HARVARD T.H. CHAN

SCHOOL OF PUBLIC HEALTH

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Illness-related poverty & financial risk protection

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Outline

Background

The post-2015 agenda and the discourse on poverty

Quantifying illness-related poverty

Medical impoverishment and financial risk protection

Health disparities

Inequalities in health outcomes and access to care

Conclusions

Anchoring health within the poverty alleviation agenda

Background

The post-2015 agenda and the discourse on poverty

End of poverty by 2030

Sustainable Development Goal 1

"End poverty in all its forms everywhere"

World Bank objectives

(1) To eradicate extreme poverty (< $1.90 per day) by 2030

(2) To boost shared prosperity by raising the incomes of the bottom 40% of populations

www.worldbank.org; www.undp.org

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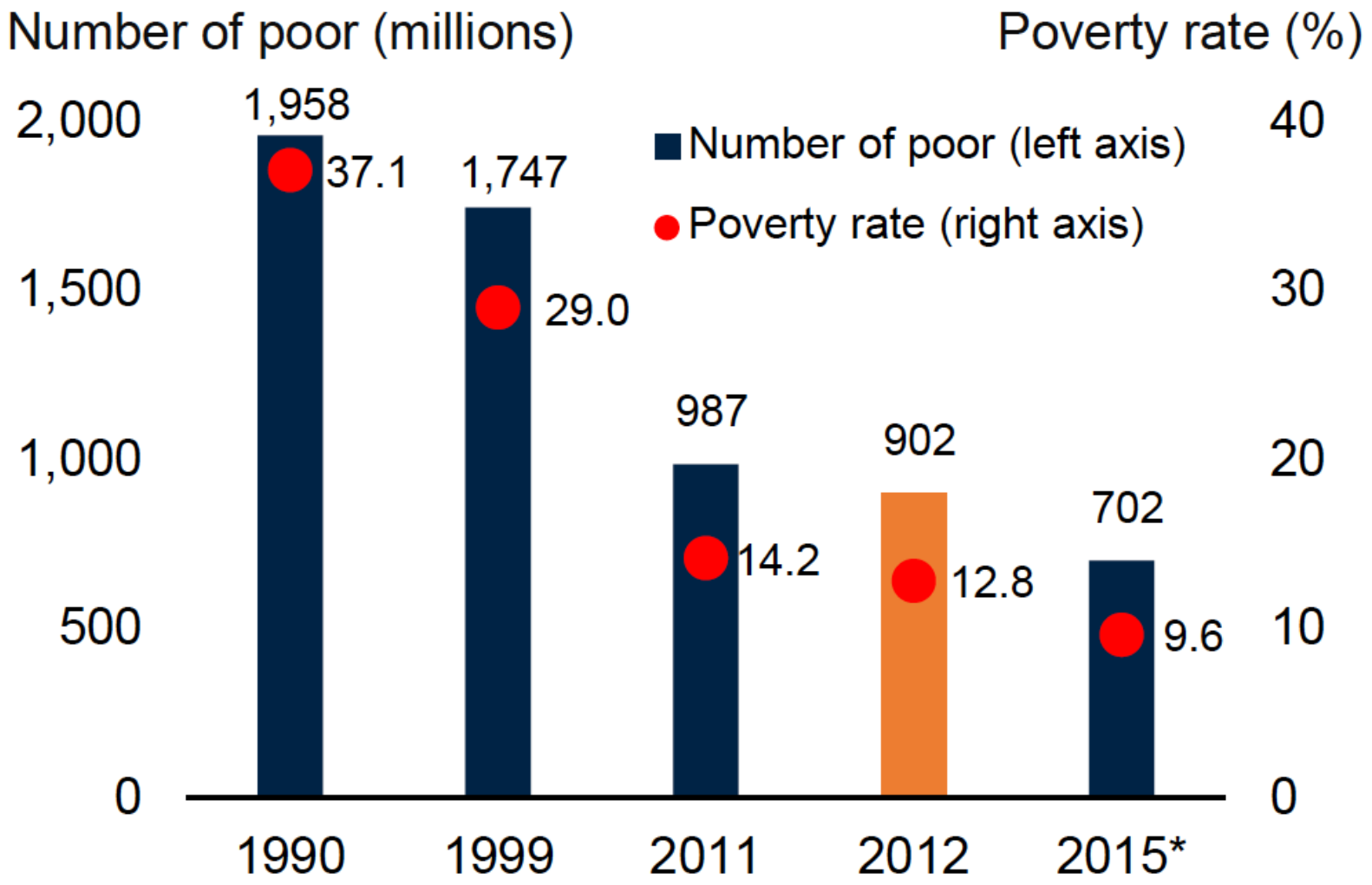
Trends in poverty



Cruz et al. World Bank 2015

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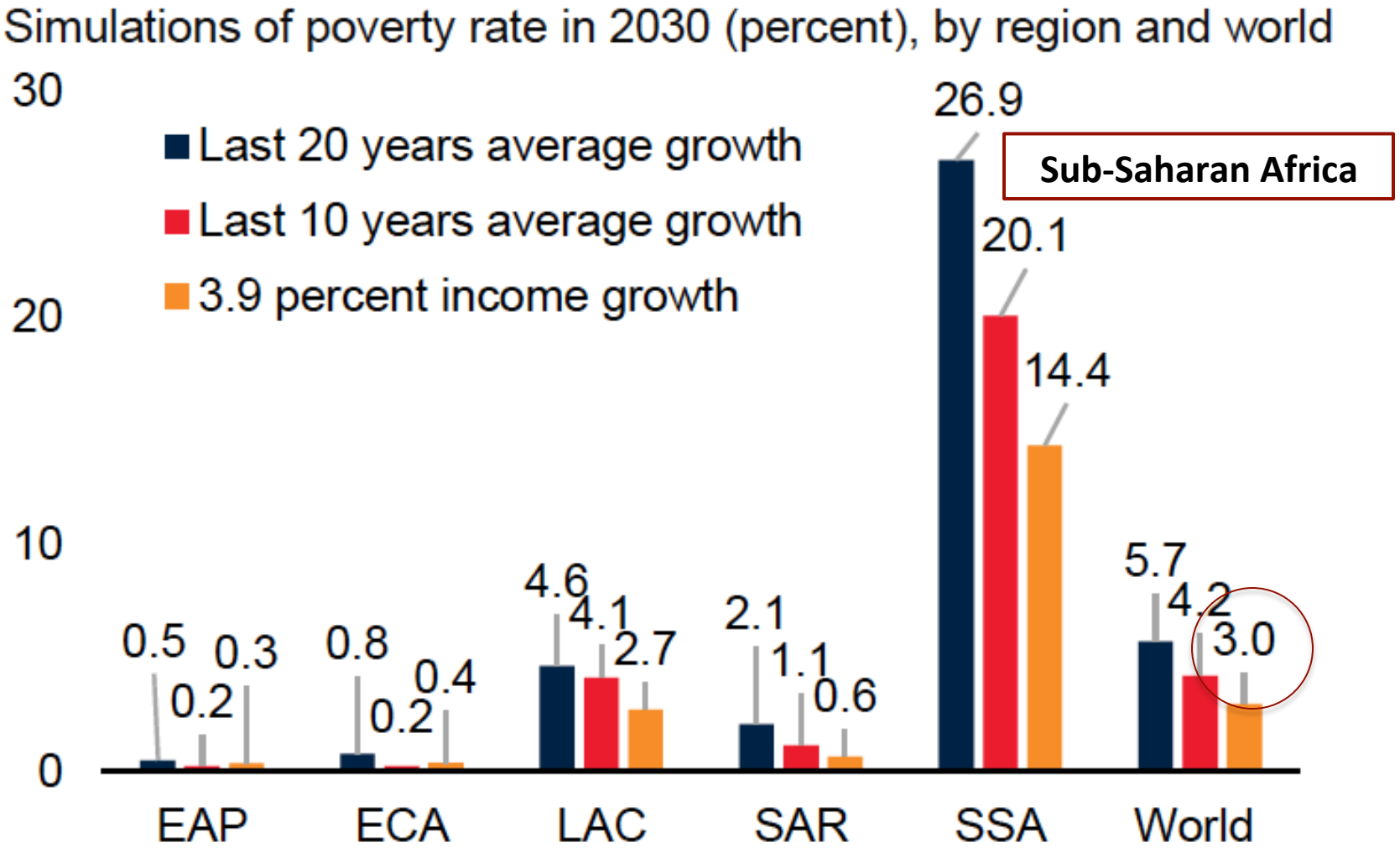
Aspirational poverty by 2030



Cruz et al. World Bank 2015

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How to achieve the poverty objective by 2030?

