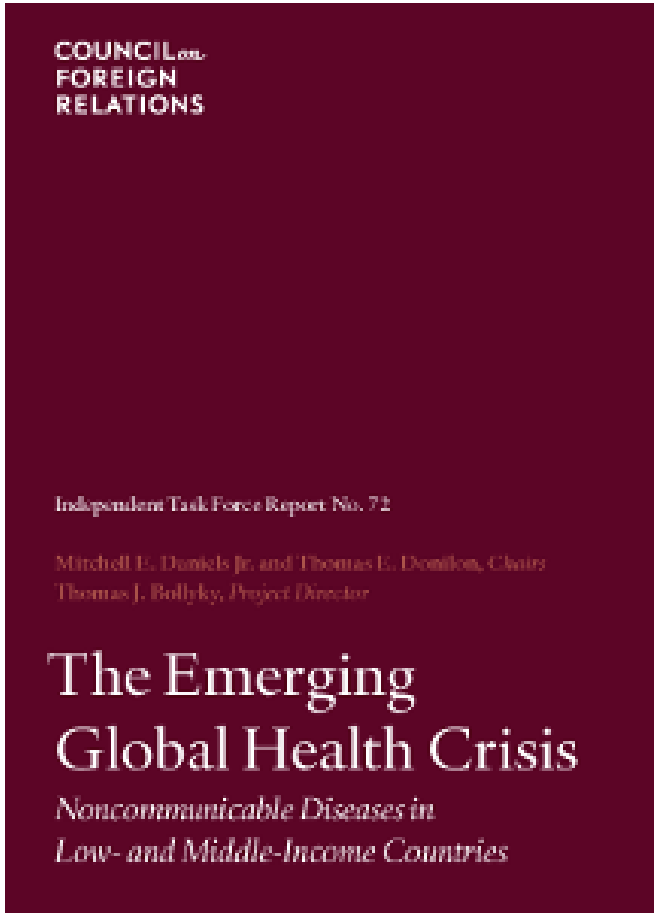
The Business Case for Cancer Prevention in Low- and Middle-Income Countries

National Cancer Policy Forum Workshop October 25-26, 2015

COUNCIL on FOREIGN RELATIONS

First CFR Task Force Devoted to Global Health



Task Force Members

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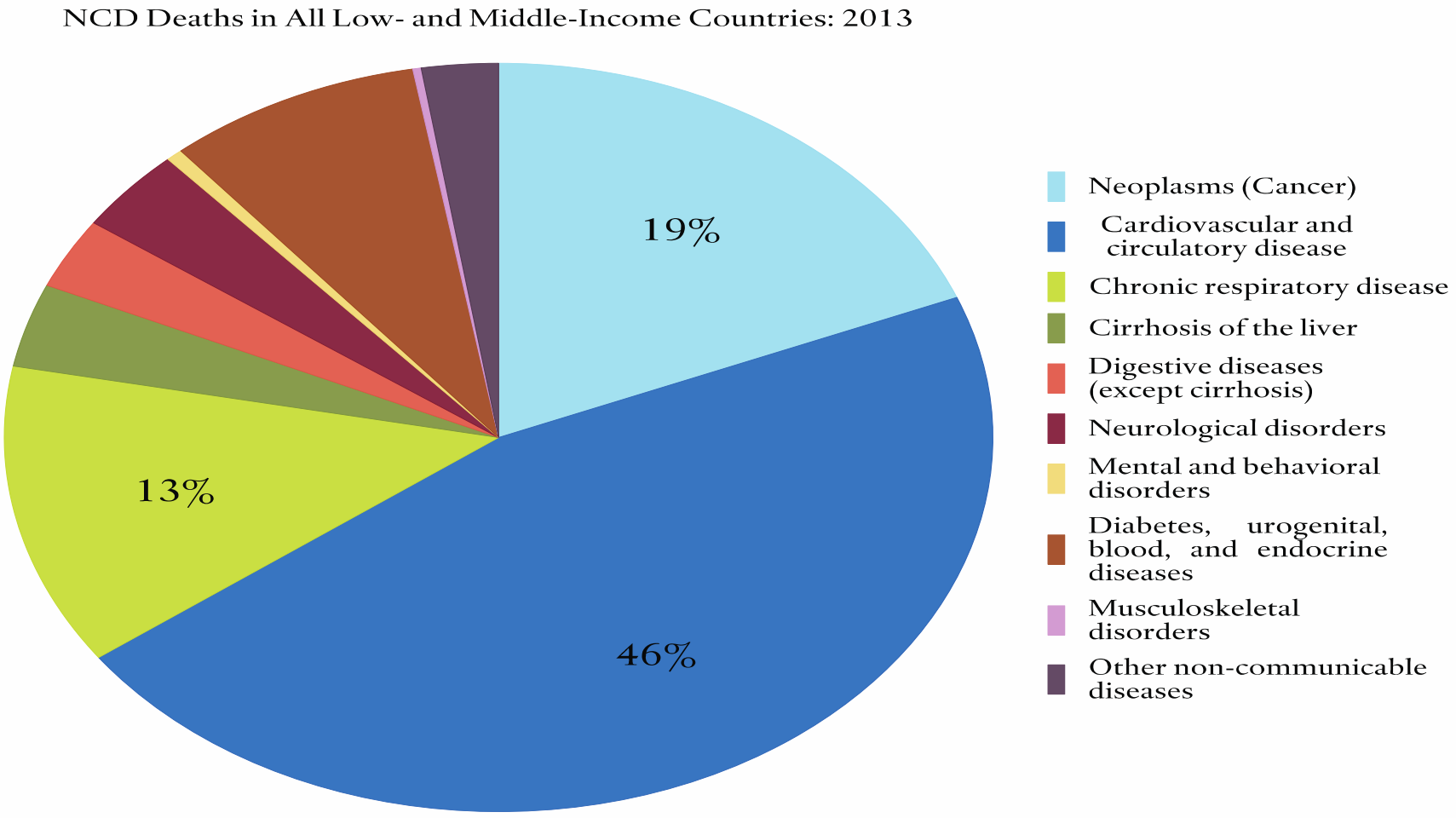
Questions

- Are cancers and other NCDs a crisis in low- and middle-income countries?
- The United States interest in addressing that crisis
- What is the practical, cost-effective role for collective action?

Are NCDs an emerging crisis in low- and middle-income countries?

Causes of NCD deaths in LMICs



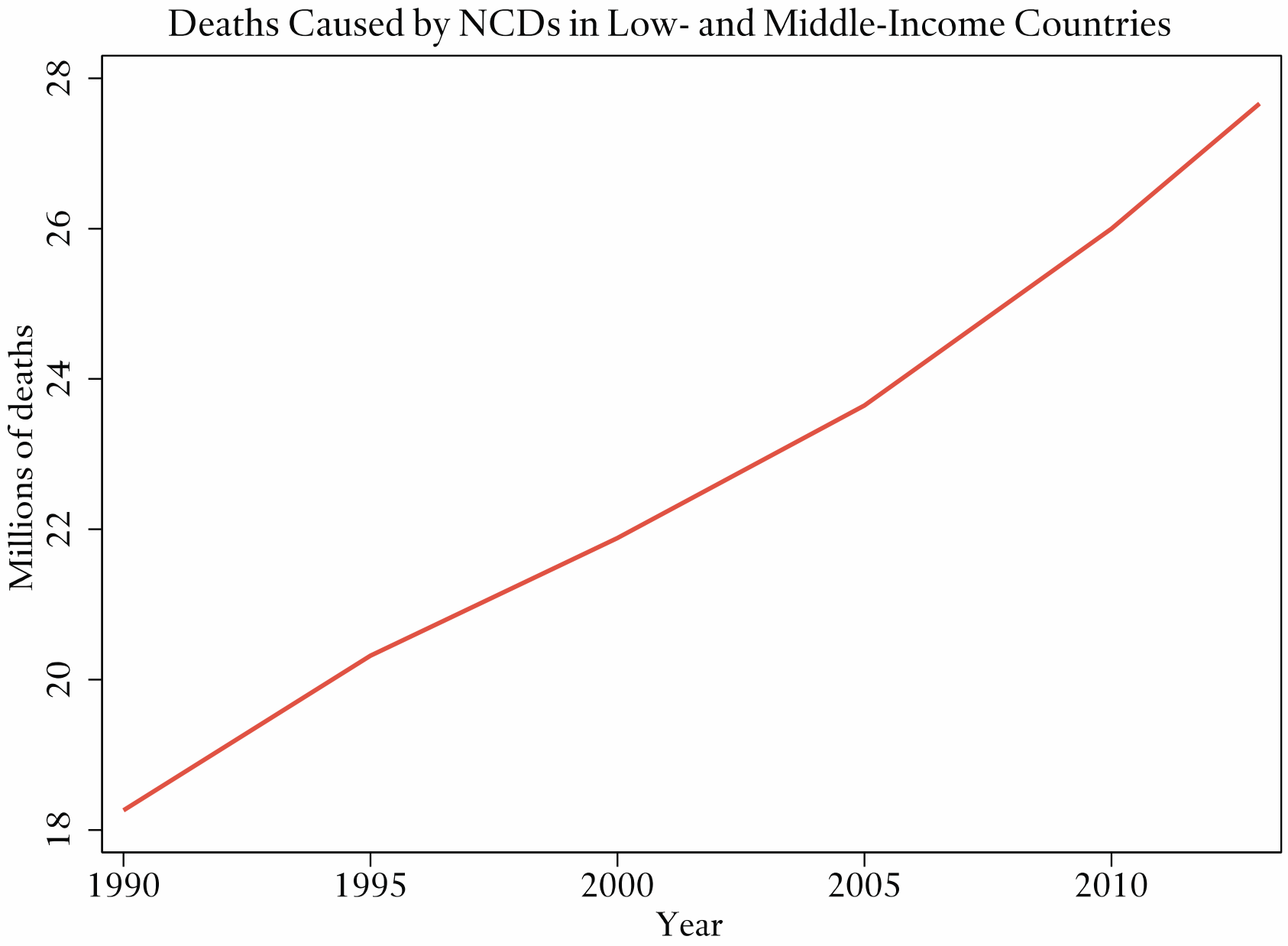

Deaths Caused by NCDs in Low- and Middle-Income Countries
Millions of deaths
18
20
22
24
26
28
1990
1995
2000
2005
2010
Year

