Ethiopia)
Data

- The Swedish population registry for two 5-year periods, 2000–2004 and 2010–2014
- Ages 30+
- 28.5 million person-years and 460,000 deaths in the period 2000–2004
- 30.4 million person-years and 446,000 deaths in the period 2010–2014
Compositional changes of foreign-born in the population aged 30+

All foreign-born groups, except those born in Nordic countries, has increased in population size.

- Nordic countries
- Non-Nordic EU countries
- Other European countries
- Non-Europ., high HDI
- Non-Europ., medium HDI
- Non-Europ., low HDI

Years: 2000-04, 2010-14
Age distribution by region of birth 2000–2004

Groups born outside Europe have low proportions in ages where deaths are most common.
Method

- Common life table calculations
- Low number of observations and deaths in a number of groups in old age → all groups were assigned the same population mortality risks at age 90 and over
- Estimations of the ages that contributes to survival differences between groups
FINDINGS
Life expectancy at age 30 for women by region of birth, period, and change between periods

<table>
<thead>
<tr>
<th>Region of birth</th>
<th>2000−2004</th>
<th>2010−2014</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>52.9</td>
<td>54.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Nordic countries</td>
<td>51.6</td>
<td>53.0</td>
<td>1.4</td>
</tr>
<tr>
<td>EU countries, except Nordic</td>
<td>53.6</td>
<td>55.1</td>
<td>1.5</td>
</tr>
<tr>
<td>Rest of Europe</td>
<td>52.4</td>
<td>53.9</td>
<td>1.5</td>
</tr>
<tr>
<td>Non-European, high HDI</td>
<td>55.4</td>
<td>56.1</td>
<td>0.7</td>
</tr>
<tr>
<td>Non-European, medium HDI</td>
<td>54.3</td>
<td>55.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Non-European, low HDI</td>
<td>54.8</td>
<td>55.8</td>
<td>1.0</td>
</tr>
<tr>
<td>Total</td>
<td>52.8</td>
<td>54.2</td>
<td>1.4</td>
</tr>
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</table>
Life expectancy at age 30 for *men* by region of birth, period, and change between periods

<table>
<thead>
<tr>
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<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>48.8</td>
<td>50.8</td>
<td>2.0</td>
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<tr>
<td>Nordic countries</td>
<td>45.8</td>
<td>48.1</td>
<td>2.3</td>
</tr>
<tr>
<td>EU countries, except Nordic</td>
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<td>51.4</td>
<td>1.9</td>
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<tr>
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<td>49.9</td>
<td>2.0</td>
</tr>
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<td>52.3</td>
<td>2.1</td>
</tr>
<tr>
<td>Non-European, low HDI</td>
<td>48.9</td>
<td>51.8</td>
<td>2.9</td>
</tr>
<tr>
<td>Total</td>
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Difference in $e_{30}$ compared with the population by period and region of birth. **Women**

### Difference in years

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-3 -2 -1 0 1 2 3
Difference in $e_{30}$ compared with the population by period and region of birth. **Men**

Difference in years

- Sweden
- Nordic countries
- EU countries
- Rest of Europe
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Contribution from various age groups to the difference in $e_{30}$ between native-born and those born in Nordic countries 2010–2014

Contribution to difference in $e_{30}$ in years

$Δ = \text{Total difference in } e_{30}$
Contribution from various age groups to the difference in $e_{30}$ between native-born and those born in non-European countries with high HDI 2010–2014

Δ = Total difference in $e_{30}$
Discussion

- There are clear differences in longevity between various groups defined by country of birth
- Those born in non-European countries and in EU countries except Nordic countries have higher life expectancy than the native-born
- Those born in Nordic countries and European countries outside EU have lower life expectancy than the native-born
- Differences in longevity were similar in 2000–2004 and 2010–2014 and of similar size as sex differences
Discussion cont.

- Findings from the last 15 years suggest that three main groups can be adopted in the projections: native-born, one foreign-born group with lower and one foreign-born group with higher mortality than the population.
- The group with low mortality (EU + non-European countries) increase in the population (≈10 %).
- The number of foreign-born is still relatively small in ages where most people die. The proportion of deaths in the foreign-born group was 11% in the period 2010–2014 (17% of pop.).
- Irregular mortality trends for foreign-born in young adulthood and the very old → difficult to model trends for the future.
- Including mortality assumptions for two foreign-born groups will probably have small consequences for the population projection.
- A more detailed analysis is needed in order to estimate the numerical consequences of including foreign-born in mortality assumptions for Sweden.
Thank you!

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