Usual requirements are put forward:

- **Sustaining growth:** leadership and governance, macroeconomic stability, market orientation
- **Investing in human development:** education, health
- **Insuring against risks:** social policies and programs, insurance

THEY LACK OF SPECIFIC PROPOSITIONS AND QUANTIFICATION OF IMPACT AND COST

Cruz et al. World Bank 2015

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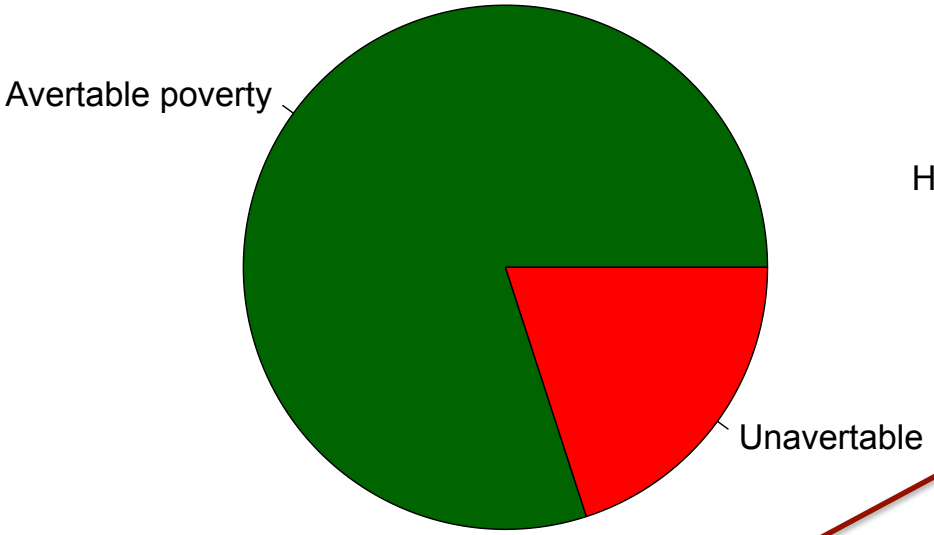
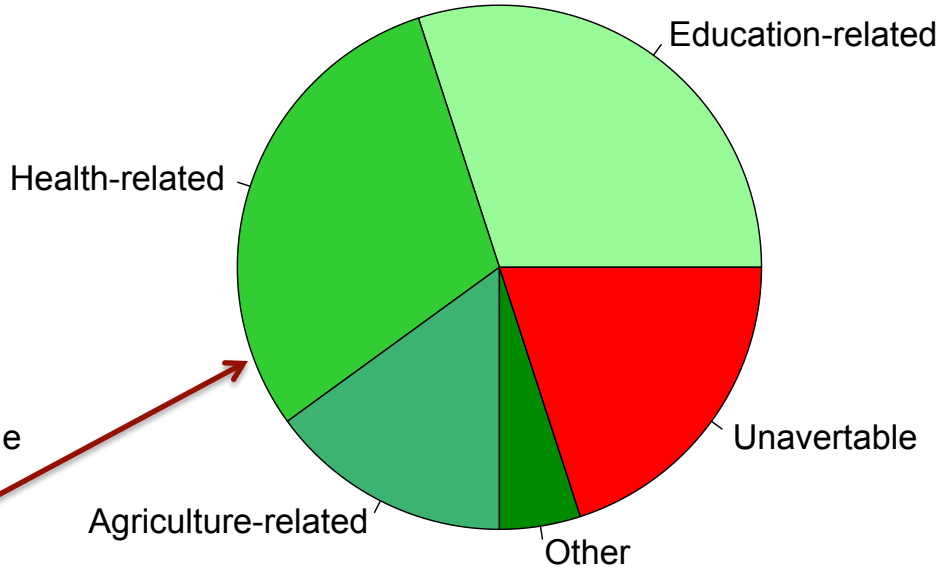
What poverty is addressable?

Addressable poverty?



Addressable poverty, by sector?



What are the size and drivers of illness-related poverty?

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Quantifying illness-related poverty

Medical impoverishment and financial risk protection

Medical impoverishment

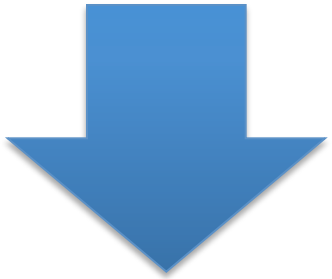
When confronted with expensive medical expenditures, poor people can face high out-of-pocket (OOP) payments and fall into poverty

Important issue in low- and middle-income countries, but also in the United States

Example: borrowing & asset selling

When faced with costly medical treatment, the poor can use coping mechanisms

e.g. borrowing from relative/peers or sell assets

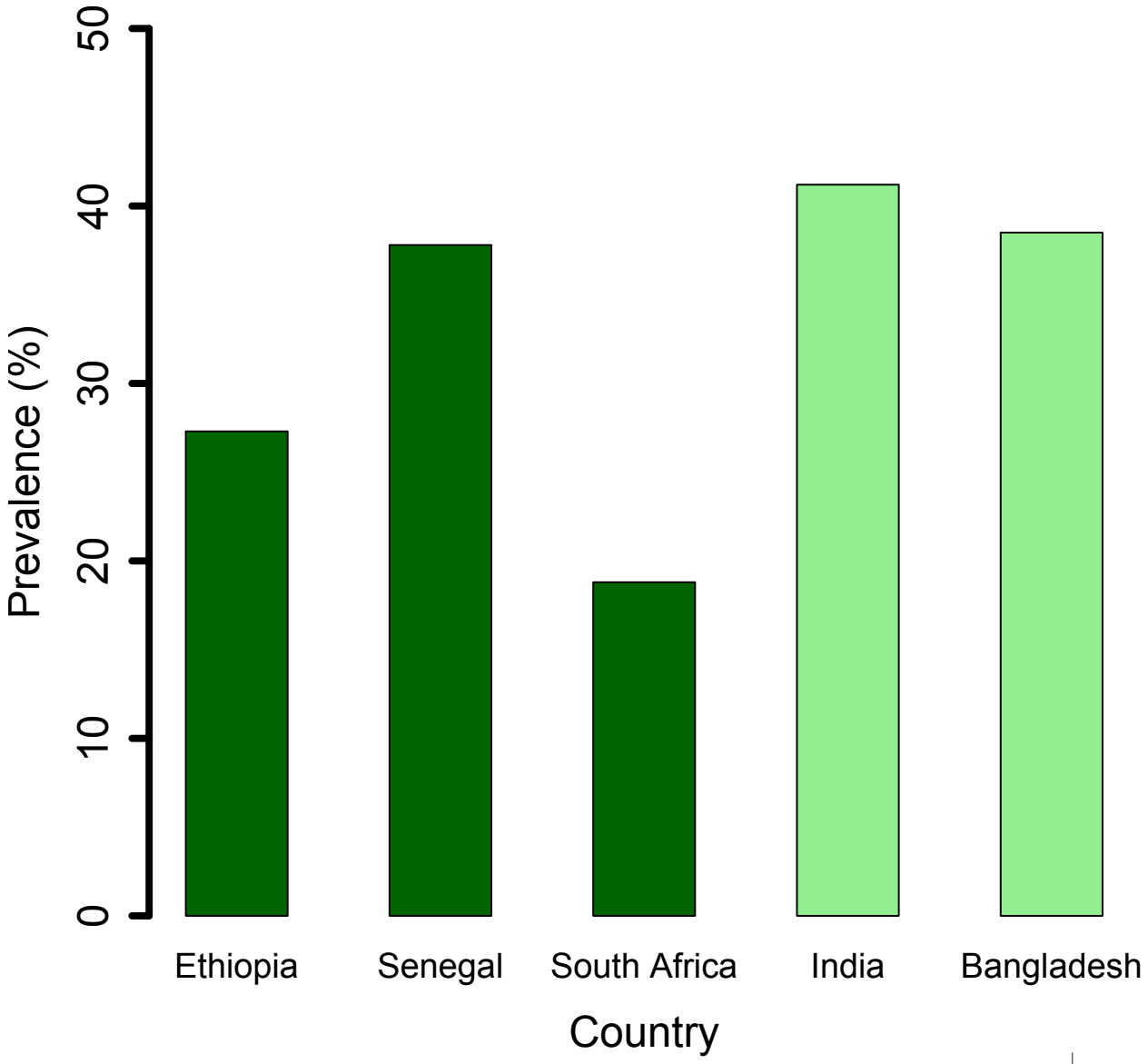


- Very high interest rates such as 40-50% annual

Banerjee & Duflo (2007)

- Put individuals in high debt

Borrowing/asset sales for medical expenditures



Adapted from: Kruk et al. (2009)

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Case study of tuberculosis (TB) (1)

- Substantial household economic burden of TB
  - Russell (2004), Cleary et al. (2013)

Table 2
Direct costs relative to ability-to-pay.

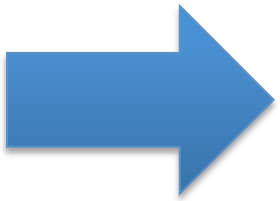
	Health care as % of household spending	*p*-Value	Incurred catastrophic expenditure (%)	*p*-Value
TB	13.06		32.99	
Bushbuckridge	17.31	0.0001	35.25	0.000
Hlabisa	15.34		50.38	
Soweto	4.02		10.76	
Mitchells Plain	14.02		32.21	

Data from Cleary et al. (2013) for 4 sites in South Africa

Case study of TB (2)

e.g. India: substantial out-of-pocket (OOP) payments
(~ 80% of healthcare privately subsidized)

1. **Direct costs**
   - DOTS = partially privately financed (Niruparani et al. 2010)
   - Private doctors/non-DOTS (Rajeswari et al. 1999; Uplekar et al. 2001; Udwadia et al. 2010)



prescribe non-standard regimens

low-quality treatment

Case study of TB (3)

2. **Indirect costs** (e.g. earnings foregone)

Number of workdays lost among TB patients in India

Occupation	Rural	Urban
Self employee	71	62
Wage earner	72	84

Data from Muniyandi et al. (2006)

What causes medical impoverishment?

