BEYOND COST-EFFECTIVENESS: WHY BENEFIT-COST ANALYSIS?

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Topics to be Covered

• Two cultures
• The Evolution of Disease Control Priorities
• Why BCA?
• The Way Forward: Education as an Example
# Two Cultures: A (mild) Caricature

<table>
<thead>
<tr>
<th>Sources of difference</th>
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<th>Environmental economics and the BCA community</th>
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<td>Routine</td>
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A Caveat on CEA

We should distinguish two types of CEA

CEA-1: Assesses choice of technique and scale of effort using real outcomes (deaths averted; pregnancies averted; HIV infections averted, etc.)

CEA-2: Addresses intrasectoral resource allocation using QALYs or DALYs

* * *

CEA-1 is always essential

CEA-2 is completely replaced by BCA
The Evolution of the World Bank’s Disease Control Priorities

• *DCP 1* (1993) and *DCP2* (2006): CEA focused
• *DCP3* (2015-17): Substantial use of BCA (and of extended cost-effectiveness analysis)
Injury Prevention and Environmental Health

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Ais Alwan
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WHY BCA (Rather than CEA-2)?

1. Some health sector investments have outcomes not measured in DALYs or QALYs – financial risk protection, IQ change, pain control and palliative care, stillbirths averted, growth shortfalls averted, control of fertility, abortion, plastic and reconstructive surgery. The list is short but important.

2. Many non-health sector investments have important health consequences – water supply and sanitation, traffic safety, air pollution control, education.

3. Existing aggregate measures of health outcomes can change in non-transparent ways and suffer conceptual shortcomings.

4. NIPA excludes mortality change. Full appreciation of the role of health in the evolution of human welfare requires valuation of change in health

COMMON THEME: COMPARABILITY
Intersectoral Resource Allocation: Education as an Example
Figure 30.3 Benefit Stream for Lower-Middle-Income Countries from One Additional Year of Schooling

Internal Rate of Return (IRR)

\[ hPVNB(r_h) = \sum_{a=A}^{65} \frac{ev(a) + hv(a) - c_1(a) - c_2(a)}{(1+r_h)^{a-A}} \]

- \( c_1 \) and \( c_2 \) are direct and opportunity costs
- \( ev \) earnings value
- \( hv \) is health value
- PVNB is present value of net benefits
- The internal rate of return (IRR) is the value of the discount rate, \( r_h \), that makes \( PVNB = 0 \)
### VSLₐ Values for Lower Middle-Income Countries

#### VSLₐ for Anchor VSLₐ = 180

<table>
<thead>
<tr>
<th>Age Adjustment</th>
<th>N</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Adjustment</td>
<td>180</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>115</td>
<td>66</td>
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</tbody>
</table>

#### VSLₐ for Anchor VSLₐ = 100

<table>
<thead>
<tr>
<th>Age Adjustment</th>
<th>N</th>
<th>Y</th>
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</thead>
<tbody>
<tr>
<td>Income Adjustment</td>
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<td>58</td>
</tr>
<tr>
<td></td>
<td>67</td>
<td>33</td>
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</tbody>
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Source: Personal Communication from Angela Chang
## Health-Inclusive IRR for Lower-Middle Income Countries

### Panel A: Anchor VSL$_r$ = 180

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<thead>
<tr>
<th>Age Adjustment</th>
<th>N</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Adjustment</td>
<td>N</td>
<td>10.2%</td>
</tr>
<tr>
<td></td>
<td>Y</td>
<td>9.1%</td>
</tr>
</tbody>
</table>

### Panel B: Anchor VSL$_r$ = 100

<table>
<thead>
<tr>
<th>Age Adjustment</th>
<th>N</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Adjustment</td>
<td>N</td>
<td>8.8%</td>
</tr>
<tr>
<td></td>
<td>Y</td>
<td>8.2%</td>
</tr>
</tbody>
</table>

Original paper: VSL$_r$ = 130  
(Pradhan et al, 2017)

IRR = 9.3%  
IRR, without health = 7%

Source: Personal communication from Elina Pradhan.
THANK YOU

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