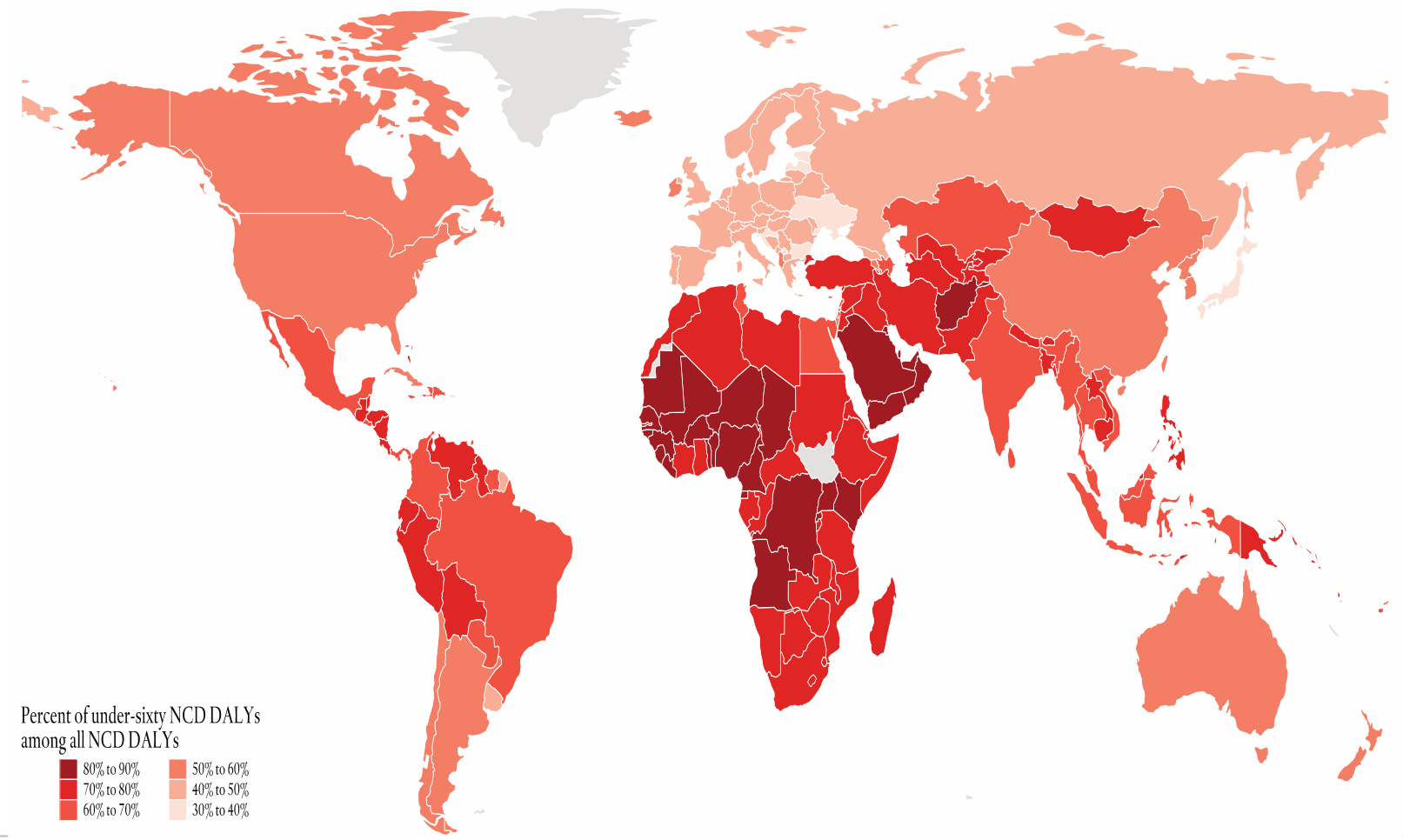
Table 1: Percentage change in DALYs: 1990–2010

	Low income	Lower-middle income	Upper-middle income	High income
All communicable diseases	-14%	-27%	-47%	-23%
All NCDs	42%	38%	18%	9%
Lung cancer	78%	56%	52%	7%
Breast cancer	124%	58%	55%	1%
Cervical cancer	28%	19%	18%	-16%
Leukaemia	54%	30%	-7%	1%

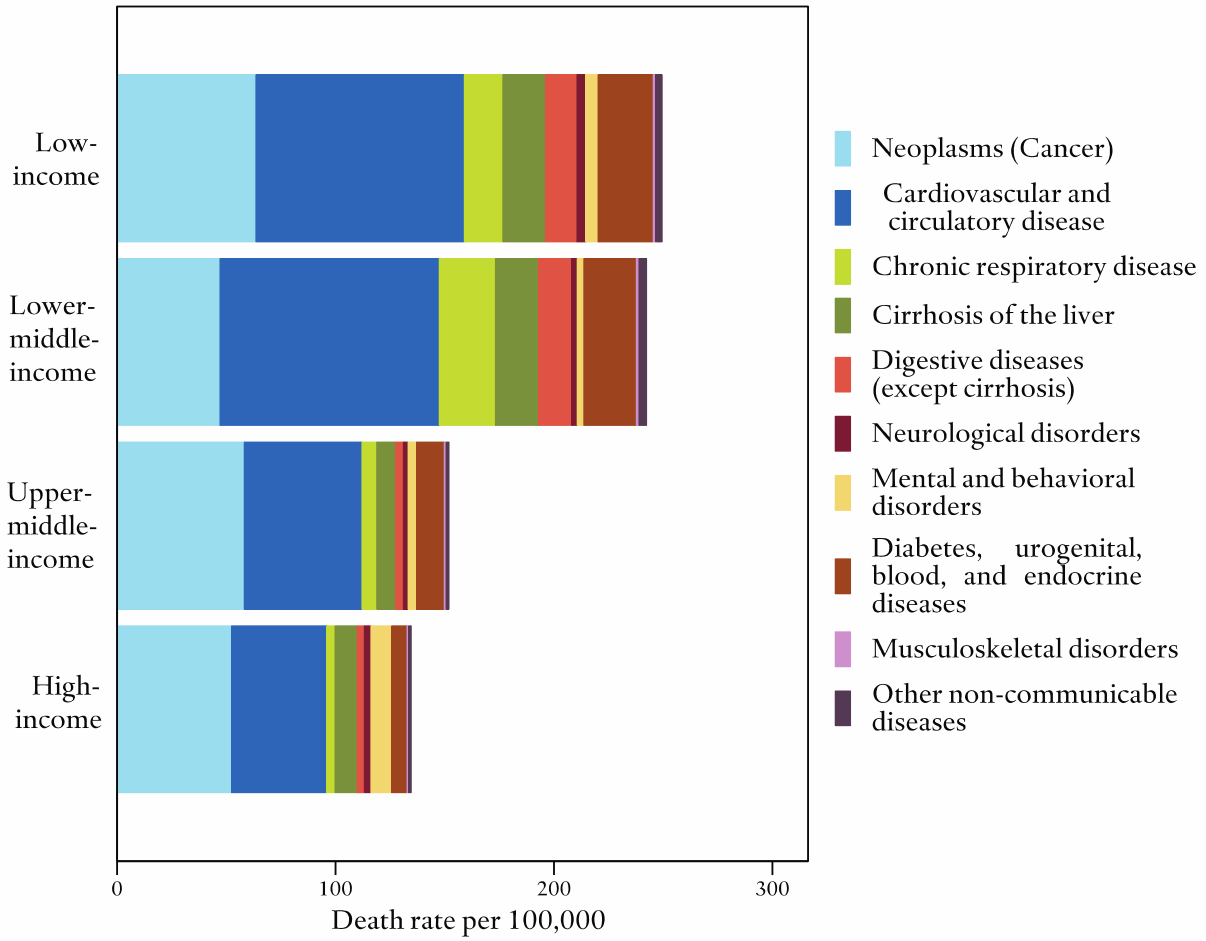
Data source: Institute for Health Metrics and Evaluation, Global Burden of Disease Study 2010

Bollyky & Andridge, Cancer Control (2015)