Large costs associated with diseases born out-of-pocket by households

1. **OOP direct medical costs (e.g. cost of TB drugs)**

   When private sector is large (e.g. Nigeria, India)

2. **OOP direct non-medical costs (e.g. transport costs)**

   When health facility is far and no decentralized care (e.g. antiretroviral therapy in the beginning, surgery)

3. **Indirect costs (e.g. time lost and earnings foregone)**

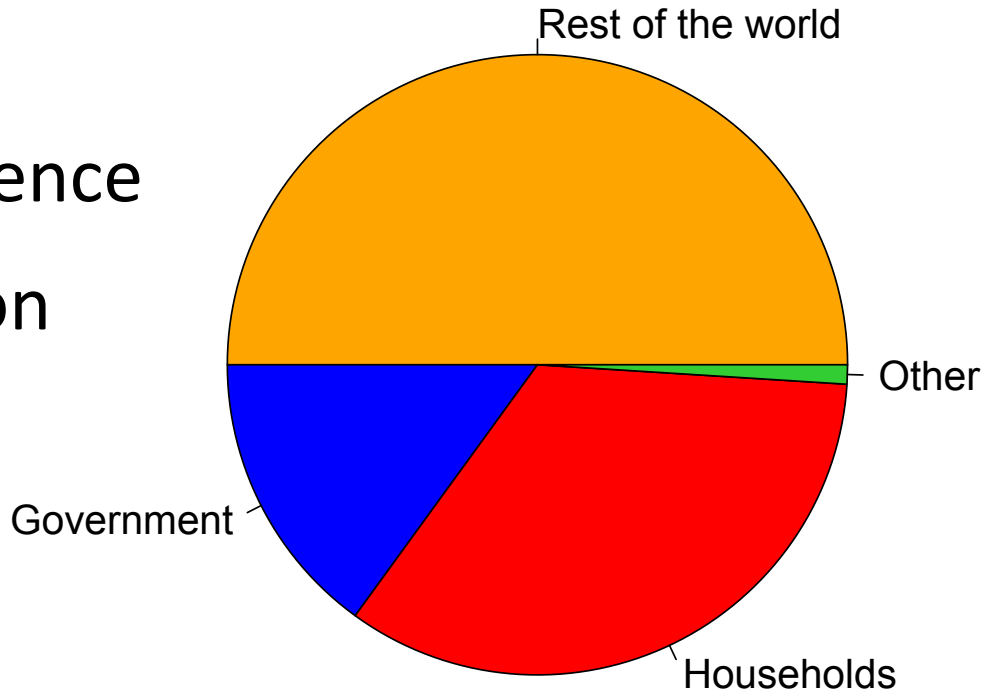
   When disease lasts long and can be impactful (e.g. mental conditions)

Illness-related OOP costs

Depends on:

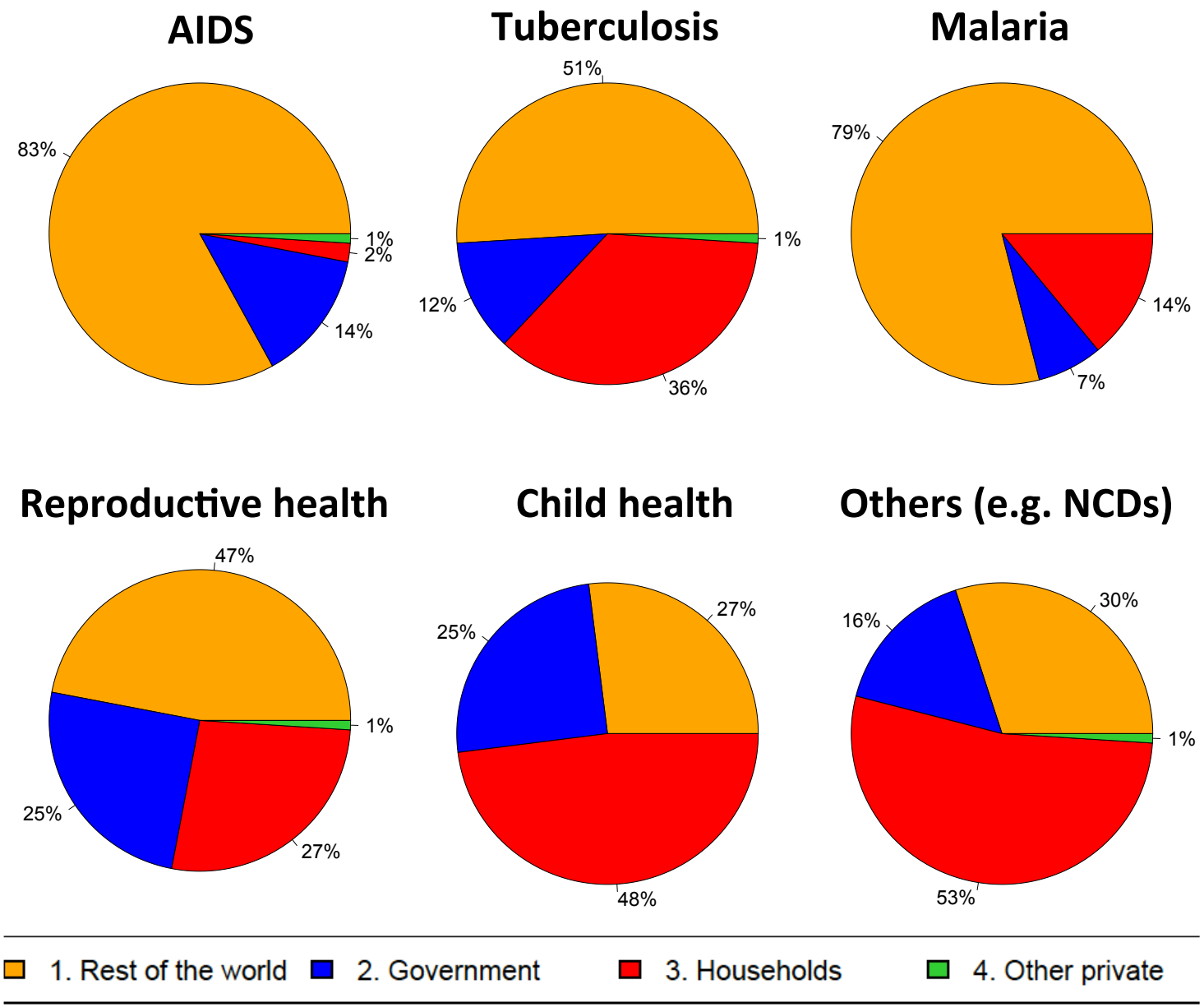
- Illness-related incidence
- Healthcare utilization
- Illness-related OOP expenses

Funding sources for health, Ethiopia



Source: National Health Accounts V, 2011

Funding sources for health, Ethiopia, 2011



Source: National Health Accounts V, 2011

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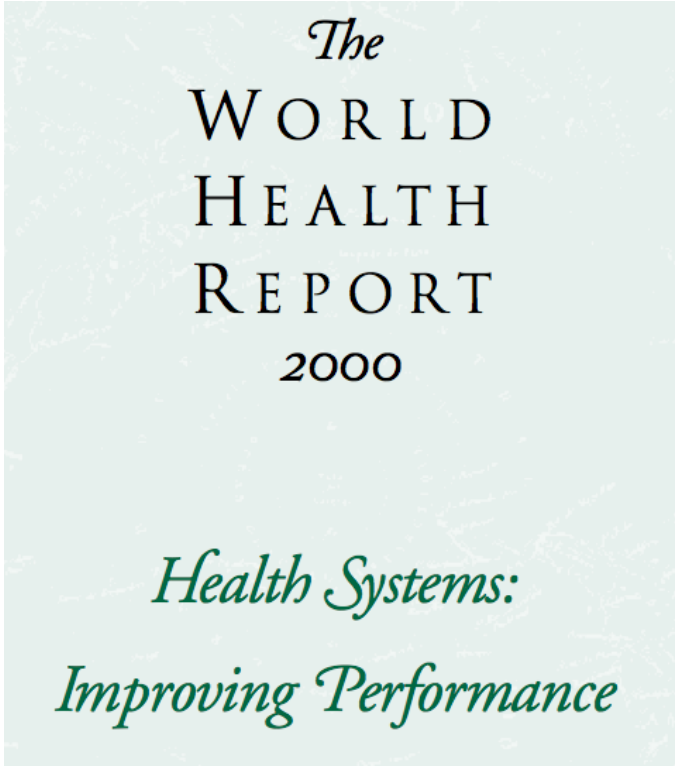
Prevention of medical impoverishment = financial risk protection

Health system objectives

- **Improving health and the distribution of health in the population**
- **Financial risk protection: prevention of medical impoverishment**
- **Fairness in the financial contribution toward health**



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Measures of financial risk protection

1. Catastrophic expenditures

- Defined as health spending > threshold defined in relation to household's prepayment income
- Threshold

  = fraction of medical spending + non-medical spending
- Threshold

  = fraction of pre-payment income – (food & other necessities)

Wagstaff (2010)

