

# The use of big data in building the foundations for sustainable development: a case for global investment in the capabilities of adolescents

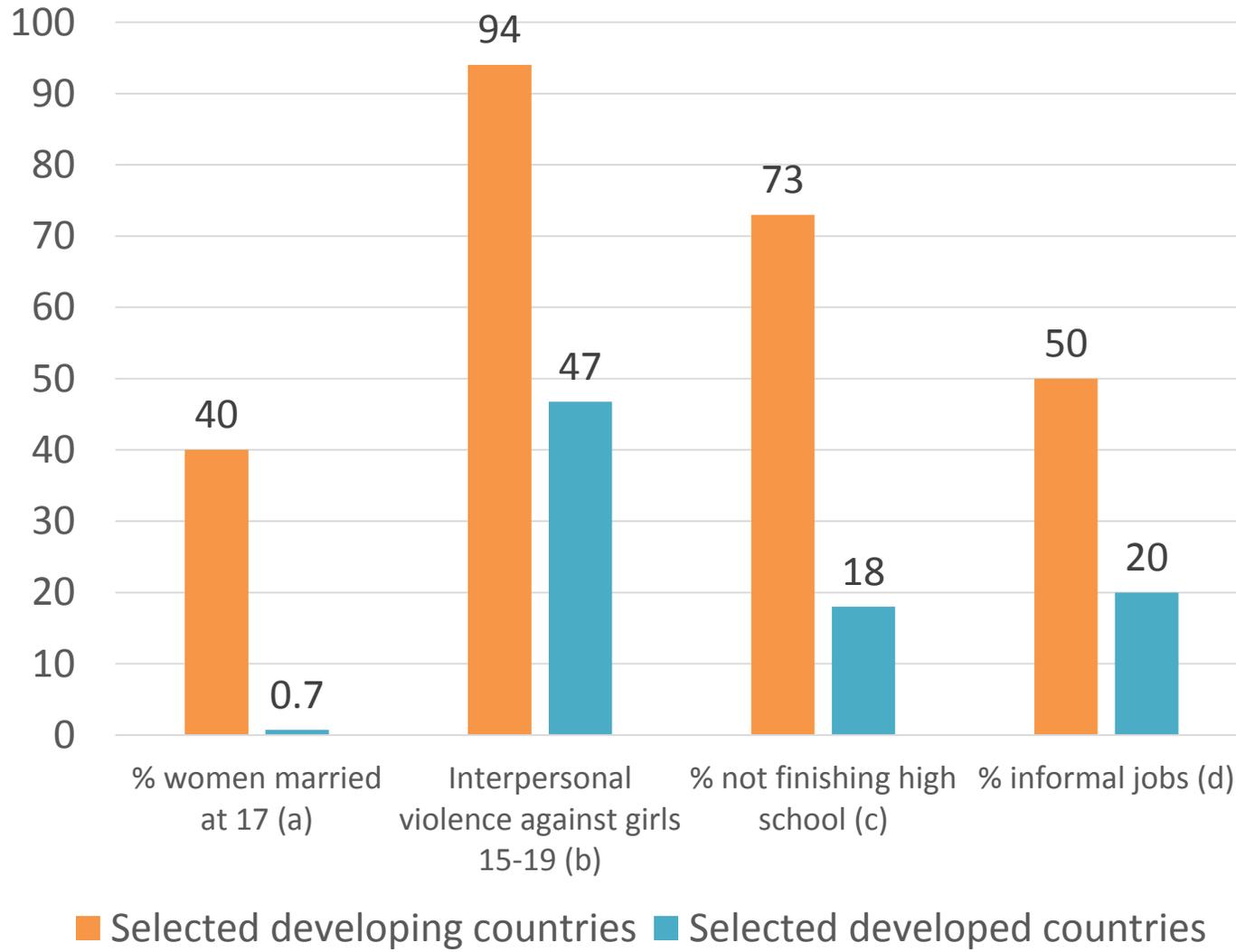
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# Outline