Proportion of NCD Death & Disability that Arises under 60

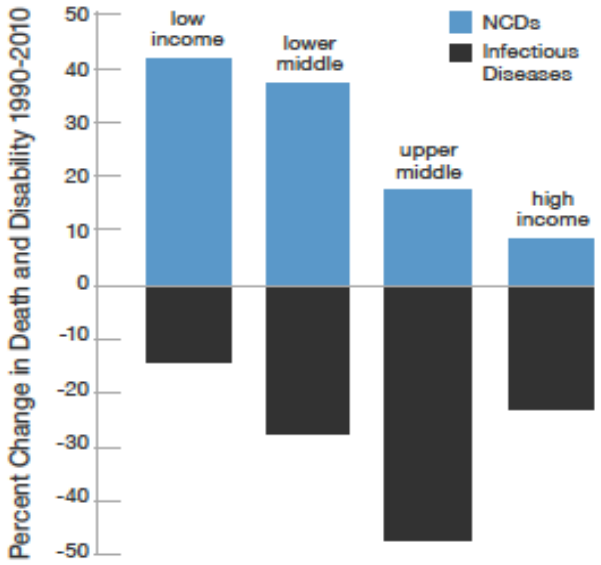


Worse Outcomes



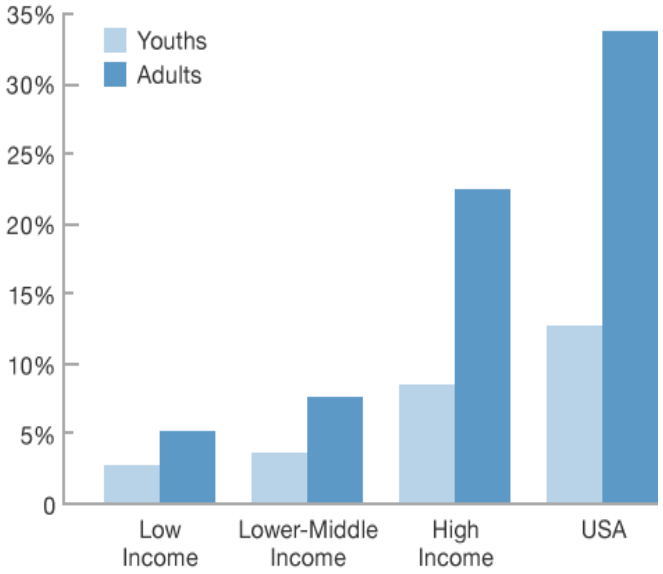
Not Merely a Byproduct of Success & Unhealthy Lifestyles

Rise of NCDs exceeds decline of infectious diseases in developing countries

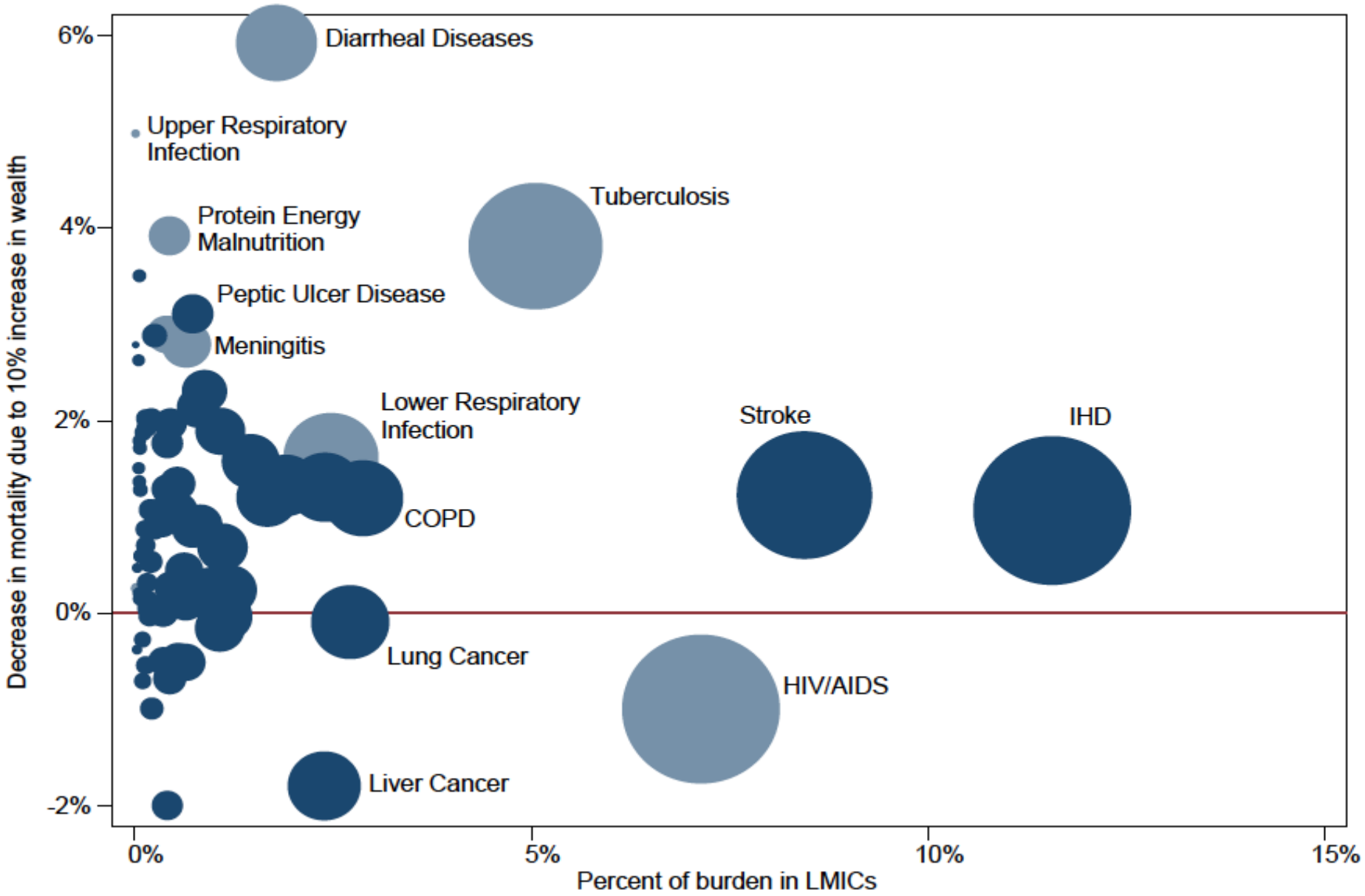


Source: Institute for Health Metrics and Evaluation, Global Burden of Disease Study (2010)

Rates of obesity are rising, but still relatively low in developing countries



Source: Institute for Health Metrics and Evaluation, Overweight and Obesity Viz.



Bollyky et al., Health Affairs (2015)

Country Wealth And Its Association With Premature Adult Mortality From Major Noncommunicable Diseases

Cause	Total effect: wealth on mortality (%)	Direct effect: wealth on mortality (%)
Noncommunicable diseases	−1.0****	−1.2****
Rheumatic heart disease	−2.1****	−2.5****
Asthma	−1.9****	−2.4****
Hypertensive heart disease	−1.6****	−1.8****
Chronic kidney diseases	−1.3****	−1.5****
Diabetes mellitus	−1.3****	−1.6****
Cerebrovascular disease	−1.2****	−1.6****
Stomach cancer	−1.2****	−1.5****
Chronic obstructive pulmonary disease	−1.2****	−1.3****
Ischemic heart disease	−1.1****	−1.5****
Cervical cancer	−0.9****	−1.0****
Cirrhosis of the liver secondary to hepatitis B	−0.7**	−0.8**
Cardiomyopathy and myocarditis	−0.3	−0.6**
Cirrhosis of the liver secondary to hepatitis C	−0.2	−0.3
Cirrhosis of the liver secondary to alcohol use	−0.2	−0.4
Esophageal cancer	−0.1	−0.3
Leukemia	−0.1	−0.5**
Breast cancer	0.0	−0.2

Bollyky et al., Health Affairs (2015)

Per capita GDP when the median life expectancy reached 59 years old

$4,334 OECD countries (1946)

$$$$$$$$$$$$$$$$$$$$$$
$$$$$$$$$$$$$$$$$$$$$$

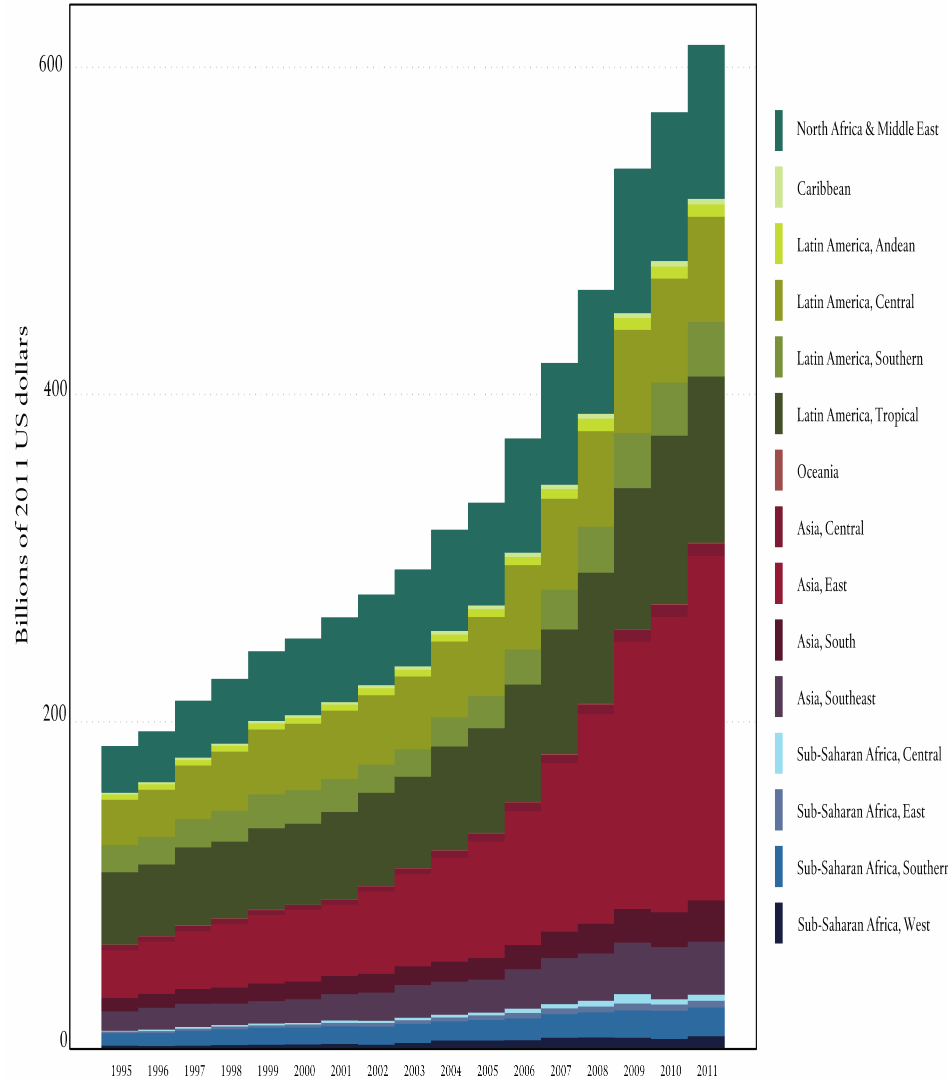
$2,211 Lower-middle income countries (1986)