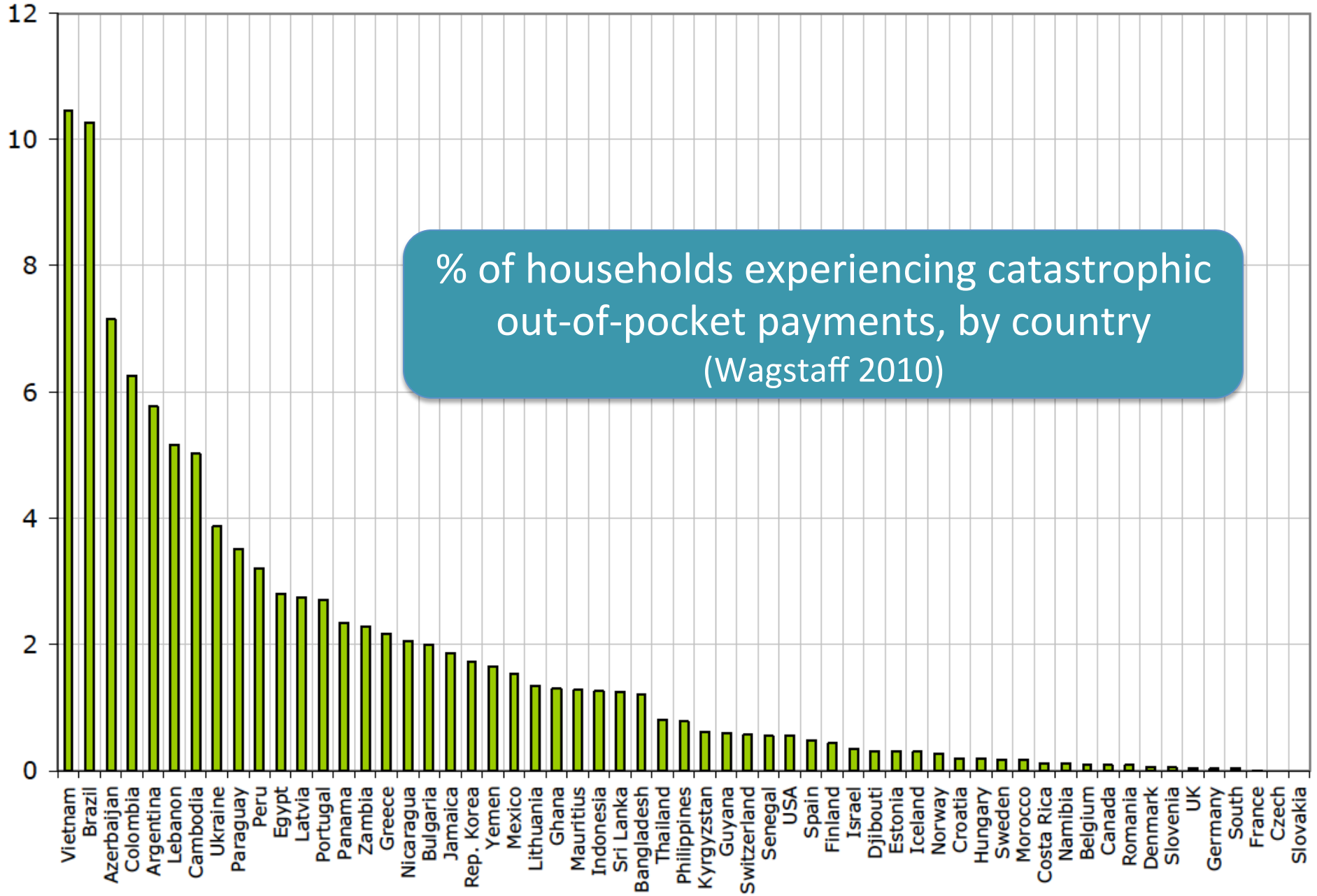
Application: cross-country studies

Xu et al. “Household catastrophic health expenditure: a multicountry analysis”. Lancet 2003

Medical expenditures E are ‘catastrophic’ when superior to 40% of subsistence income SI

(off housing and food consumption)

$$E > 0.40 * SI$$


% of households experiencing catastrophic out-of-pocket payments, by country
(Wagstaff 2010)
12
10
8
6
4
2
0
Vietnam
Brazil
Azerbaijan
Colombia
Argentina
Lebanon
Cambodia
Ukraine
Paraguay
Peru
Egypt
Latvia
Portugal
Panama
Zambia
Greece
Nicaragua
Bulgaria
Jamaica
Rep. Korea
Yemen
Mexico
Lithuania
Ghana
Mauritius
Indonesia
Sri Lanka
Bangladesh
Thailand
Philippines
Kyrgyzstan
Guyana
Switzerland
Senegal
USA
Spain
Finland
Israel
Djibouti
Estonia
Iceland
Norway
Croatia
Hungary
Sweden
Morocco
Costa Rica
Namibia
Belgium
Canada
Romania
Denmark
Slovenia
UK
Germany
South
France
Czech
Slovakia

Measures of financial risk protection

2. Impoverishing expenditures

- Before health spending shock, household income > poverty line
- After health spending shock, household < poverty line

1 poverty case due to medical expenditure

Wagstaff (2010)

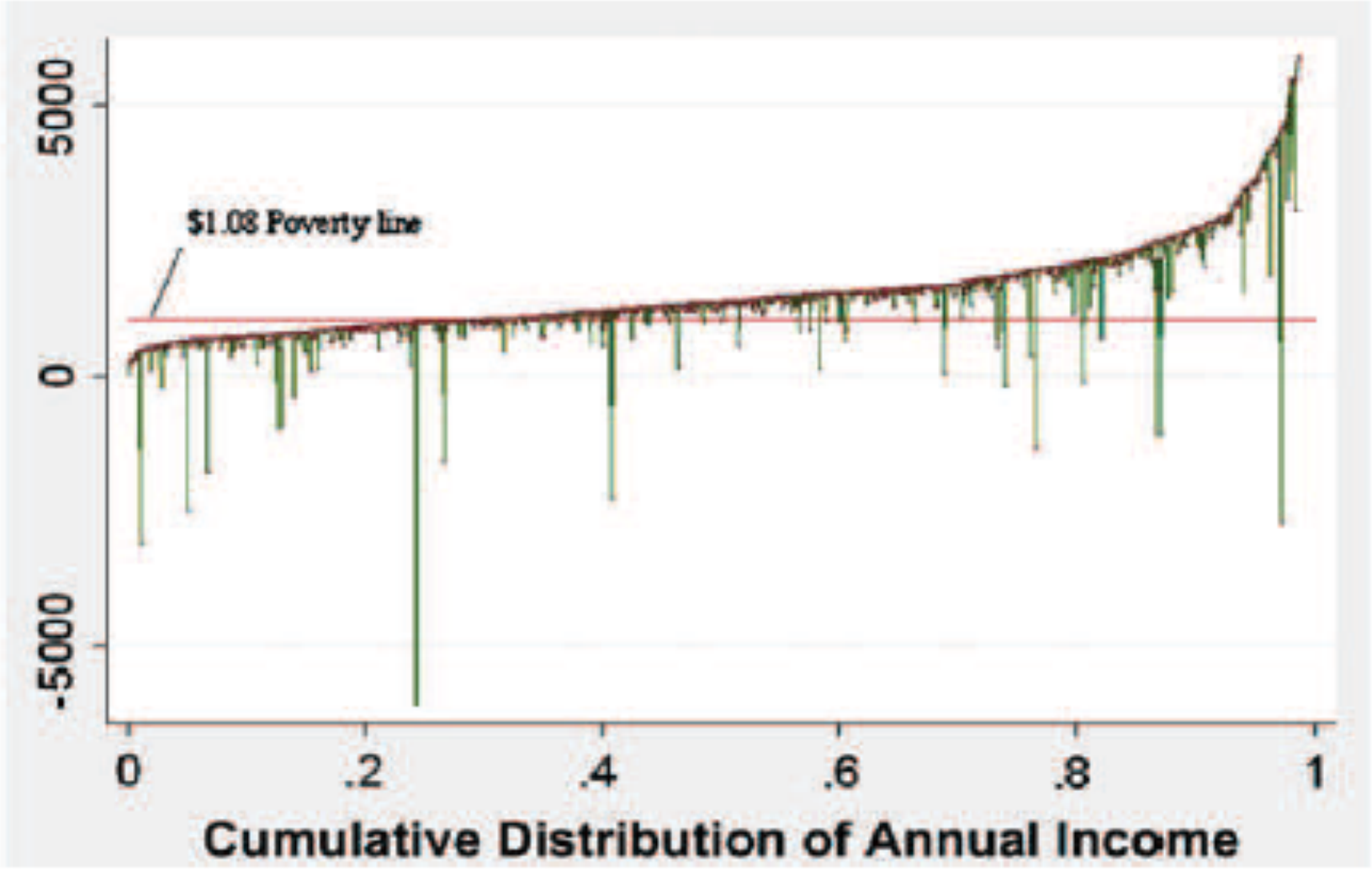


Fig. 2. Cumulative distribution of income and the effect of medical spending. Note: for the purpose of this figure, observations with extreme values (above 6000 RMB and below −6000 RMB) are excluded.

Yip and Hsiao (2009)

Mechanisms of financial risk protection

- **Self-insurance** (e.g. borrowing against own income)
- **Loans upon incidence of disease/medical expenditures**
- **Moving from out-of-pocket payments to prepayment mechanisms reduces medical impoverishment**

  (Xu et al. 2007; cross-country study)

- **Social insurance programs/health insurance**

  e.g. México & Seguro Popular in 2004 (Knaul et al. 2006)

  e.g. Medicare in the US (McClellan and Skinner 2006)

Social insurance programs

- **e.g. in the United States**

Social security: provides insurance against earnings loss due to death or retirement

Unemployment insurance: provides insurance against job loss

Disability insurance: provides insurance against career-ending disability

Workers' compensation: provides insurance against on-the-job accidents

Medicare: provides insurance against medical expenditures in old age

Gruber (2005)

Examples of health insurance programs (1)

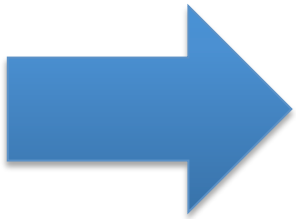
United Kingdom's National Health Service (1948)

"There are no charges, except for a few special items. There are no insurance qualifications. But it is not a charity. You are all paying for (the National Health Service), mainly as taxpayers, and it will relieve your money worries in times of illness..."

Examples of health insurance programs (2)

México & Seguro Popular See Knaul et al. (2006)

- Introduced in 2004
- Structural reform mandated by congress designed to provide financial protection by offering publicly provided insurance to 50 million Mexicans not belonging to a social security institute
- Insurance premiums subsidized as a large majority of México's poor were uninsured



Large number of health reforms followed in other Latin American countries (e.g. AUGE in Chile)

Health disparities

Inequalities in disease burden and access to care

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Health outcomes: life expectancy estimates (1)

- **Map from World Bank website**

  Estimates produced by the United Nations Population Division. World Population Prospects

http://data.worldbank.org/indicator/SP.DYN.LE00.IN/countries/1W?display=map

Health outcomes: life expectancy estimates (2)

Country/region	Life expectancy at birth, males and females (years)
Japan	83
Sierra Leone	44
China	74
India	65
United States	78
France	81
Western Europe	80
sub-Saharan Africa	53
More developed regions	77
Less developed regions	67

Source: United Nations Population Division

Health outcomes: Child mortality estimates (1)

- **Map from childmortality.org website**

  Under-five mortality estimates produced by the UN Inter-agency Group for Child Mortality Estimation

http://www.childmortality.org/index.php?r=site/map

Health outcomes: child mortality estimates (2)

Country/region	Under-five mortality, per 1,000 live births
Sweden, Finland, Iceland, Singapore	2 to 3
Sierra Leone	182
China	14
India	56
United States	7
France	4
Ethiopia	68
Nigeria	124
D.R. of the Congo	146

Source: childmortality.org

Health outcomes: within country variation (1)

- **Differences per socio-economic status**

  U5 in D.R. of the Congo: 110 per 1,000 among richest; 193 per 1,000 among poorest

