COSTING DATA AND THE COST-EFFECTIVENESS OF INTERVENTIONS

What data do we need?
What can we learn?

WEBINAR AGENDA

Welcome and overview of the session

Introductions: presentation team

Participants: What questions are you bringing to the session?

First section: How to track costing data?

First section: Q&A

Second section: How to present costing data to show program efficiency?

Second section: Q&A

OUTCOMES FOR THIS WEBINAR

1. Discuss why it is important to think about project *cost-efficiency* in addition to its *effectiveness*, especially in the path to scale-up.

2. Understand how to prepare from the beginning of a project to be able to talk about cost-efficiency with potential partners.

3. Present a tool to keep track of costing data and compute the program's cost per beneficiary.

4. Discuss several ways in which costing data can be presented to convey useful information about the program's cost-effectiveness.
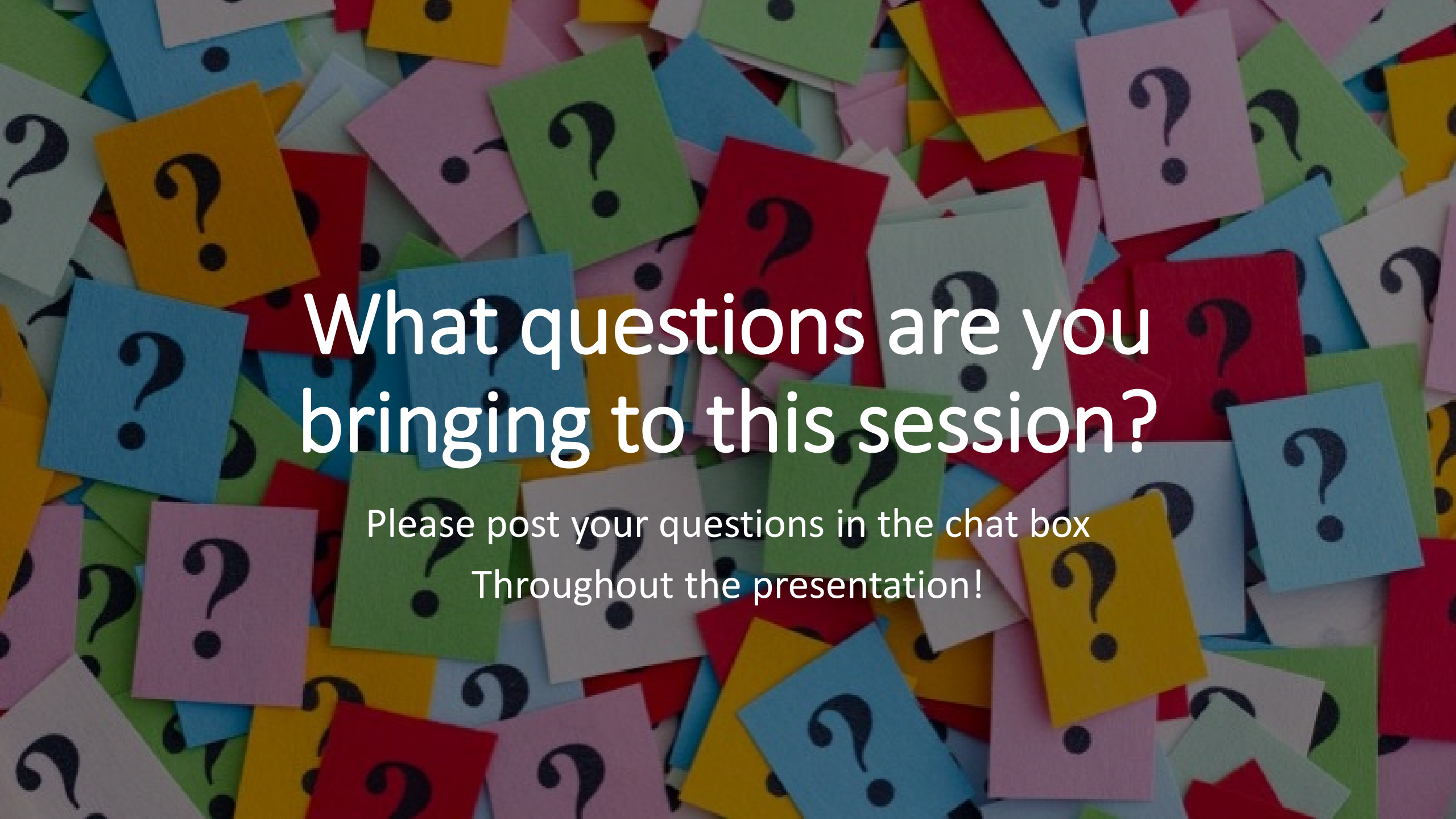
TODAY'S WEBINAR PRESENTER
Raquel Bernal PhD