$$$$$$$$$$$
$$$$$$$$$$$

$1,072 Low-income countries (2012)

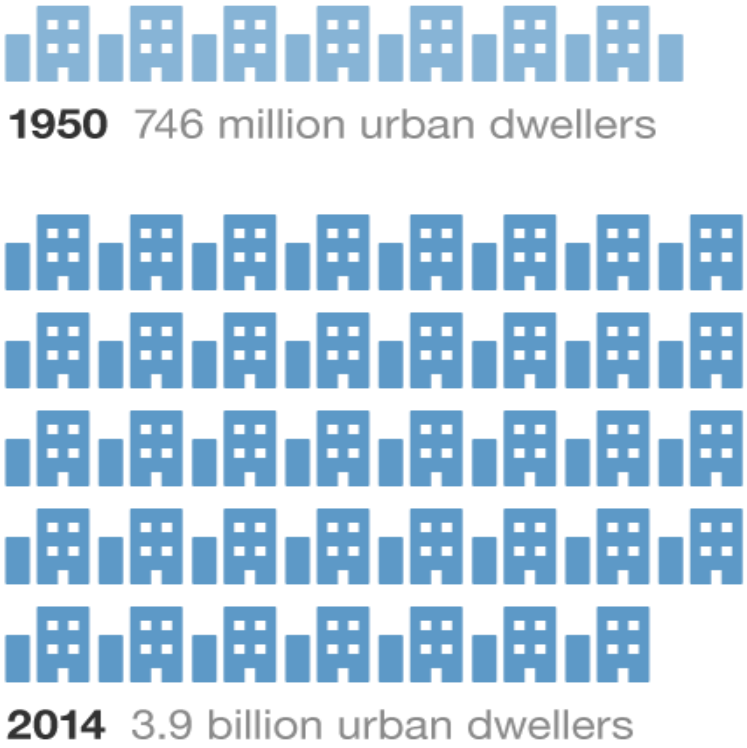
$$$$$
$$$$$

Source: The Gapminder Foundation



Source: Institute for Health Metrics and Evaluation, Global Health Spending Database (2013).

The world is urbanizing at an unprecedented rate



1950 746 million urban dwellers

2014 3.9 billion urban dwellers

The rate of urbanization is fastest in Asia and Africa

0.2% North America

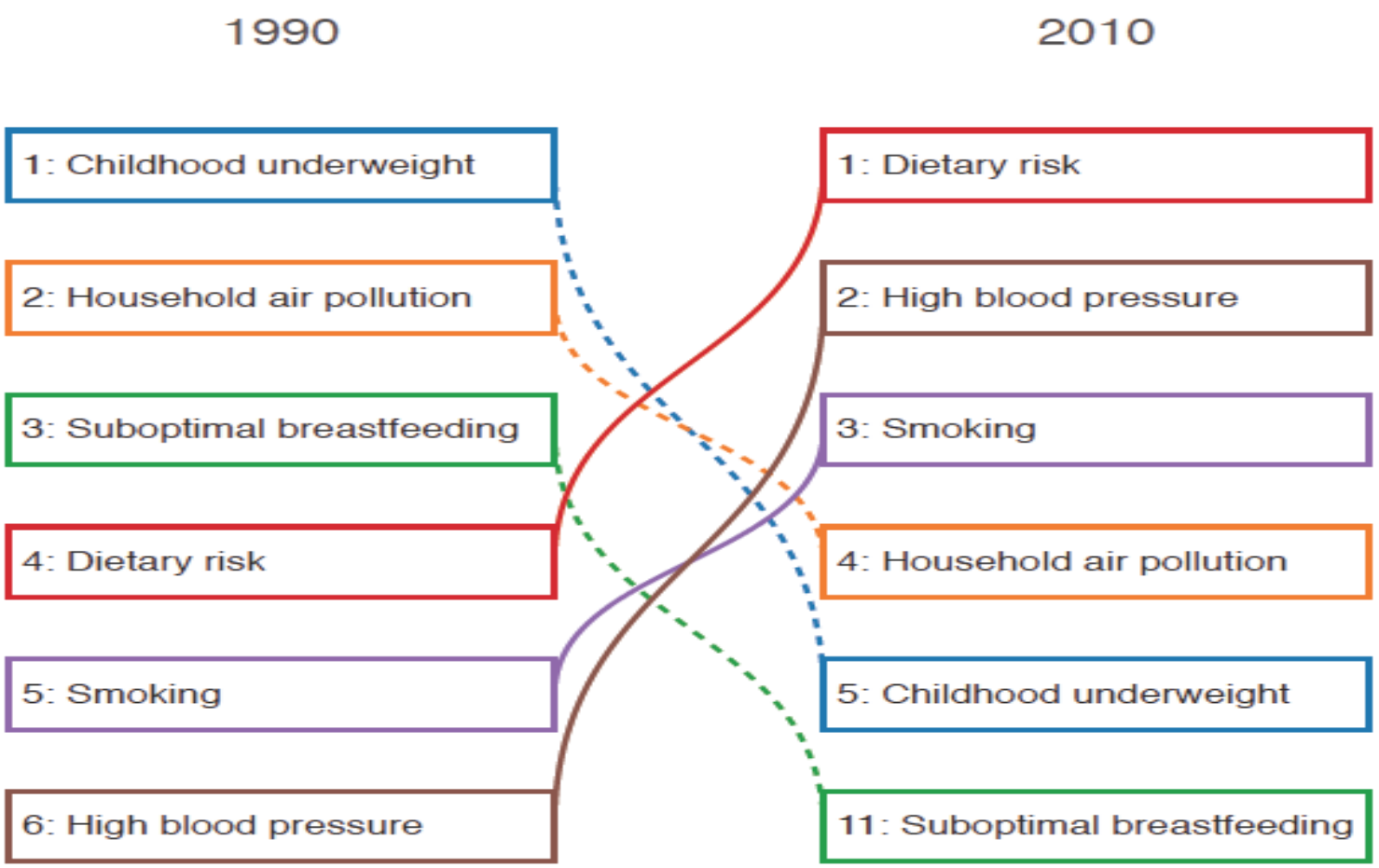
0.3% Europe

1.1% Africa

1.5% Asia

Source: United Nations, World Urbanization Prospects (2014)

Top Health Risks in LMICs



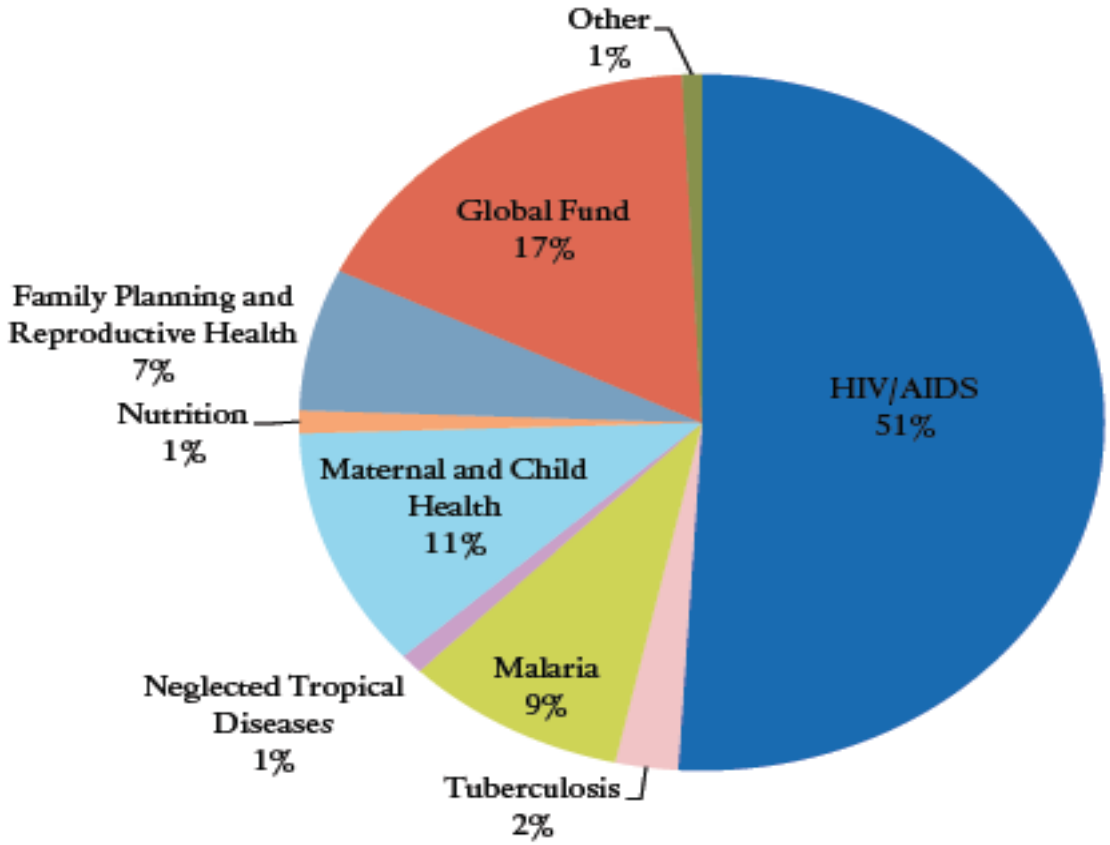
The Case for Greater Engagement on NCDs

Current US Engagement on NCDs

- No dedicated programs or budget
- Small scale & ad hoc efforts to integrate objectives into existing US global health programs
- $10.8 million spent in 2013
- Other bilateral donor investments on NCDs similar