- Adolescence is a neglected cohort which is pivotal to outcomes for later life and the next generation
- Our study for the UNFPA was to evaluate the net benefits from health, education and other social programs for adolescents  
(Sheehan P, Sweeny K, Rasmussen B, et al. 2017, Building the foundations for sustainable development: A case for global investment in the capabilities of adolescents. *Lancet*, 390: 1792–1806.)
- Assessed almost 100 'best practice' interventions
- Large data requirements – mega indicators, sectoral data and interventions evidence
- Outcomes:
  - Benefit-cost ratios of 10–12 times for health and education, and 5–6 times for other social programs
  - Economic value came from better jobs
  - For girls, finishing secondary education delivered big benefits
  - For all adolescents, living healthier and better educated lives provided sizeable social, as well as economic, gains
- Policy implications

# Issues for adolescents in developing countries



Sources:

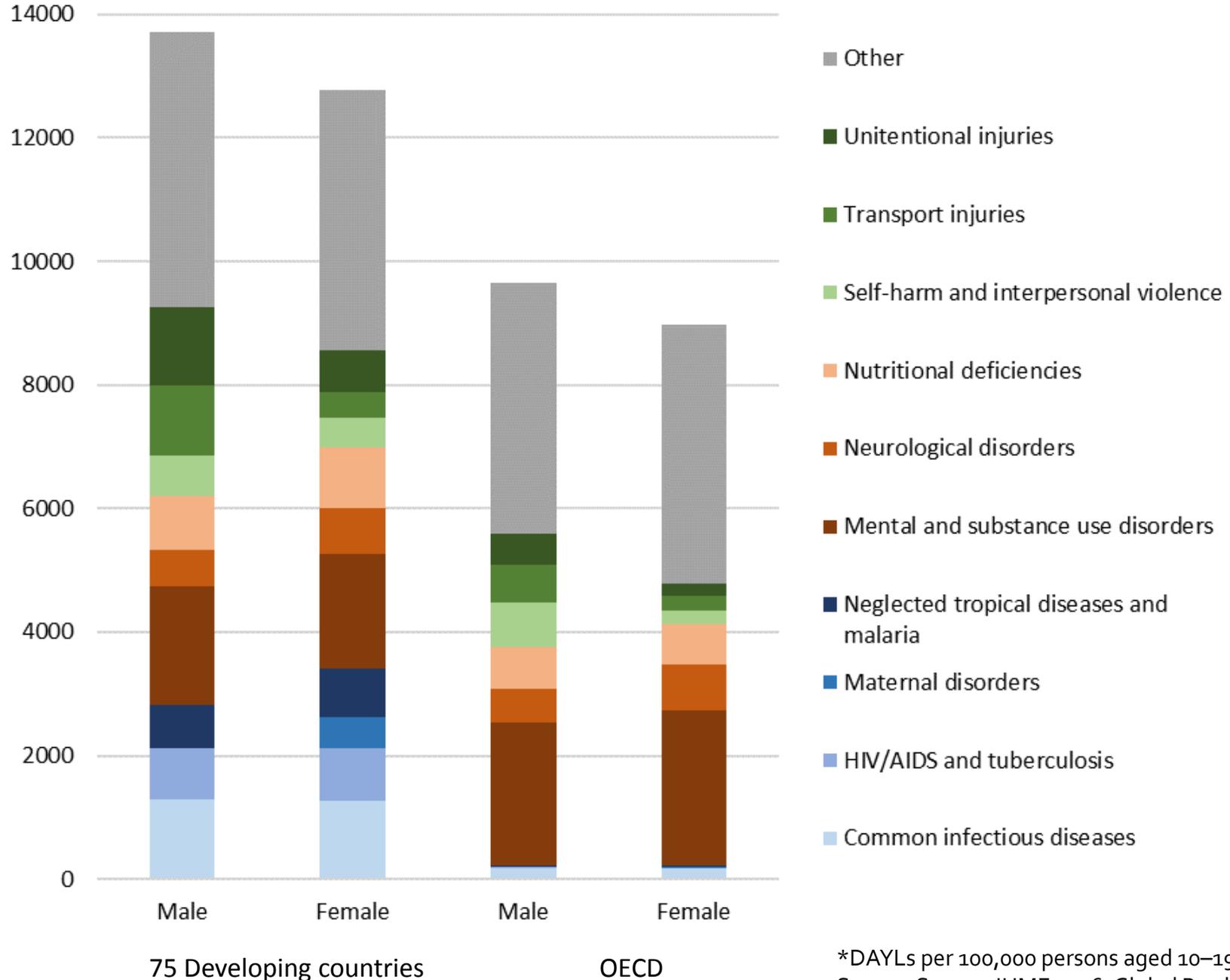
(a) SSA - UNICEF 2017; EC - Eurostats 2017

(b) DALYs per 50,000 Countdown & OECD - IHME 2016

(c) Countdown - ILO 2016; OECD 2014

(d) Countdown - ILO 2016; EC - Hazans 2011

# Adolescent burden of disease, 2016\*



\*DALYs per 100,000 persons aged 10–19.  
Source: Source: IHME 2016, Global Burden of Disease.