  U5 in Ethiopia: 52 among richest; 86 among poorest

- **Differences per setting (rural vs. urban)**

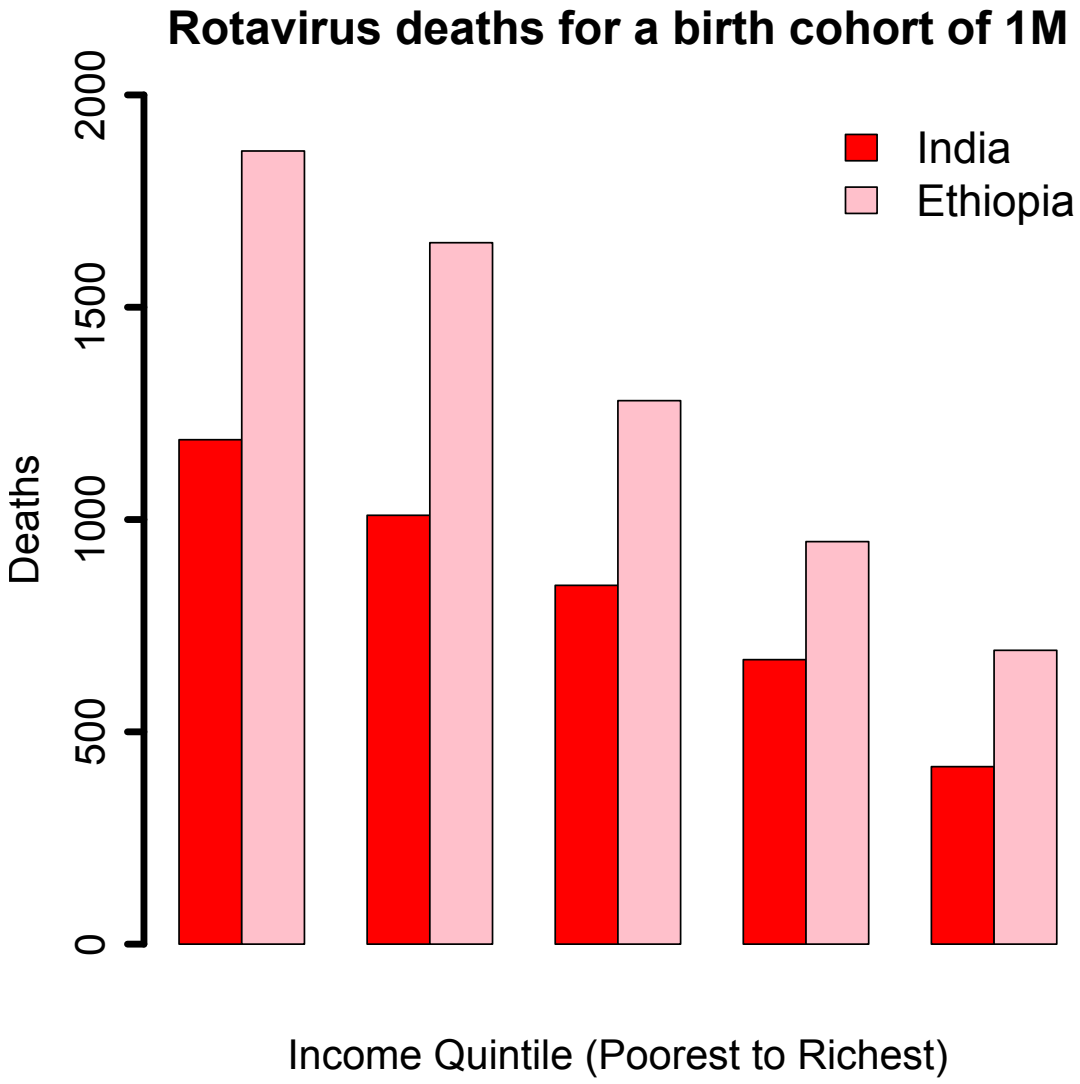
  U5 in Ethiopia: 83 in urban areas; 114 in rural areas

- **Sub-national differences**

  U5 in Ethiopia: 53 in Addis Ababa; 169 in Benishangul-Gumuz

Source: EDHS 2011; United Nations 2013

Health outcomes: within country variation (2)



Source: Verguet et al. Vaccine 2013

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"Eight Americas" Murray et al. PloS Medicine 2006

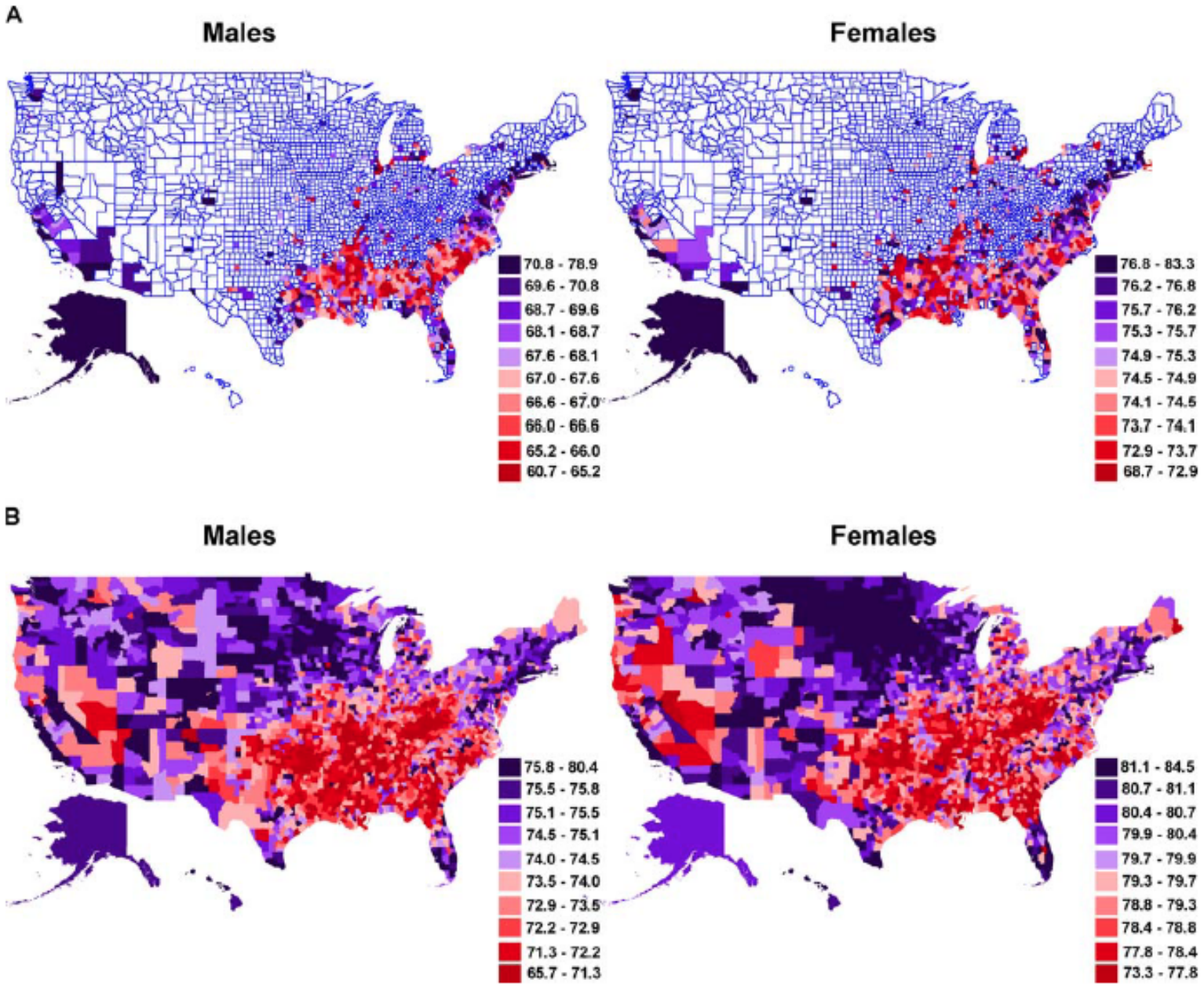
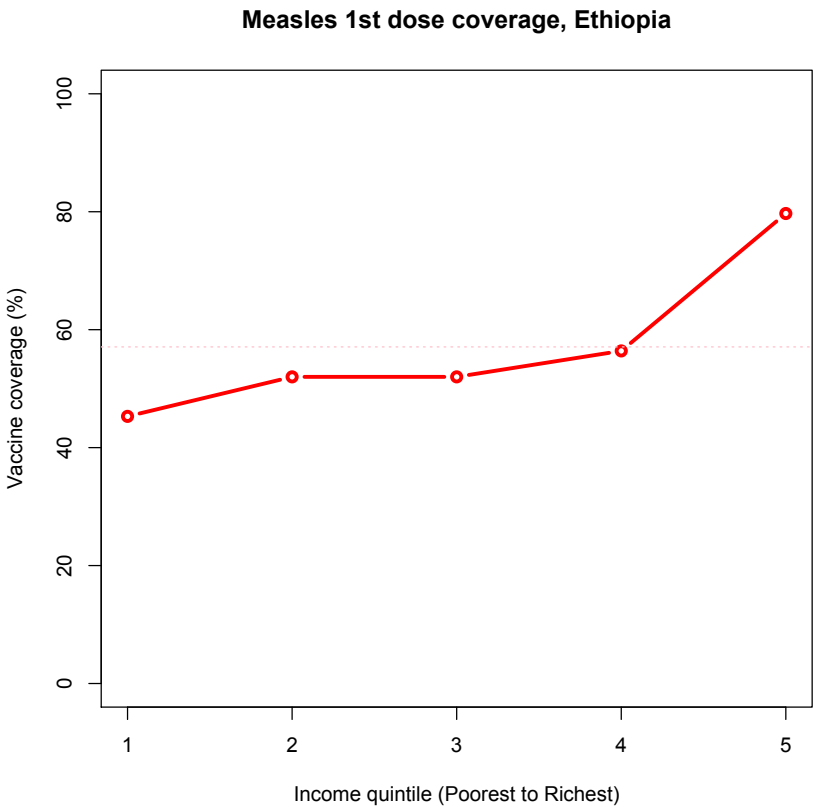
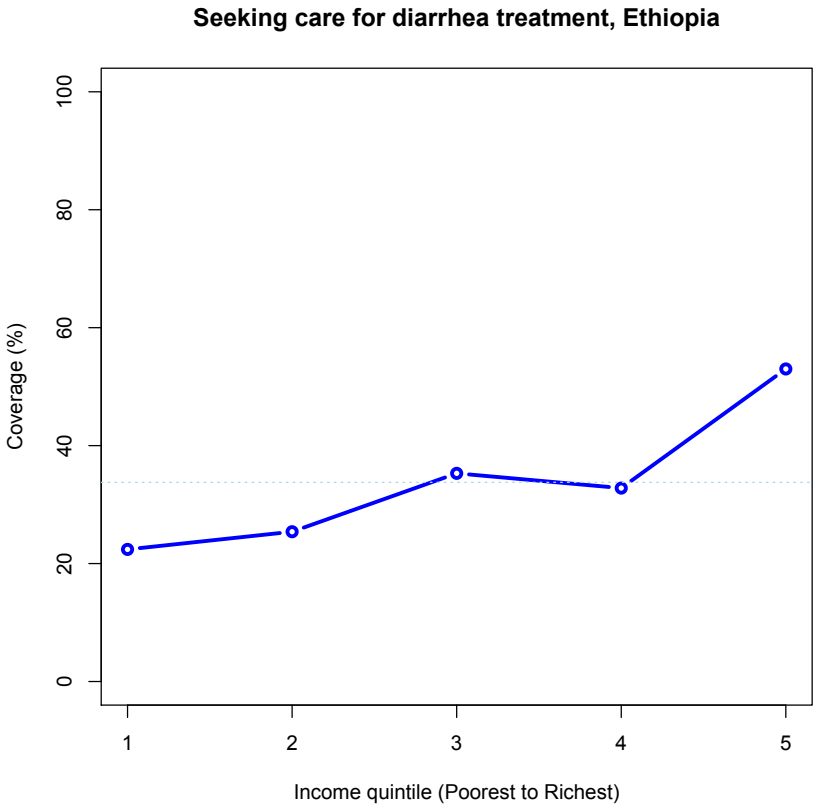