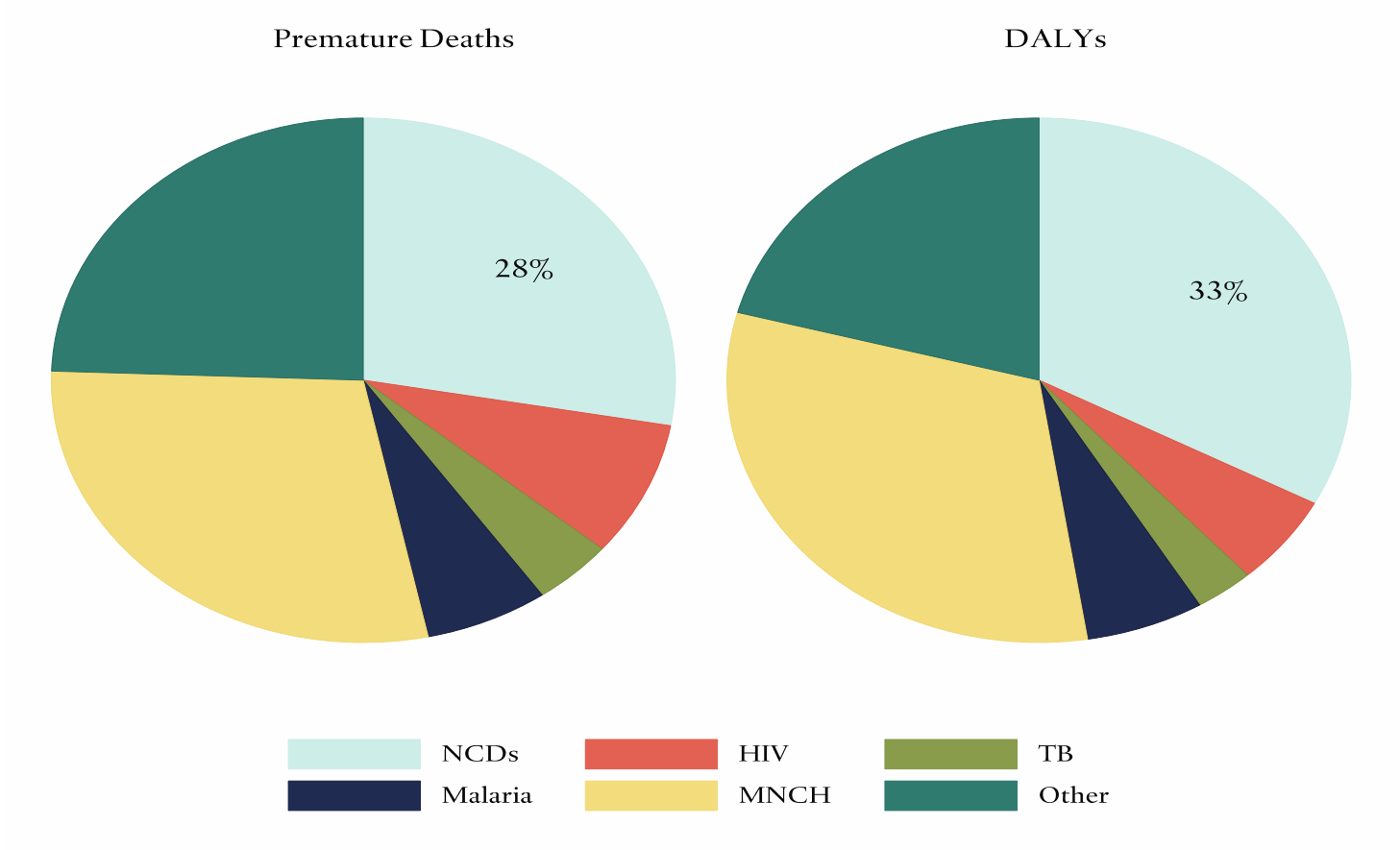

Bloomberg
Businessweek
EBOLA
IS
COMING
The U.S. had a chance
to stop the virus in its tracks.
It missed.

US FY13 Global Health Budget

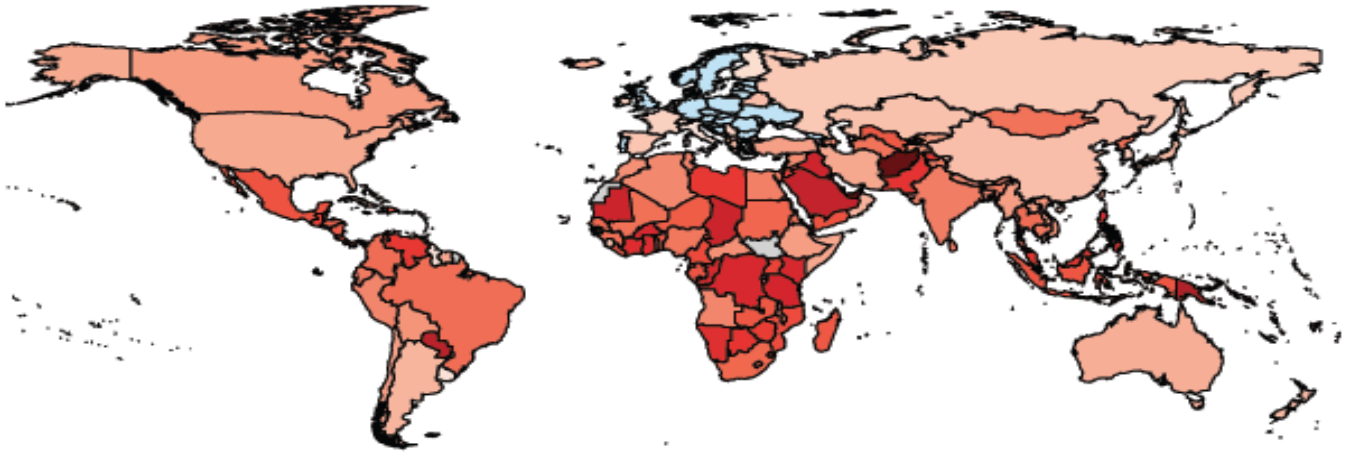


Data Source: Henry J. Kaiser Family Foundation, 2014.[77]

