



RAND LABOR AND POPULATION

## ***Overview of Benefit-Cost Analysis for Early Childhood Interventions***

Lynn A. Karoly  
RAND

March 4, 2009

Presented at the Workshop on Strengthening Benefit-Cost Methodology for the  
Evaluation of Early Childhood Interventions

National Research Council and Institute of Medicine  
Board on Children, Youth, and Families

This presentation does not necessarily reflect the opinion of RAND research sponsors and should not be quoted or cited without permission of the author.

### ***Growing Interest in Assessing Programs on the Basis of Net Cost Savings or Net Benefits***

- Program funders in public and private sectors have been placing more emphasis on results-based accountability
- Interest in demonstrating not only program benefits but also economic returns
  - Savings to government
  - Benefits to society as a whole
- Statements that \$1 spent returns \$X in benefits can be a powerful argument
  - To support program funding
  - To choose between programs

RAND

Karoly-2 Mar-09

## Options for Cost and Outcome Analysis Vary in Information Required

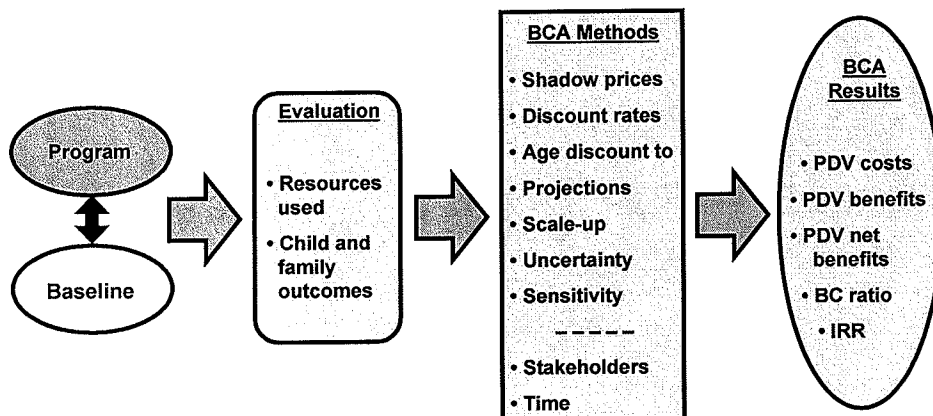
Type	Outcomes
Cost	No measurement
Cost-effectiveness	Single outcome
Cost-savings	Value to government; inclusive
Cost-benefit	Value to society; inclusive

**All methods require complete cost measurement**

RAND

Karoly-3 Mar-09

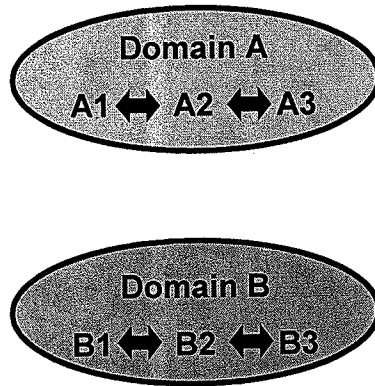
## Ingredients for BCA



RAND

Karoly-4 Mar-09

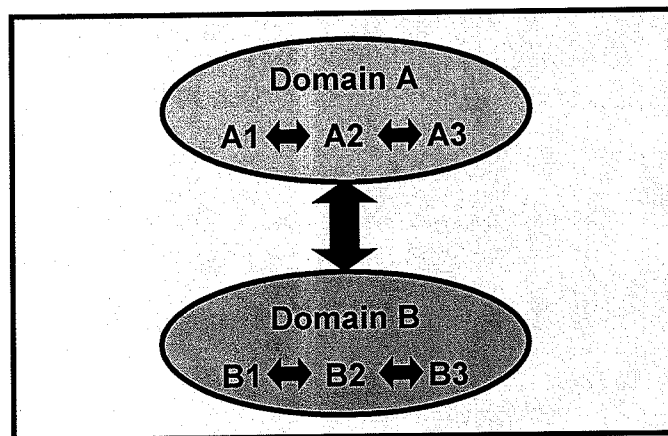
**Goal for BCA of Early Childhood Interventions:  
Compare Within Domains**