Figure 1. County Life Expectancies by Race

Distribution of health coverage

- Inequality in the distribution of vaccine coverage





- Inequality in healthcare seeking

Source: EDHS 2011

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Conclusions

Anchoring health within the poverty alleviation agenda

How to achieve the poverty objective by 2030?

Usual requirements are put forward:

- **Sustaining growth:** leadership and governance, macroeconomic stability, market orientation
- **Investing in human development:** education, health
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Cruz et al. World Bank 2015

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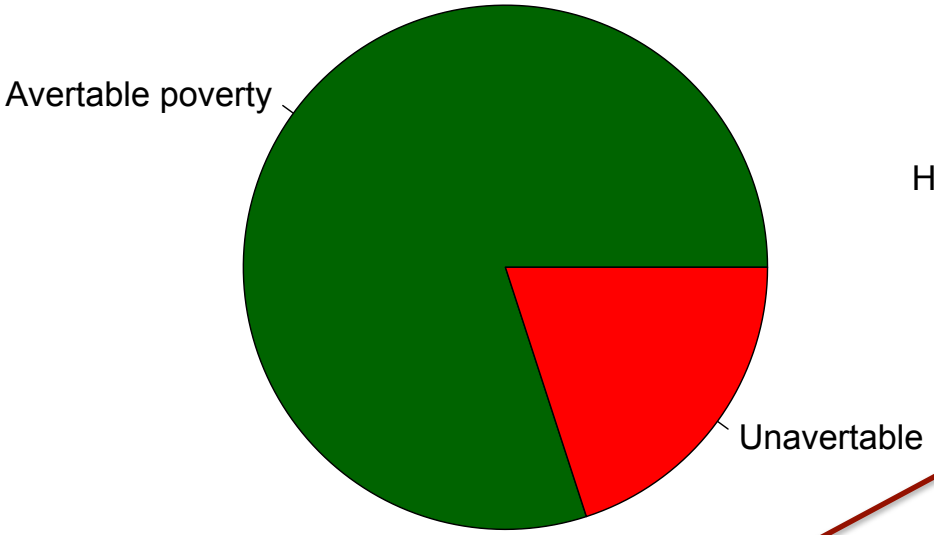
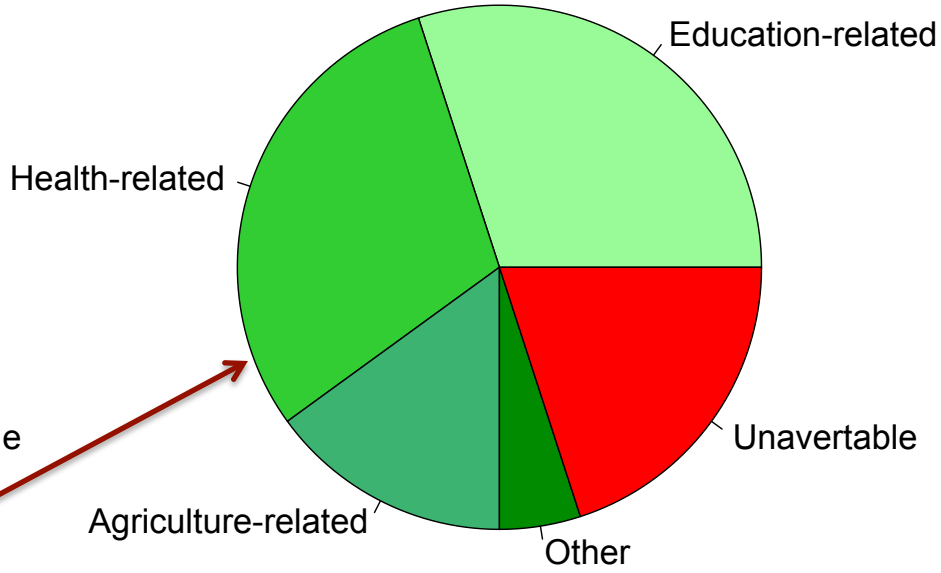
Addressable poverty?



Addressable poverty, by sector?



What are the size and drivers of illness-related poverty?