Health Burden in U.S. Priority Countries



Change in NCD DALYs, 1990-2010



All Communicable

All NCDs

Breast Cancer

CVD

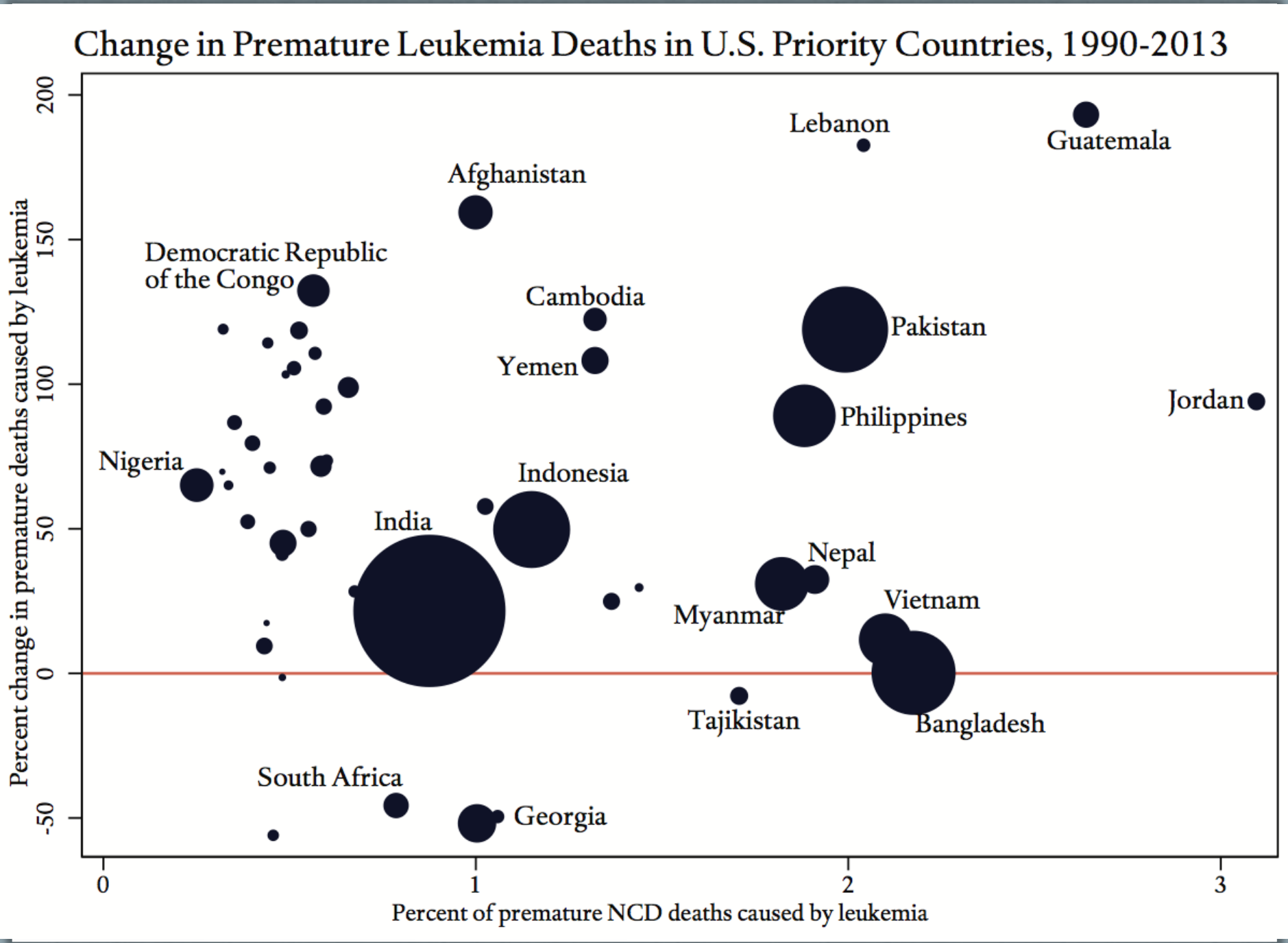
Cervical Cancer

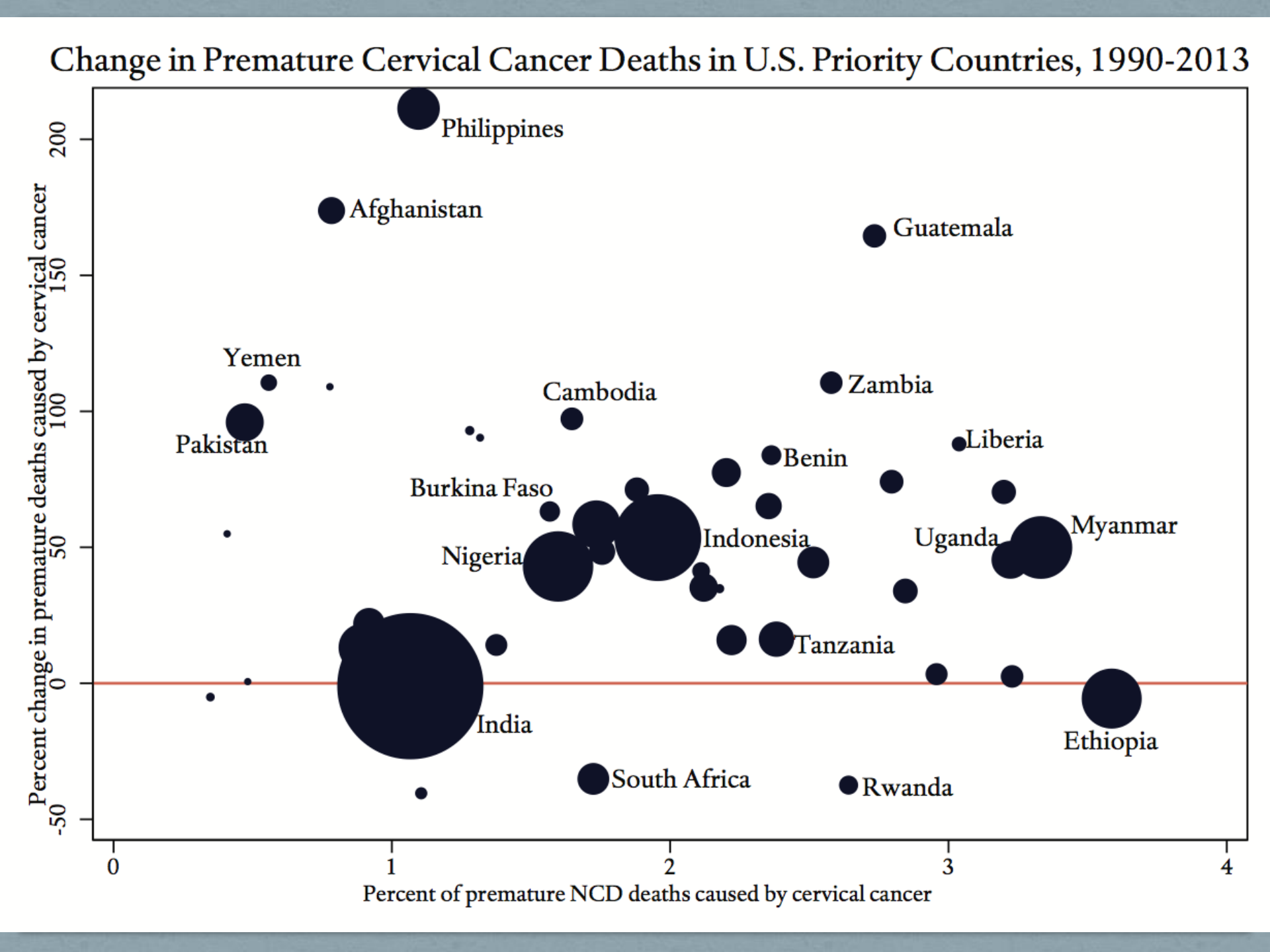
Diabetes

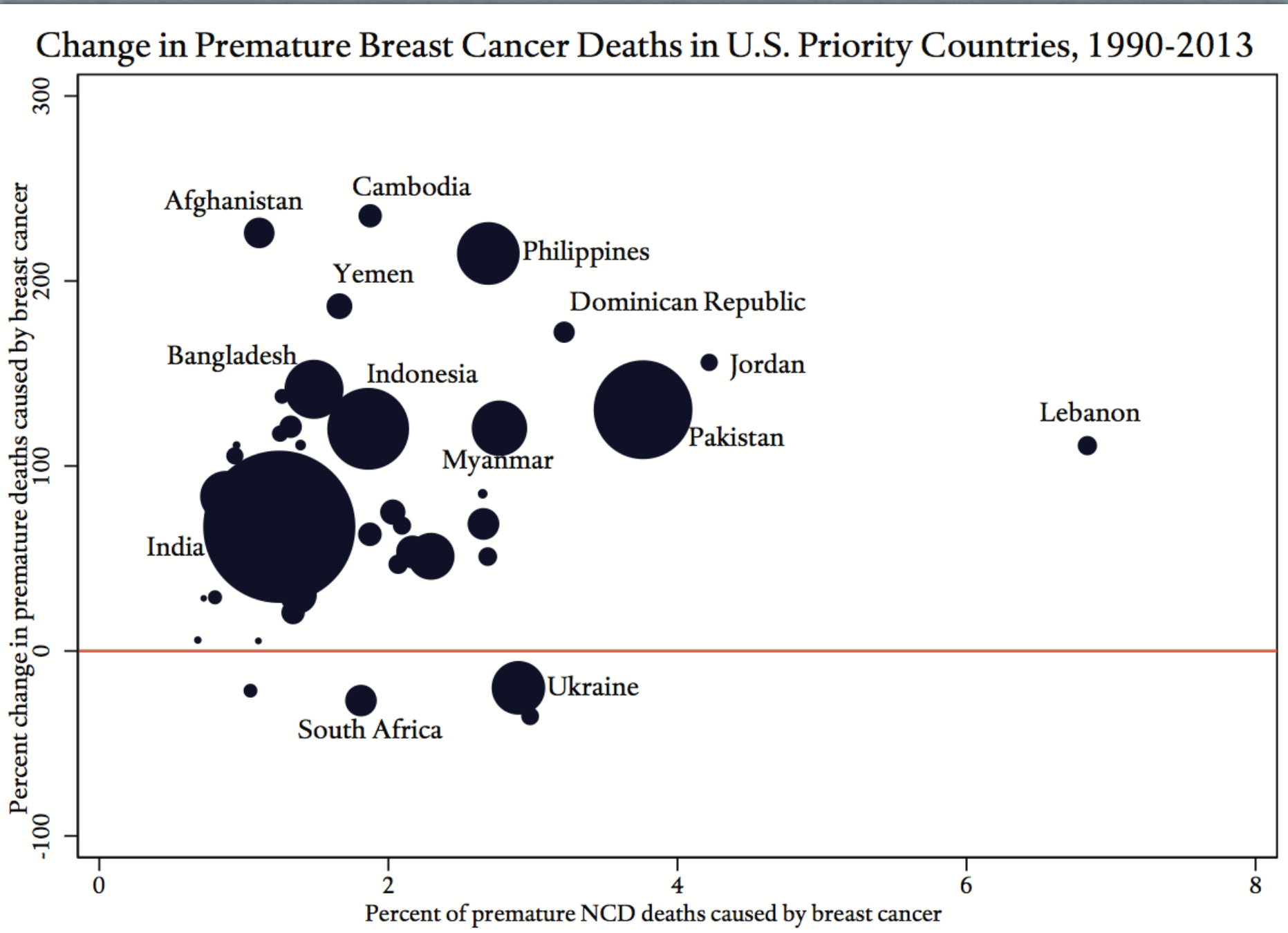
Leukemia

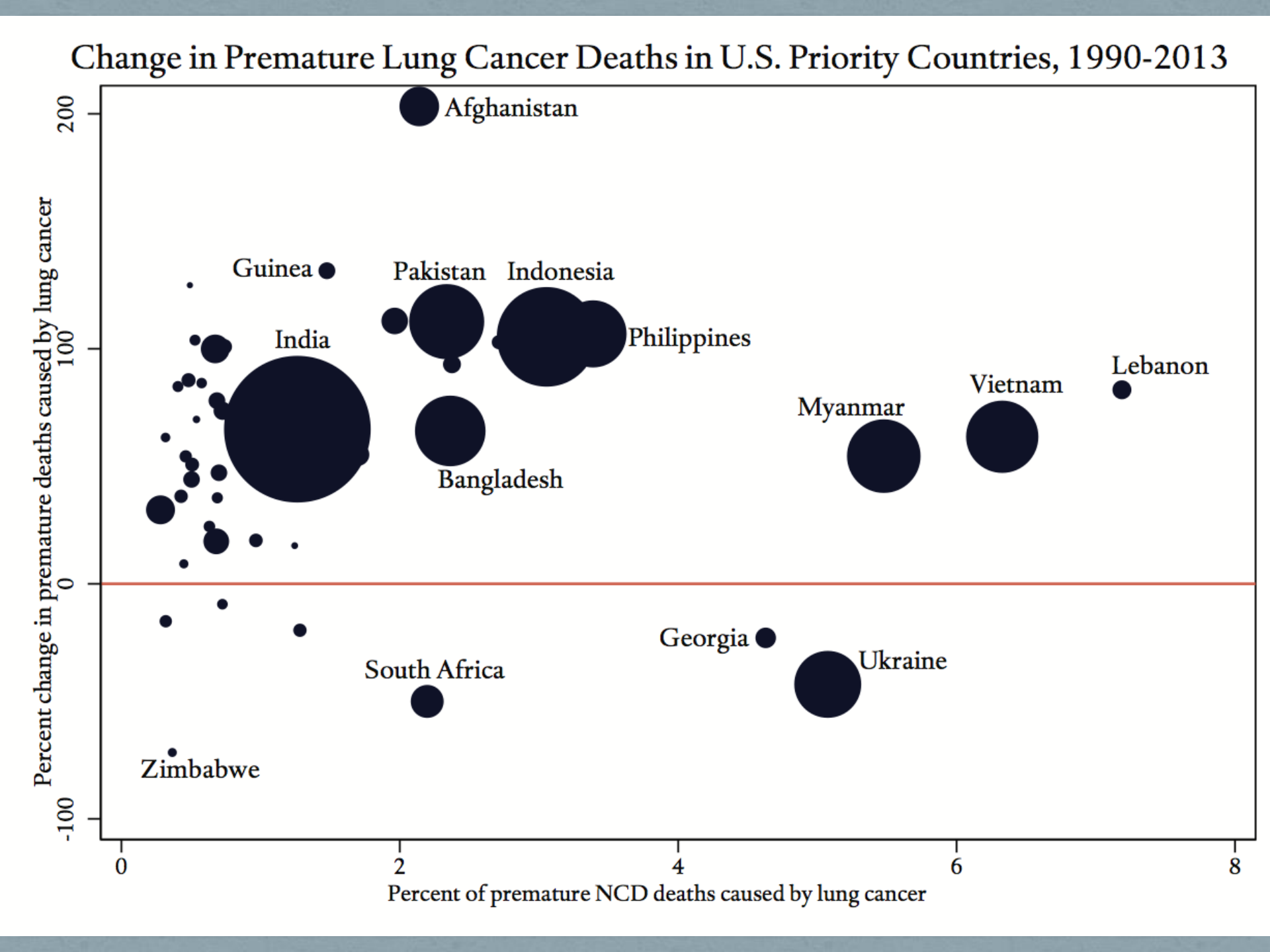
Lung Cancer

U.S. Priority Countries


Change in Premature Leukemia Deaths in U.S. Priority Countries, 1990-2013
Percent change in premature deaths caused by leukemia
200
150
100
50
0
-50
Percent of premature NCD deaths caused by leukemia
0
1
2
3
Lebanon
Guatemala
Afghanistan
Democratic Republic of the Congo
Cambodia
Pakistan
Yemen
Jordan
Philippines
Nigeria
Indonesia
India
Nepal
Myanmar
Vietnam
Tajikistan
Bangladesh
South Africa
Georgia


