The Burden of Mortality in Wisconsin: Annual Excess Deaths

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University of Wisconsin Population Health Institute – Making Wisconsin the Healthiest State Grant
Funded by the Wisconsin Partnership Fund for a Healthy Future

Introduction

• Measures of risk alone may not provide a complete picture of the magnitude of mortality burden across groups.
• Excess deaths, a measure which combines both risk and population size, can provide additional needed information for the distribution of resources to improve population health.

Methods

Data

• Wisconsin Interactive Statistics on Health (WISH)
• Wisconsin Assessment Information Manager (AIM)
• Data gathered by county for 1995-2004
• All deaths under 75 years of age included

Target rates

• Chosen as the lowest reliable mortality rates observed among Wisconsin counties for each age group

• Calculating excess deaths

• Excess deaths = risk difference \times population size
• The risk difference was calculated as the difference between the observed age-specific county death rate and the target rate.
• Multiplying the excess risk in a county by the size of the population living with this risk provides the number of excess deaths.
• Because mortality rates vary greatly with age, excess deaths were first calculated for each age group in each county and then summed across counties and ages to present group-level excess death totals.

Results

Statewide distribution

• 4,782 annual excess deaths in Wisconsin from 1995-2004
• Counties with the most excess deaths
  • Milwaukee County – 1650
  • Racine County – 210
  • Rock County – 183
• Counties with the fewest excess deaths
  • Calumet County – 3
  • Pepin County – 3
  • Florence County – 6
• The majority of the deaths occurring in Menominee County (63%) and the City of Milwaukee (51%) could be avoided through drastically improving mortality rates.

Milwaukee City and County

• Milwaukee County contains approximately 18% of the state’s population but accounts for 35% of the state’s excess deaths.
• The City of Milwaukee has 1,330 excess deaths compared to only 320 in the remaining areas of the county, a larger burden of avoidable deaths than would be expected by population distribution alone.

Rural and urban counties

• Urban counties bear less of the excess death burden in relation to their population and the City of Milwaukee bears much more than would be expected based on population size.

Table 1. Target rates and excess deaths by age group (1995-2004).

<table>
<thead>
<tr>
<th>Age group</th>
<th>Best county</th>
<th>Best rate (per 100,000 population)</th>
<th>Average annual # of excess deaths</th>
<th>Average annual # of total deaths</th>
<th>Percent of WI deaths which are excess</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 year</td>
<td>Wood</td>
<td>346.1</td>
<td>230</td>
<td>465</td>
<td>49%</td>
</tr>
<tr>
<td>1-14 years</td>
<td>Waushesa</td>
<td>11.7</td>
<td>105</td>
<td>226</td>
<td>46%</td>
</tr>
<tr>
<td>15-24 years</td>
<td>Eau Claire</td>
<td>38.9</td>
<td>261</td>
<td>560</td>
<td>47%</td>
</tr>
<tr>
<td>25-34 years</td>
<td>Waushesa</td>
<td>53.8</td>
<td>232</td>
<td>612</td>
<td>38%</td>
</tr>
<tr>
<td>35-44 years</td>
<td>Calumet</td>
<td>91.0</td>
<td>541</td>
<td>1326</td>
<td>41%</td>
</tr>
<tr>
<td>45-54 years</td>
<td>Washington</td>
<td>228.8</td>
<td>817</td>
<td>2462</td>
<td>33%</td>
</tr>
<tr>
<td>55-64 years</td>
<td>Waushesa</td>
<td>635.8</td>
<td>1070</td>
<td>4038</td>
<td>26%</td>
</tr>
<tr>
<td>65-74 years</td>
<td>Pepin</td>
<td>1824.0</td>
<td>1526</td>
<td>8004</td>
<td>19%</td>
</tr>
<tr>
<td>All ages</td>
<td>N/A</td>
<td>N/A</td>
<td>4782</td>
<td>17692</td>
<td>27%</td>
</tr>
</tbody>
</table>

Figure 2. Distribution of population and excess deaths in Wisconsin.

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%

Population Excess deaths

Rural Counties (n=52)

Urban Counties (n=20)

City of Milw.

Figure 1. Distribution of annual excess deaths in Wisconsin (total = 4782).

Dot equals one excess death and are randomly placed within the county to which they are assigned.

Conclusion

• Over one-quarter of all Wisconsin deaths under age 75 years could be avoided if every county achieved the rates observed in the healthiest counties.
• Examining the distribution of excess deaths across Wisconsin can assist in
  • program planning,
  • allocation of resources,
  • and targeting approaches for reaching state and local health goals such as those included in Healthiest Wisconsin 2010.
• The use of a measure such as excess deaths does not imply that areas with high death rates and small populations do not require attention.
• However, an examination of excess deaths can help to identify where the mortality burden falls in terms of the absolute number of excess deaths and to identify concentrated areas of the state which may need added attention.