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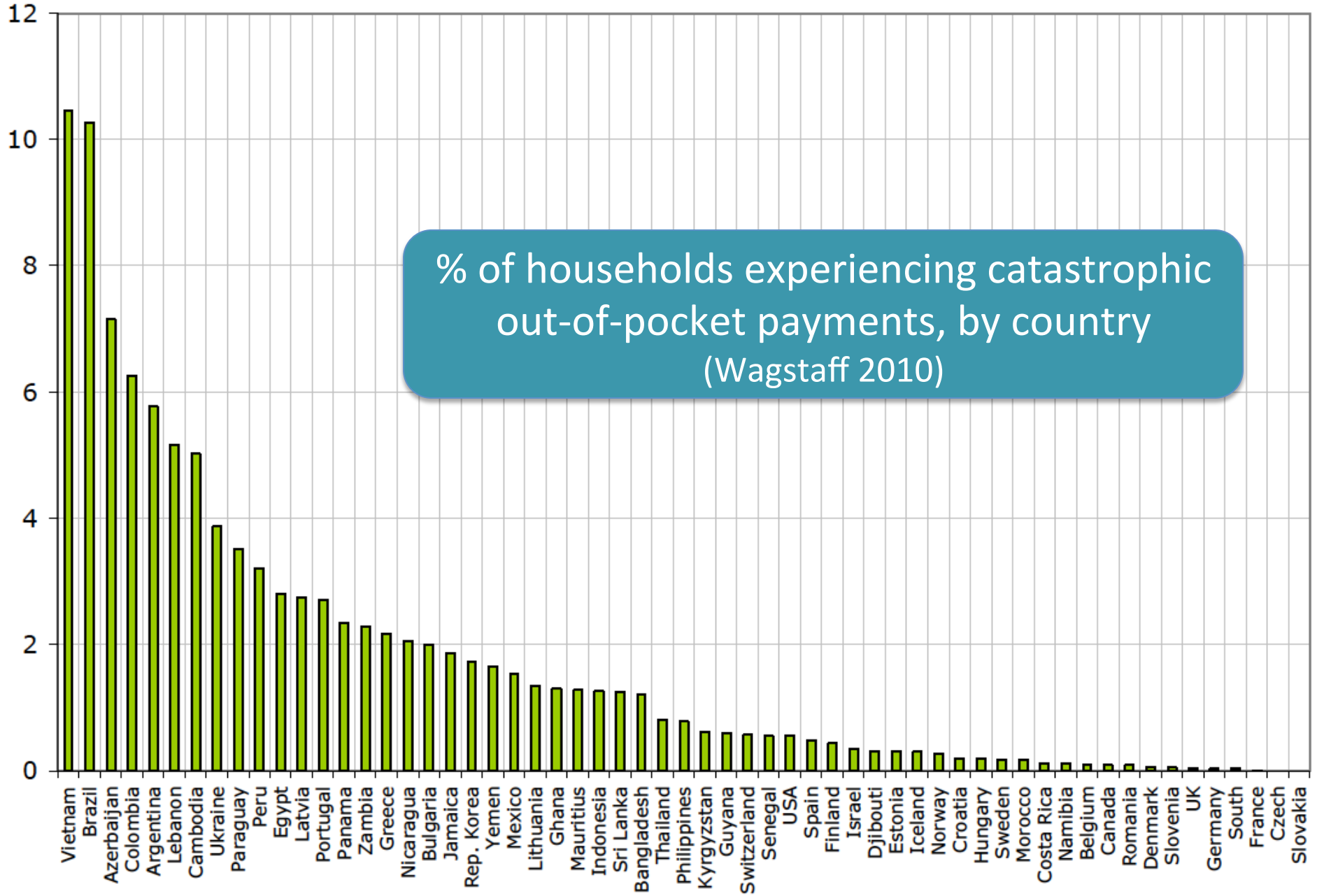
% of households experiencing catastrophic out-of-pocket payments, by country
(Wagstaff 2010)
12
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Vietnam
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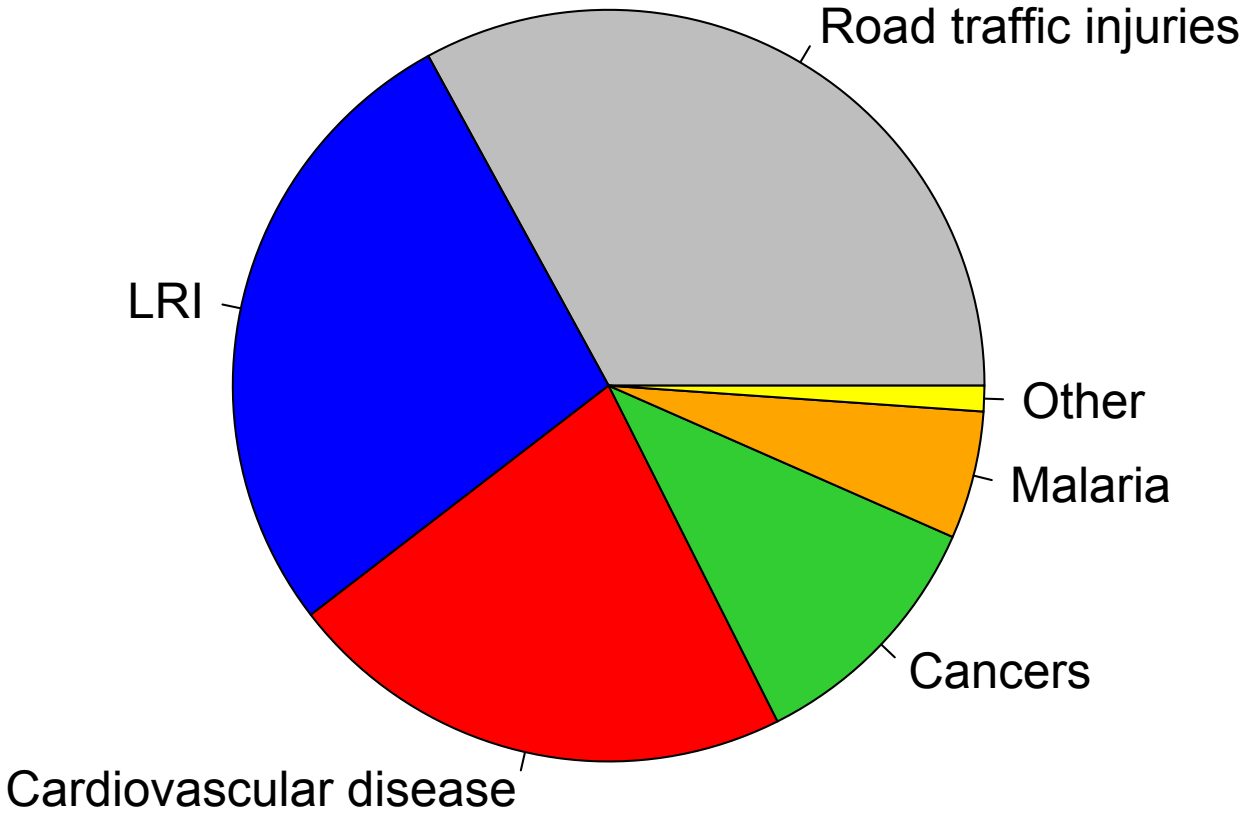
Colombia
Argentina
Lebanon
Cambodia
Ukraine
Paraguay
Peru
Egypt
Latvia
Portugal
Panama
Zambia
Greece
Nicaragua
Bulgaria
Jamaica
Rep. Korea
Yemen
Mexico
Lithuania
Ghana
Mauritius
Indonesia
Sri Lanka
Bangladesh
Thailand
Philippines
Kyrgyzstan
Guyana
Switzerland
Senegal
USA
Spain
Finland
Israel
Djibouti
Estonia
Iceland
Norway
Croatia
Hungary
Sweden
Morocco
Costa Rica
Namibia
Belgium
Canada
Romania
Denmark
Slovenia
UK
Germany
South
France
Czech
Slovakia

ISSUE: No disaggregation by driver/cause of illness-related impoverishment

Addressable illness-related poverty

Output: Systematic breakdown of poverty, by disease



LRI = Lower respiratory infections

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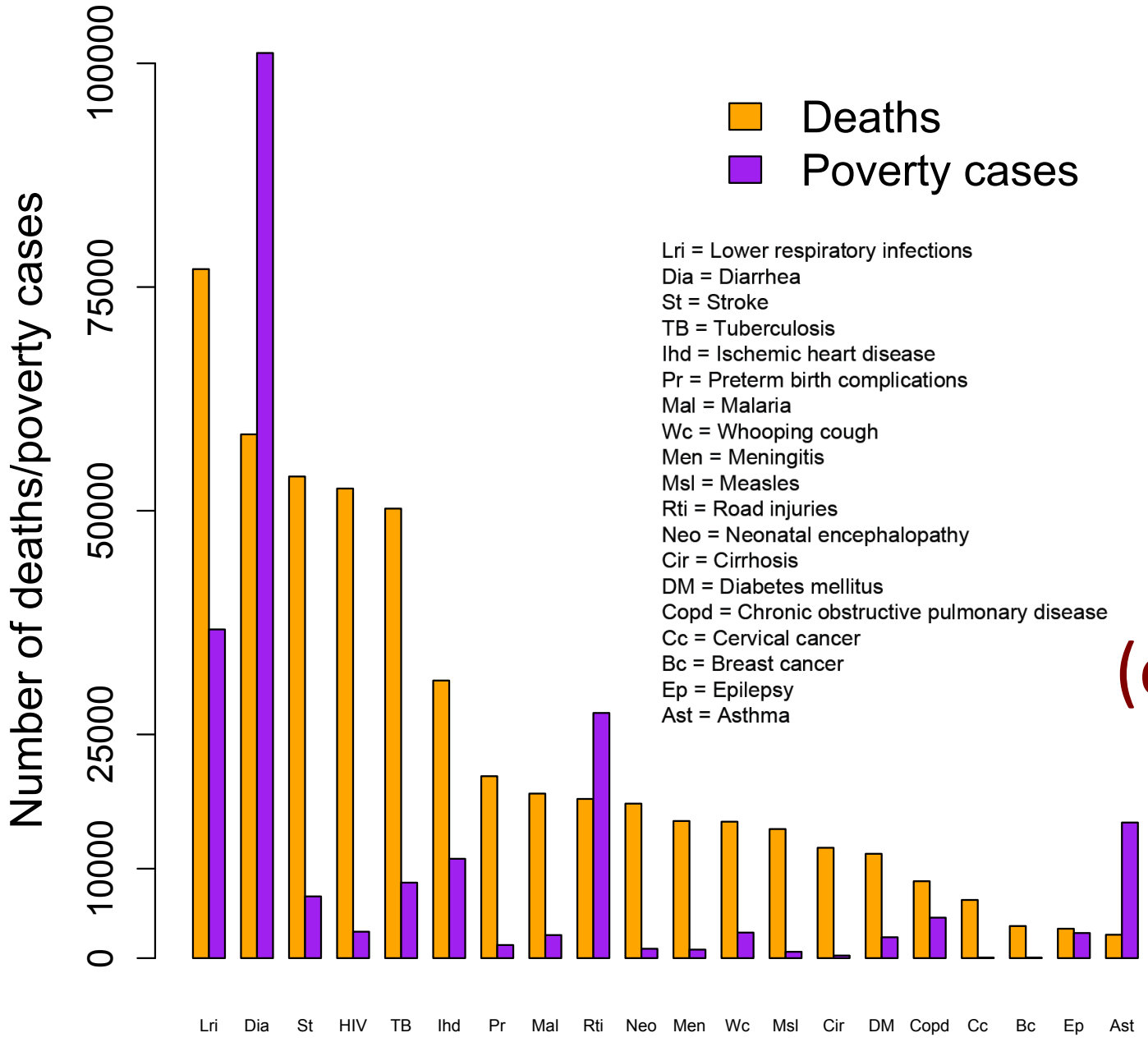

Poverty & mortality, by cause (e.g. Ethiopia)