Change in Premature Cervical Cancer Deaths in U.S. Priority Countries, 1990-2013
Philippines
Afghanistan
Guatemala
Yemen
Cambodia
Zambia
Pakistan
Liberia
Benin
Burkina Faso
Indonesia
Uganda
Myanmar
Nigeria
Tanzania
India
Ethiopia
South Africa
Rwanda
Percent change in premature deaths caused by cervical cancer
200
150
100
50
0
-50
0
1
2
3
4
Percent of premature NCD deaths caused by cervical cancer

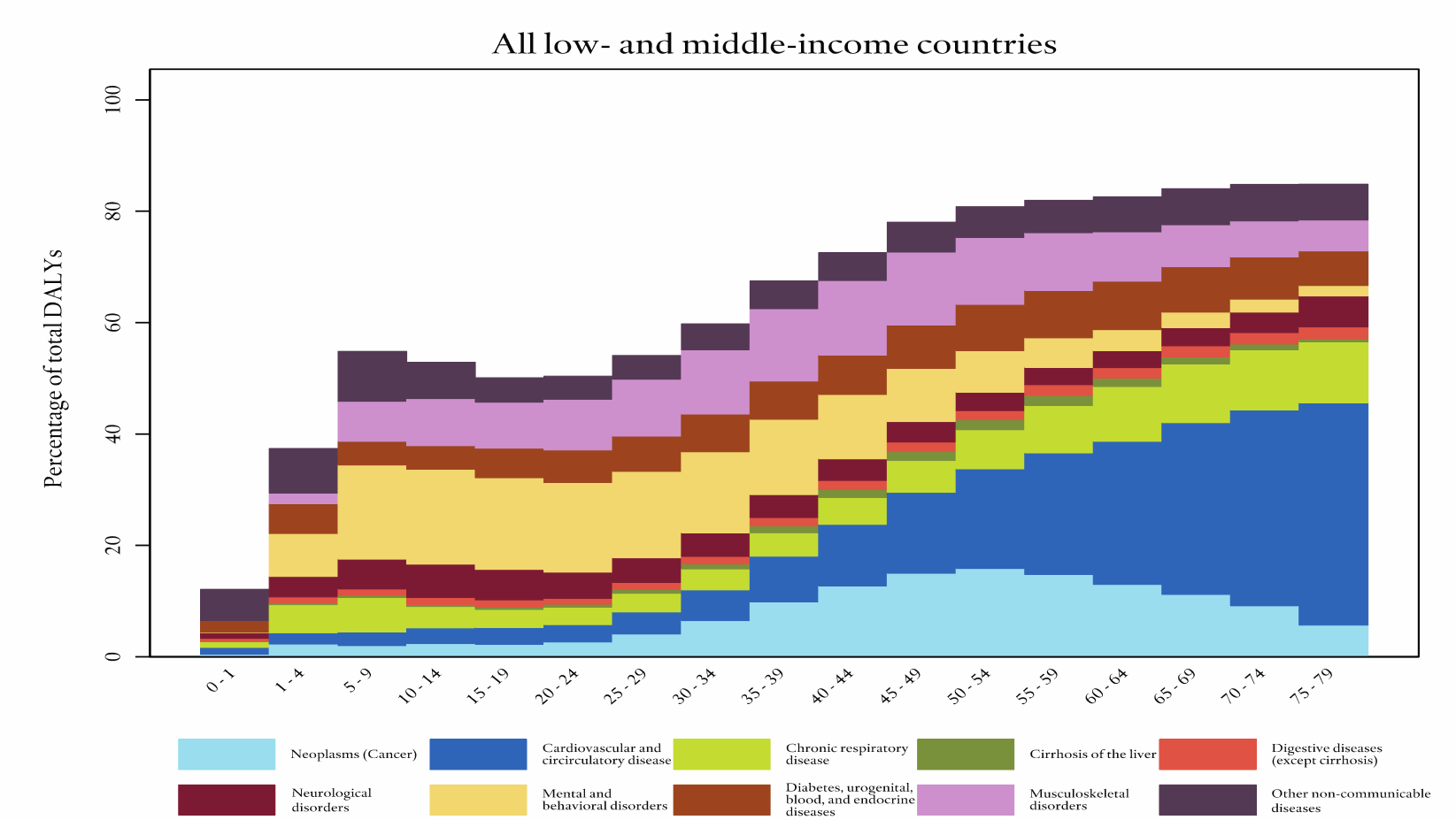

Change in Premature Breast Cancer Deaths in U.S. Priority Countries, 1990-2013
Percent change in premature deaths caused by breast cancer
300
200
100
0
-100
Afghanistan
Cambodia
Philippines
Yemen
Dominican Republic
Bangladesh
Indonesia
Jordan
Lebanon
Pakistan
Myanmar
India
Ukraine
South Africa
0
2
4
6
8
Percent of premature NCD deaths caused by breast cancer