# Social investment: definitions

## European Commission

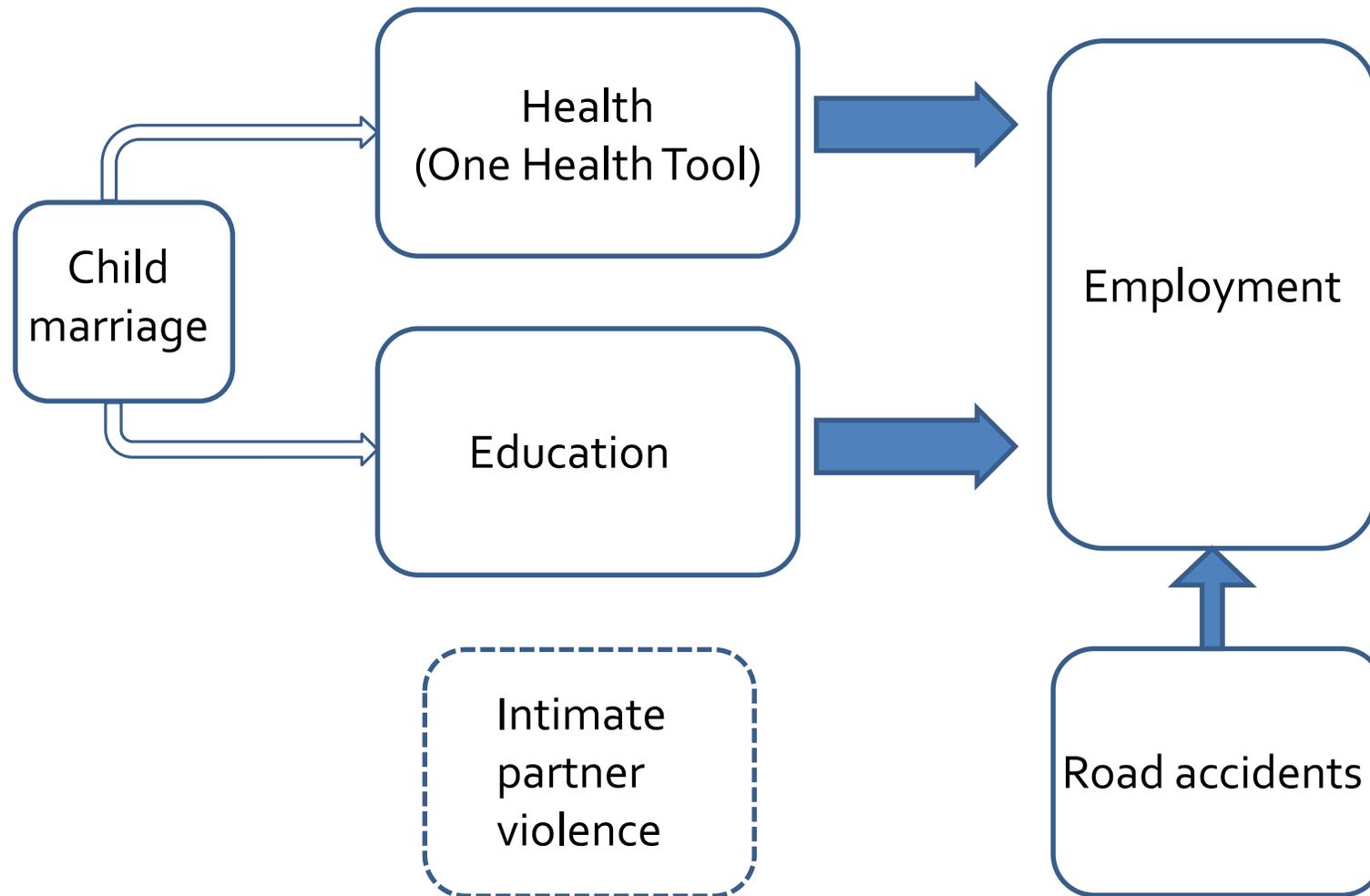
'Social investment is about investing in people. It means policies designed to strengthen people's skills and capacities, and support them to participate fully in employment and social life.' (<http://ec.europa.eu/social/main.jsp?catId=1044>)