RAND

Karoly-5 Mar-09

**Goal for BCA of Social Programs:  
Compare Across Domains**



RAND

*Is this possible today? No*

Karoly-6 Mar-09

## ***Challenges with BCA for Early Childhood Interventions***

- **Conducting rigorous evaluations to measure causal effects**
- **Measuring resources used**
- **Measuring program effects on child or family outcomes in short term and longer term**
- **Generating economic values or “shadow prices” for resources used and outcomes affected**
- **Standardizing BCA methods to support comparability**

RAND

Karoly-7 Mar-08

## ***BCA Requires Rigorous Evaluation with Baseline Program for Comparison***

- **Baseline provides comparison of costs, outcomes or benefits compared to world without program**
- **Requires comparison group evaluated under baseline**
  - **Ideal is random assignment to baseline or program being evaluated**
  - **Non-experimental methods are also available**
- **May want to compare multiple programs along with baseline**

RAND

Karoly-8 Mar-09

## ***Program Costs Should Account for All Consumed Resources of Value to Society***

- On budget
  - Additional materials needed
  - Salaries of added staff
  - Rental of extra space
- Off budget
  - Costs paid by participants (including time)
  - Donated time, other resources
  - Value of other lost opportunities

RAND

Karoly-9 Mar-09

## ***Diverse Set of Outcomes May Be Affected by Early Childhood Interventions***

<b>Outcomes that Could Be Affected</b>	
<b>Child / Youth Outcomes</b>	Behavioral / Emotional
	Cognitive
	Education
	Health
	Anti-Social / Risky Behavior
<b>Adult Outcomes</b>	Family Functioning
	Education
	Economic
	Health
	Crime and Substance Abuse

RAND

Karoly-10 Mar-09

## **Examples of Benefits from Early Childhood Interventions Found for Children and Parents**

	Child	Parent
Emotional & cognitive development	<ul style="list-style-type: none"> <li>- Improved behavior</li> <li>- Increased IQ</li> <li>- Increased achievement</li> </ul>	<ul style="list-style-type: none"> <li>- More satisfactory parent-child relationship</li> <li>- Better home environment</li> </ul>
Education	<ul style="list-style-type: none"> <li>- Higher promotion rates</li> <li>- Reduced special education</li> <li>- Increased graduation rates</li> </ul>	<ul style="list-style-type: none"> <li>- Increased educational attainment</li> </ul>
Work, welfare, crime	<ul style="list-style-type: none"> <li>- Increased employment and income</li> <li>- Lower welfare use</li> <li>- Fewer arrests</li> </ul>	<ul style="list-style-type: none"> <li>- Increased employment and income</li> <li>- Lower welfare use</li> <li>- Fewer arrests</li> </ul>
Health	<ul style="list-style-type: none"> <li>- Less child abuse</li> <li>- Fewer ER visits</li> </ul>	<ul style="list-style-type: none"> <li>- Improved family planning</li> <li>- Reduced substance abuse</li> </ul>

RAND

Karoly-11 Mar-09

## **...But Not All Benefits Are Valued in BCAs**

	Child	Parent
Emotional & cognitive development	<ul style="list-style-type: none"> <li>- Improved behavior</li> <li>- Increased IQ</li> <li>- Increased achievement*</li> </ul>	<ul style="list-style-type: none"> <li>- More satisfactory parent-child relationship</li> <li>- Better home environment</li> </ul>
Education	<ul style="list-style-type: none"> <li>- Higher promotion rates</li> <li>- Reduced special education</li> <li>- Increased graduation rates*</li> </ul>	<ul style="list-style-type: none"> <li>- Increased educational attainment*</li> </ul>
Work, welfare, crime	<ul style="list-style-type: none"> <li>- <u>Increased employment and income</u></li> <li>- <u>Lower welfare use</u></li> <li>- <u>Fewer arrests</u></li> </ul>	<ul style="list-style-type: none"> <li>- <u>Increased employment and income</u></li> <li>- <u>Lower welfare use</u></li> <li>- <u>Fewer arrests</u></li> </ul>
Health	<ul style="list-style-type: none"> <li>- Less child abuse</li> <li>- Fewer ER visits</li> </ul>	<ul style="list-style-type: none"> <li>- Improved family planning</li> <li>- Reduced substance abuse</li> </ul>

RAND

Outcome = valued; Outcome\* = used to project another outcome; Outcome = projected