- Economics Professor at University Los Andes (Bogotá, Colombia)

- Former GCC TTS Grant leader for Colombia's FAMI parenting program project

- Interests: impact of research, impact evaluation, working for the well-being of children, mentoring young people.

What questions are you bringing to this session?

Please post your questions in the chat box

Throughout the presentation!

WHAT DOES COST-EFFICIENCY MEAN?

- *Effective* **program:** the intervention had significant benefits on its beneficiaries with respect to non-beneficiaries.

- *Cost-efficient* **program:** the benefits on the beneficiaries were achieved at a reasonable cost, that is, the program is operating at its optimal level in terms of costs.

  o This implies understanding how big the benefits of the program are in relation to its costs (benefits would have to, at least, outweigh the costs in order for this investment to make sense)
  o This implies understanding whether those same benefits could have been achieved at a lower cost. Thus, it typically involves comparing with other options.

WHAT DOES COST-EFFICIENCY MEAN?

__Efficiency__ is typically understood as a *relative* term

The program is efficient *relative to other alternatives* designed with similar objectives and target populations.

In other words: the benefits associated with the program are achieved at lower costs relative to other programs with similar objectives aimed at similar populations.

WHAT DATA DO WE NEED TO DISCUSS COST-EFFICIENCY?

1. Data on how much the program costs per beneficiary, as well as, reliable data about the program's benefits on participants.

2. Data on the benefits and costs of *similar programs* with similar objectives for similar target populations.

LET'S USE THE FOLLOWING EXAMPLE

An early education teacher training program aimed at improving children's cognitive development.

Program consists of a pre-service training program of 100 hours (during six months) delivered by professional tutors. Ten tutors hired for the project. Each tutor trains 40 teachers, each teacher serves 30 children.

1. DATA REQUIRED TO COMPUTE THE PROGRAM'S COST PER BENEFICIARY: COSTING TOOL

Basic guidelines

1. Use an accurate definition of your intervention. Is it a <u>standalone</u> intervention? (e.g., an early education program) Or is an <u>add-on</u> to an already existing intervention? (e.g., a teacher training intervention offered at an already existing early education program).

2. The costs recorded in the tool should include all inputs required to deliver your intervention *regardless of the funding sources* (your own inputs but also those of partners including the government, NGOs, private, etc.).

3. The tool focuses on **direct** costs of program delivery and does not explicitly include **indirect** costs.*

Direct cost the cost of program delivery by the agency in charge of the program
Indirect costs: other pecuniary and non-pecuniary costs such as the opportunity cost of beneficiaries attending the program, the cost of transportation to the program paid for by beneficiaries (if not paid for by the program directly), etc.

Understanding the Costing Tool

HUMAN RESOURCES EXPENSES

SALARIES, MONETARY INCENTIVES OR NON-MONETARY INCENTIVES OF WORKERS IN THE PROGRAM

Item	Description	Period of time (payment cycles)	Unitary cost per payment cycle	Fringe benefits per payment cycle	Fraction of each payment cycle devoted to this project only (*include as number between 0 and 1 being 1 full-time dedication*)	Number of payment cycles	Total number of workers in this category	Total cost	Number of children served by each type of worker	Cost per child [(D+E)*F*G]/J
Frontline workers	Describe here if: a teacher, community worker, community health worker, paraprofessional care provider, etc.							0		
Trainers	Professional tutors in charge of training teachers	Month	300	60	1	6	10	21600	=40*30	
Supervisors								0		
Field manager								0		
Project manager					USD 300 per month per teacher	Fringe benefits= 20% of salary	Tutors devote a 100% of their time to this project	Each tutor hired for a total 6 months	Project hired 10 tutors	0	Each tutor trains 40 teachers, and each teacher serves 30 children
Communications manager								0		
Secretarial suppport								0		
Logistics personnel								0		
Financial officer								0		
Program developer								0		
								0		
								0		
								0		