Verguet, Memirie, Norheim. 2016

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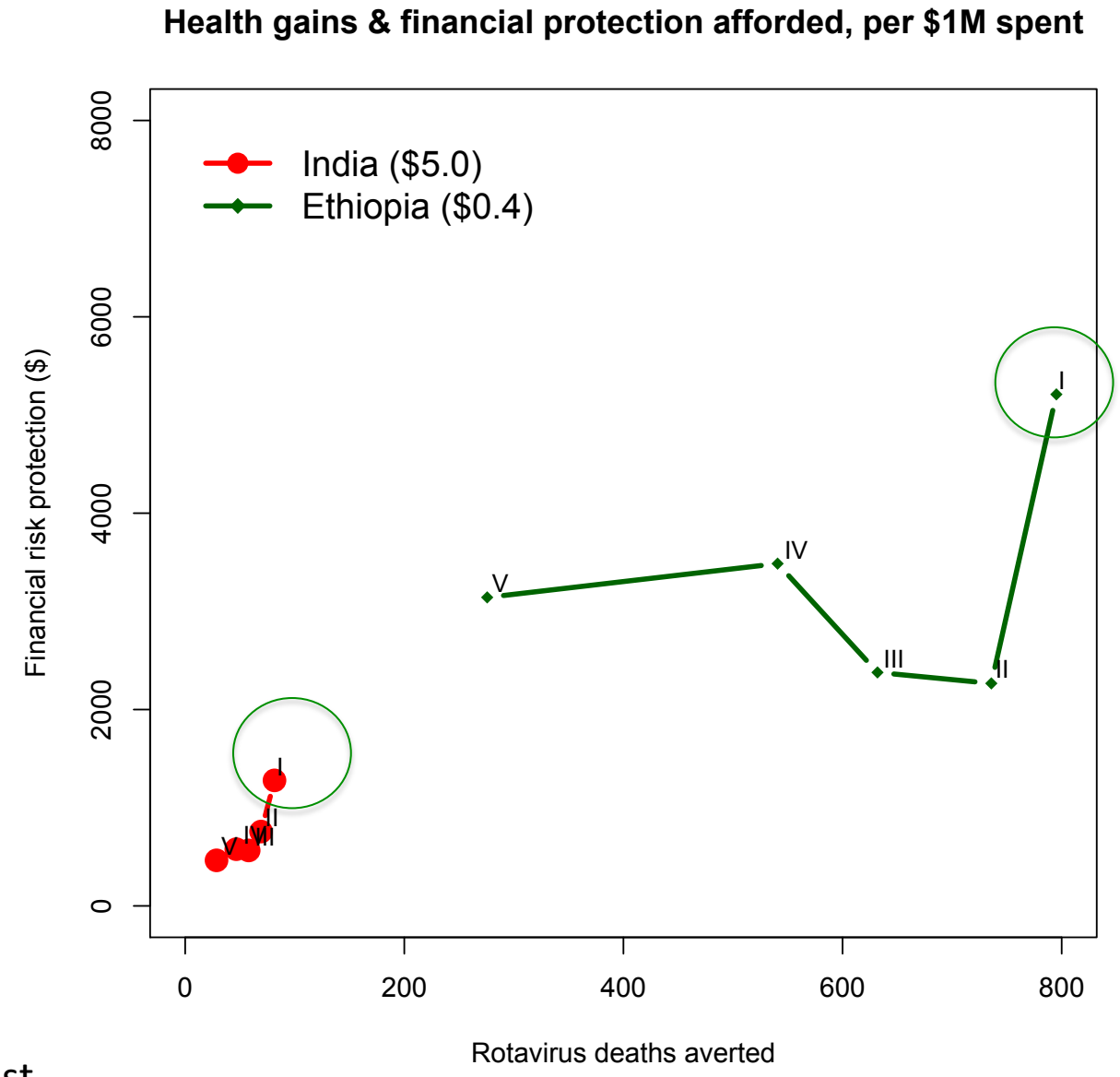
Investments in health **within** the health sector (1)



I = poorest, V = richest

Verguet, Murphy, Johansson, et al. Vaccine 2013

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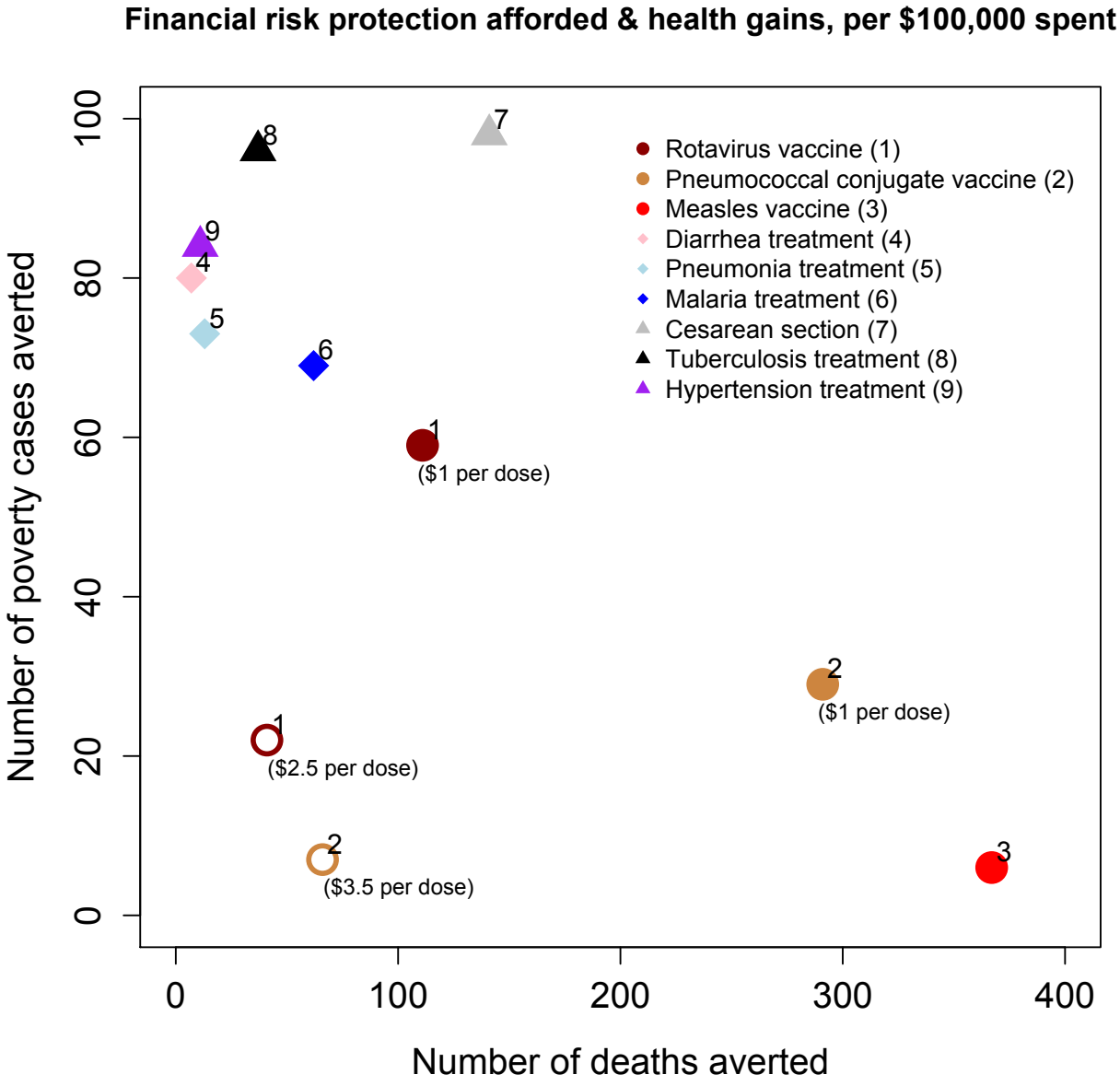
Investments in health **within** the health sector (2)



Verguet, Olson, Babigumira, et al. Lancet Global Health 2015

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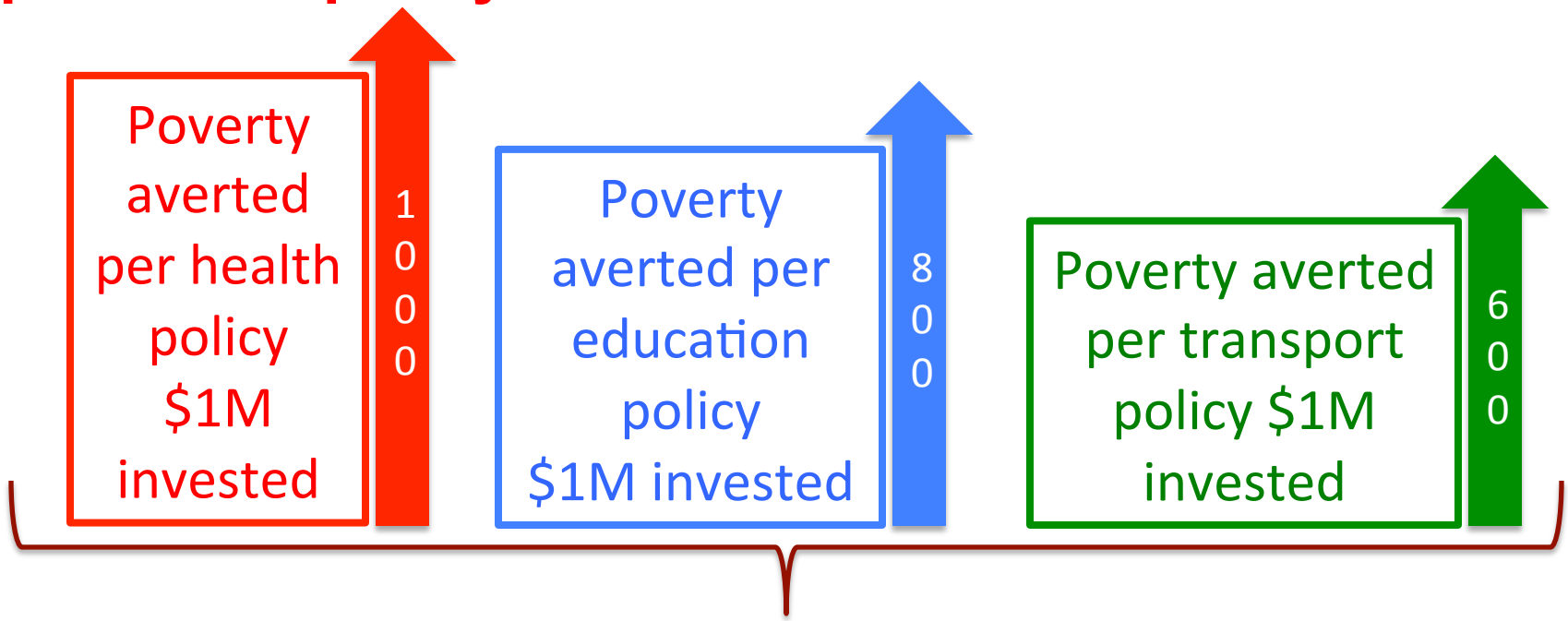
Beyond the health sector

Estimate efficient purchase of poverty alleviation benefits by health policies i.e. **poverty cases averted per health policy $ invested**



Intersectoral comparison by Ministry of Finance & Development

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http://www.hsph.harvard.edu/stephane-verguet/