Karoly-12 Mar-09

## ***Many Benefits from Early Childhood Interventions Do Not Translate into Dollars***

Benefit type	Translates into dollar terms?
Emotional and cognitive development	Not well
Health	Some yes, some no
Education	Some yes, some no
Welfare, income, crime	Yes

RAND

Karoly-13 Mar-09

## ***Previous RAND Research Summarized Findings for 20 Early Childhood Interventions***

Home Visiting / Parent Education	Early Childhood Education / Combination
Dare to Be You	Abecedarian Program
Developmentally Supporting Care: Newborn Individualized Developmental Care and Assessment Program (DSC/NIDCAP)	Comprehensive Child Development Program (CCDP)
Home Instruction Program for Preschool Youngsters (HIPPI USA)	Chicago Child Parent Centers (CPC)
Incredible Years	Early Head Start
Nurse Family Partnership (NFP)	Early Training Project
Parents As Teachers	Head Start
Project CARE (Carolina Approach to Responsive Education)	Houston Parent Child Development Center (PCDC)
Reach Out and Read	Infant Health and Development Program (IHDP)
	Oklahoma Universal Preschool
	Perry Preschool Project
	Syracuse Family Development Research Program

RAND

Karoly-14 Mar-09

## ***Seven Programs Have Associated BCAs***

Home Visiting / Parent Education	Early Childhood Education / Combination
Dare to Be You	Abecedarian Program
Developmentally Supporting Care: Newborn Individualized Developmental Care and Assessment Program (DSC/NIDCAP)	Comprehensive Child Development Program (CCDP)
Home Instruction Program for Preschool Youngsters (HIPPI USA)	Chicago Child Parent Centers (CPC)
Incredible Years	Early Head Start
Nurse Family Partnership (NFP)	Early Training Project
Parents As Teachers	Head Start
Project CARE (Carolina Approach to Responsive Education)	Houston Parent Child Development Center (PCDC)
Reach Out and Read	Infant Health and Development Program (IHDP)
	Oklahoma Universal Preschool
	Perry Preschool Project
	Syracuse Family Development Research Program

RAND

Karoly-15 Mar-09

## ***Standardization May Be Easier for Some Methodological Issues***

### Easier Issues to Address

- Discount rate
- Age discount to
- Disaggregation by stakeholder
- Accounting for uncertainty
- Sensitivity analysis

RAND

Karoly-16 Mar-09

## ...Compared With Other Methodological Issues

### Easier Issues to Address

- Discount rate
- Age discount to
- Disaggregation by stakeholder
- Accounting for uncertainty
- Sensitivity analysis

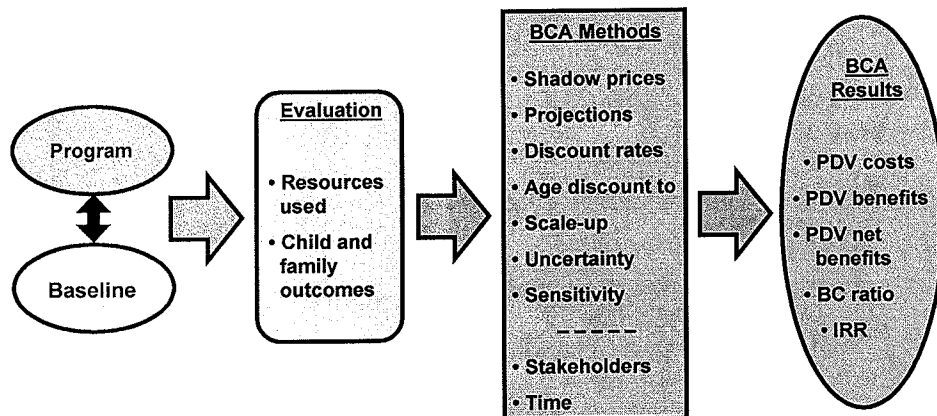
### Harder Issues to Address

- Baseline
- Outcomes measured
- Length of follow-up
- Projection of future outcomes
  - Participant
  - Parents/siblings/peers
  - Descendants
- Shadow prices for all outcomes

RAND

Karoly-17 Mar-09

## Ingredients for BCA Map Into Agenda for Workshop



RAND

Karoly-18 Mar-09



LABOR AND POPULATION