Dictionary | HUMAN RESOURCES | TRAVEL | MATERIALS | INCENTIVES | ASSETS | INFRASTRUCTURE

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Frontline workers	Describe here if: a teacher, community worker, community health worker, paraprofessional care provider, etc.							0		
Trainers	Professional tutors in charge of training teachers	Month	300	60	1	6	10	21600	1200	1,8
Supervisors								0		
Field manager								0		
Project manager			USD 300 per month per teacher	Fringe benefits= 20% of salary	Tutors devote a 100% of their time to this project	Each tutor hired for a total 6 months	Project hired 10 tutors	0	Each tutor trains 40 teachers, and each teacher serves 30 children	The cost of program trainers per child is USD 1.8
Communications manager								0		
Secretarial suppport								0		
Logistics personnel								0		
Financial officer								0		
Program developer								0		
								0		
								0		
								0		

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Formula bar: `=((D8+E8)*F8*G8)/J8`

HUMAN RESOURCES EXPENSES

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Item	Description	Period of time (payment cycles)	Unitary cost per payment cycle	Fringe benefits per payment cycle	Fraction of each payment cycle devoted to this project only (*include as number between 0 and 1 being 1 full-time dedication*)	Number of payment cycles	Total number of workers in this category	Total cost	Number of children served by each type of worker	Cost per child [(D+E)*F*G]/J
ntline workers	Describe here if: a teacher, community worker, community health worker, paraprofessional care provider, etc.							0		
iners	Professional tutors in charge of training teachers	Month	300	60	1	6	10	21600	1200	1,8
pervisors	Each supervisor in charge of 5 tutors	Month	500	100	1	6	2	7200	6000	0,6
ld manager								0		
ject manager								0	=5 x (40 x 30)	
mmunications manager								0		
retarial suppport								0		
istics personnel								0		
ancial officer								0		
gram developer								0		
								0		
								0		
								0		

Add all

Formula bar: `=((D6+E6)*F6)/H6`

AVELING EXPENSES OF PERSONNEL REQUIRED FOR PROGRAM IMPLEMENTATION

costs related to traveling across sites for program implementation (delivery, trianing, supervision, etc.)

Item	Description	Period of time (payment cycles)	Transportation costs per payment cycle	Accommodation and living expenses when off-site per payment cycle	Number of payment cycles	Total number of workers in this category	Number of children served by each type of worker	Total cost	Cost per chi [(D+E)*F]/H
ontline workers	Describe here if: a teacher, community worker, community health worker, paraprofessional care provider, etc.							0	
ainers	Trainers travel throughout municipalities during the month	Month	120	150	6	10	1200	16200	1,35
pervisors								0	
ld manager			Transportation cost per trainer per month	Accommodation cost per trainer per month	Trainers hired for 6 months	Ten trainers hired for project	=40 teachers per trainer x 30 children per teacher	0	
oject manager								0	
mmunications manager								0	
cretarial suppport								0	
gistics personnel								0	
ancial officer								0	
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Dictionary | HUMAN RESOURCES | TRAVEL | MATERIALS | INCENTIVES | ASSETS | INFRASTRUCTURE

7:49 p. m.

2. HOW TO USE THE COSTING DATA TO CONVEY INFORMATION ABOUT PROGRAM COST-EFFECTIVENESS

Basic guidelines

1. Recommendation: full benefit-to-cost ratio calculation. You might need to hire an expert in your team.

2. Other simpler alternatives rely on strong assumptions, and are *suggestive* of the cost-efficiency of the project.

DATA REQUIRED: PROGRAM BENEFITS AND COSTS

1. The program's cost per beneficiary and the benefit per beneficiary.

2. Ideally, one should have both, *private* and *social* benefits. Our examples will focus on private benefits.

3. Similarly, one could have both, *direct* and *indirect* costs. We will focus on direct costs.

4. Given that cost-efficiency is a relative term, it is ideal to have data on costs and benefits of other programs aimed at similar populations and with similar objectives.