## New Zealand Treasury

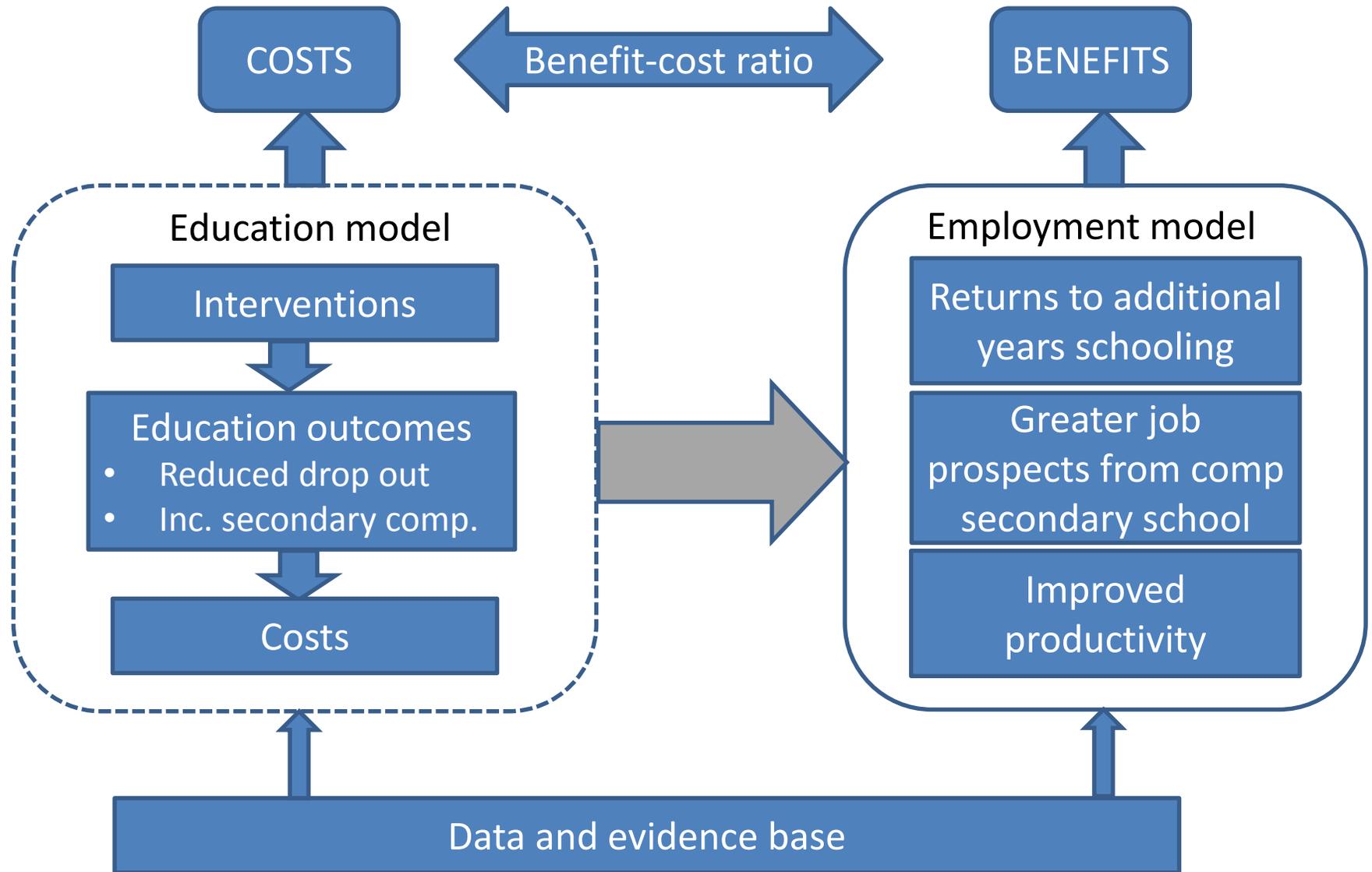
'Social investment is about improving the lives of New Zealanders by applying rigorous and evidence-based investment practices to social services.'  
(<http://www.treasury.govt.nz/statesector/socialinvestment>)