5. Both, costs and benefits, need to be measured in the same way (same *metric*) in your program and in the programs you are comparing it with.

A. COMPARE WITH INTERVENTIONS AIMED AT SAME OBJECTIVES AND SAME POPULATIONS

Data required: cost and benefit per beneficiary for your program and for other similar programs. Our program (# 1)-> early education teacher training. Compared with other three early child development interventions. All four programs measured benefits on **early cognitive development**. All programs report data on total **cost of program delivery per child**.
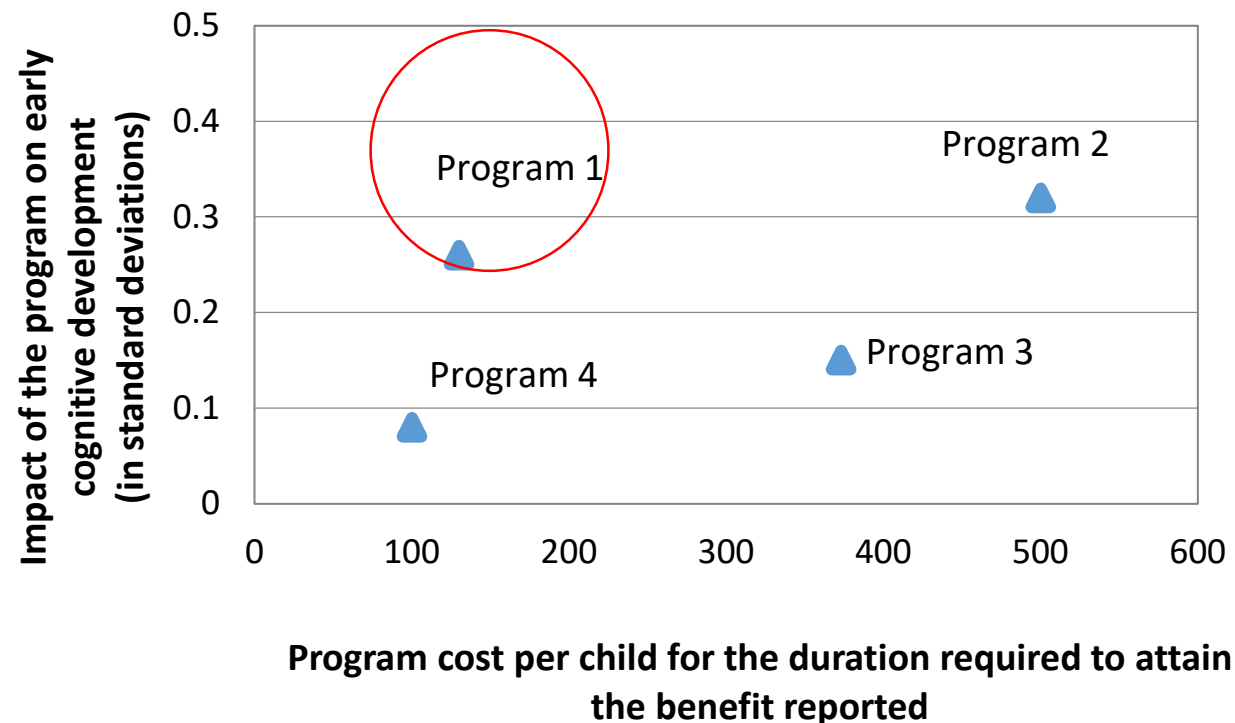
B. COMPARE WITH PROGRAMS SIMILAR IN NATURE

Data required: cost and benefit per beneficiary for your program and for a program(s) similar *in nature*. For example: both are human capital interventions, both are infrastructure programs, both are rural development treatments, etc. For comparability, both need to measure costs and benefits in the **same metric**, typically, in monetary terms.

Program	Benefit reported	Cost reported
Early childhood program	10% gain in cognitive development	USD 200
Job-training for young adults	4% increase in labor earnings	USD 500

Not in same metric

B. COMPARE WITH PROGRAMS SIMILAR IN NATURE

a. Alderman et al. (1996) report that a 1% increase in cognitive ability during childhood increases labor earnings by 0.23% in a developing country:

10% gain in cognitive development ➡️ 2.3% higher labor earnings during adulthood

b. Suppose that based on household surveys, we know that an average program beneficiary would earn US 4,350 per year given his/her socioeconomic characteristics. US= 4,350 X 2.3% = USD 100 for our program, similarly for the job training program US= 4,350 X 4% = USD 174.

c.

Program	Back-of-the-envelope annual return (benefit/cost)
Early childhood program	USD 100 benefit / USD 200 cost=0.5
Job-training for young adults	USD 174 benefit / USD 500 cost=0.35

C. COMPARE WITH OTHER CORRELATES OF YOUR OUTCOME

Data required: cost and benefit per beneficiary for your program and a relevant correlate for your outcome of interest for which you can find costing data. In our example: a variable that significantly correlates with child cognitive development like *maternal education*.

Program and comparison	Effect (or correlation) on child cognitive development		Cost of providing
Early childhood program	10%		USD 200
Maternal education	20%		USD 400

From own data you show that one more year of maternal education is associated with an increase of 20% in child cognitive development

C. COMPARE WITH OTHER CORRELATES OF YOUR OUTCOME

Data required: cost and benefit per beneficiary for your program and a relevant correlate for your outcome of interest for which you can find costing data. In our example: a variable that significantly correlates with child cognitive development like *maternal education*.

Program and comparison	Effect (or correlation) on child cognitive development	Increase in wage associated with that change in early cognitive development	Cost of providing
Early childhood program	10%	10 x 0.23= 2.3%	USD 200
Maternal education	20%	20 x 0.23= 4.6%	USD 400

Using estimates from Alderman et al. (1996)

# C. COMPARE WITH OTHER CORRELATES OF YOUR OUTCOME

Again, we know based on household surveys, that an average program beneficiary would earn US 4,350 per year given his/her socioeconomic characteristics. We can compute the increase in average labor earnings associated with our program (2.3%) and the increase associated with one more year of maternal education (4.6%):

Program and comparison	Back-of-the-envelope annual return
Early childhood intervention	=100 benefit /200 cost =0.5
Maternal education	=200 benefit /400 cost=0.5

A WORD ABOUT SOCIAL BENEFITS

Example: Preventive healthcare intervention. Consisted of reducing the insurance copayments for prenatal controls and preventive visits of babies up to the first year of life. The evaluation shows:

↓ Copayment ⟹ ↑ Prenatal care & preventive visits ⟹ ↓ Children's hospital visits
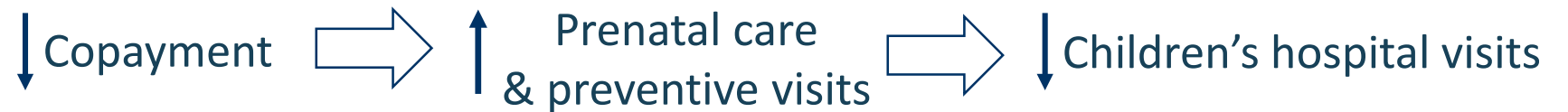
Social benefits would correspond to the savings of the government due to less visits of young children to the hospital. Total savings depend on the average cost of children's hospitalizations and the size of the effect of the program on hospitalizations.

D. FULL BENEFIT-TO-COST ANALYSIS

Data required: cost and benefit per beneficiary for your program, as well as, costs and benefits of similar investments against with which you will compare your program. Everything has to be expressed in monetary terms (using the "translations" shown earlier).
The benefit-to-cost ratio is given by:

$$BC = \frac{\text{Present value of all (private and social) benefits associated with the delivery of the program}}{\text{Present value of all the (direct and indirect) costs associated with the delivery of the program}}$$

BC=1 then the discounted flows of benefits are equal to the discounted flows of costs.

BC > 1 the benefit flows are higher than the cost flows, the higher it is, the better (relative to what?).

BC < 1 cost of the program is higher than what the beneficiary receives in return, bad investment