**Spending on education and health increases the capacities of people to be fully and productively employed. Some social investments return more than others.**

# Model components



# Intervention modelling: estimating returns to education



# Big data requirements for 75 countries

Level	Type	Source
Mega indicators for each country	Demographic data (population, birth and death rates by age, sex) Labour force age, sex GDP, per capita, projections	International agencies <ul style="list-style-type: none"> <li>• UN agencies</li> <li>• World Bank</li> <li>• ILO</li> </ul>
Sectoral information <ul style="list-style-type: none"> <li>• Education</li> <li>• Health</li> <li>• Employment</li> <li>• Gender issues</li> <li>• By country</li> </ul>	Costs, e.g. <ul style="list-style-type: none"> <li>• System cost</li> <li>• Operating costs</li> <li>• Wage costs</li> </ul> Performance data, e.g. <ul style="list-style-type: none"> <li>• School completion rates</li> <li>• Lives saved/conditions treated</li> </ul>	<ul style="list-style-type: none"> <li>• Global Burden of Disease</li> <li>• Population surveys               <ul style="list-style-type: none"> <li>○ DHS, MICS</li> </ul> </li> <li>• One Health Tool</li> <li>• WHO</li> <li>• UNESCO</li> <li>• UN Population Fund</li> <li>• Country sources</li> </ul>
Interventions evidence <ul style="list-style-type: none"> <li>• Health</li> <li>• Education</li> <li>• Gender (IPV, child marriage)</li> </ul>	Costs and effectiveness of targeted interventions	Global peer reviewed and grey literature on intervention program evaluations

# Interventions

Health	
Maternal/newborn and reproductive health	Nutrition
Family planning	Women of reproductive age and adolescent girls
Safe abortion and management	Pregnant and lactating women
Pregnancy care	Mental, neurological, and substance use disorders
Childbirth care	Depression and anxiety disorders
Postpartum care	Epilepsy
Malaria	Alcohol use/dependence
Tuberculosis	Cervical cancer
HIV/AIDS	
Prevention	
Care and treatment	
Education	
Supply expansion of schools	Learning quality enhancements
Target interventions to reduce drop-out	
Child marriage	
Reducing child marriage via increased school retention	
Programs to reduce child marriage within schooling groups	
Interpersonal violence against women	
Group training (social norms/life skills) programs	
Road safety	
Behavioural measures: helmet usage, speed compliance, alcohol testing, seat belt use, graduated licensing	

# Evaluation of intervention programs

	Cost per capita per annum* (US\$)	Cost % GDP	Benefit-cost ratio to 2030
Education* (72 countries)	22.6	0.57	11.8
School attendance interventions	7.3		
School quality interventions	8.8		
Incremental schooling costs	5.2		
Health services (40 countries)	4.5	0.11	10.2
Road accidents (75 countries)	0.6		5.9
Child marriage (31 countries)	3.8		5.7
<b>Overall cost*</b>	<b>31.5</b>	<b>0.8</b>	

\* Approximate, due to different country coverage in model components.

# Outcomes

- Benefit-cost ratios of 10–12 times for health and education and 5–6 times for other social programs
- Economic value came from better employment opportunities
- For girls, finishing secondary education delivered big benefits
- For all adolescents, living healthier and better educated lives provided sizeable social, as well as economic, gains

# Policy implications

- Public social expenditure and tax concessions are increasingly shifting resources to the elderly as concern for the ageing population grows
- These results are a reminder of the high value of investing in comprehensive social programs for adolescents
  - Returns are high because it is an investment in a lifetime of valuable employment and community contribution
  - Still 1.2 billion adolescents (10–24) in the world heavily concentrated in Africa and more than a quarter of the population for Indonesia, Mexico, Thailand, Papua New Guinea
- Key components of this program are health and education
  - However gender related issues and road accidents are also important to address

Thank you

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