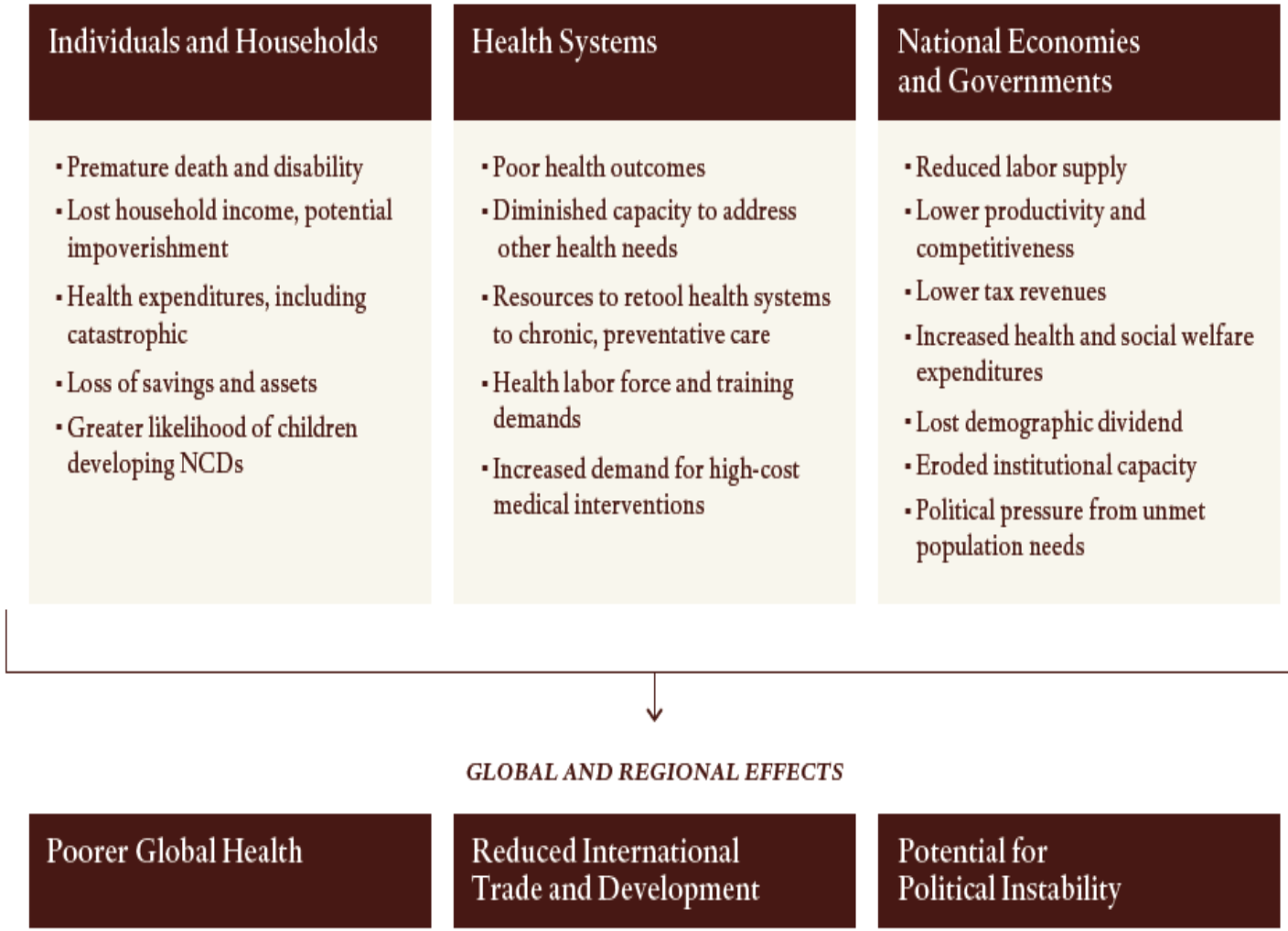

Change in Premature Lung Cancer Deaths in U.S. Priority Countries, 1990-2013
Afghanistan
Guinea
Pakistan
Indonesia
India
Philippines
Lebanon
Vietnam
Myanmar
Bangladesh
Georgia
Ukraine
South Africa
Zimbabwe
200
100
0
-100
Percent change in premature deaths caused by lung cancer
0
2
4
6
8
Percent of premature NCD deaths caused by lung cancer

Economic Interests

- Investments to address NCDs support economic development and trade
  - Low- and middle-income countries have represented roughly half of global growth since the 2008 financial crisis.
- Investments to address NCDs are means of building fruitful partnership with allies and rising powers

Proportion of DALYs due to NCDs by Age




Individuals and Households
• Premature death and disability
• Lost household income, potential impoverishment
• Health expenditures, including catastrophic
• Loss of savings and assets
• Greater likelihood of children developing NCDs
Health Systems
• Poor health outcomes
• Diminished capacity to address other health needs
• Resources to retool health systems to chronic, preventative care
• Health labor force and training demands
• Increased demand for high-cost medical interventions
National Economies and Governments
• Reduced labor supply
• Lower productivity and competitiveness
• Lower tax revenues
• Increased health and social welfare expenditures
• Lost demographic dividend
• Eroded institutional capacity
• Political pressure from unmet population needs
GLOBAL AND REGIONAL EFFECTS
Poorer Global Health
Reduced International Trade and Development
Potential for Political Instability

Source: Bloom et al., World Economic Forum (2011)

Potential Strategies for U.S. Engagement

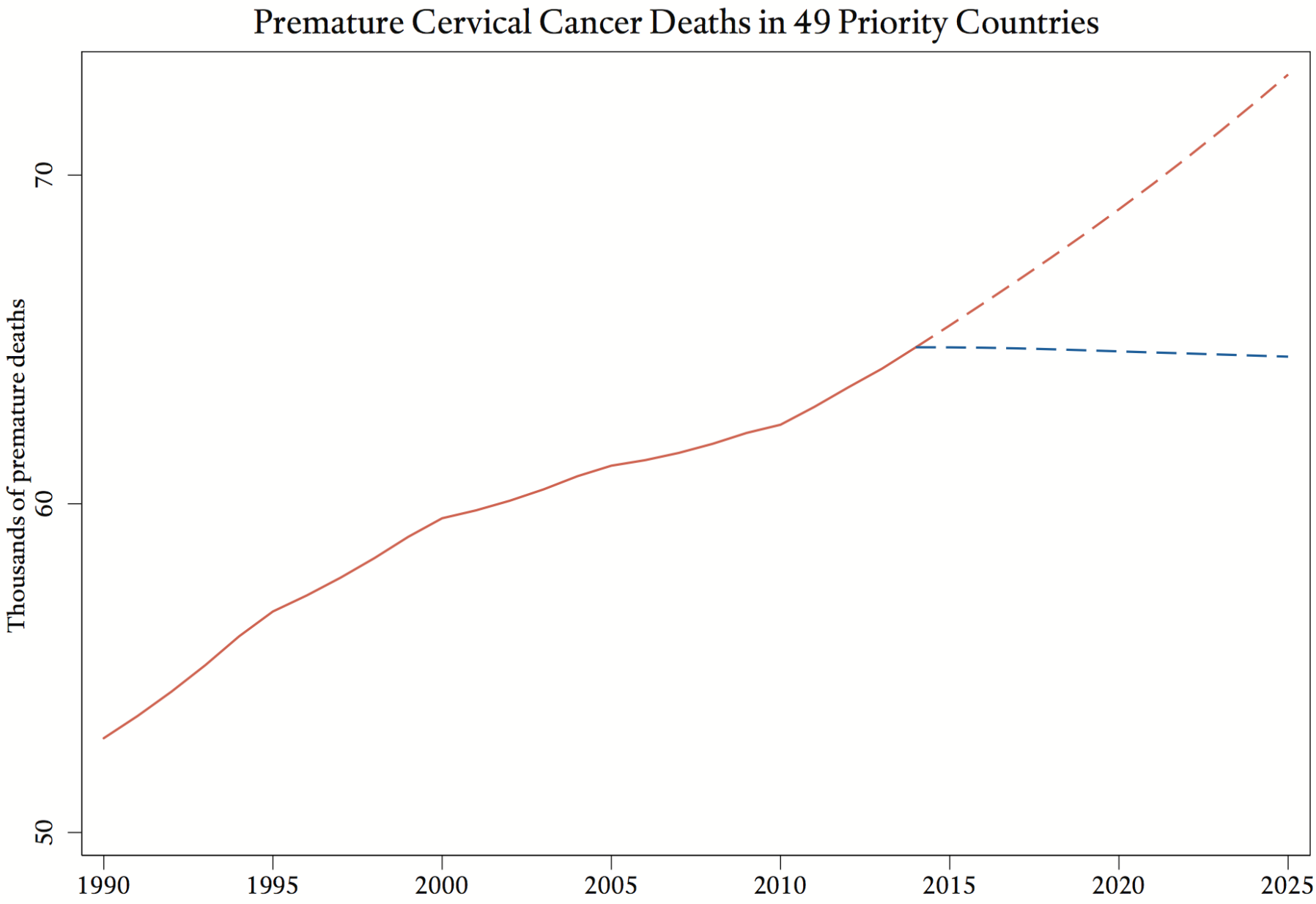
Strategies

- Challenges where interventions exist & can leverage existing infrastructure
  - Tobacco
  - HPV vaccine & screening
  - Hepatitis B vaccine
- Challenges where interventions exist but require adaptation for low resource setting
  - Breast, stomach cancers, leukemia, children's cancers
- Shared challenges where cooperation between developed & developing countries and with private sector could help

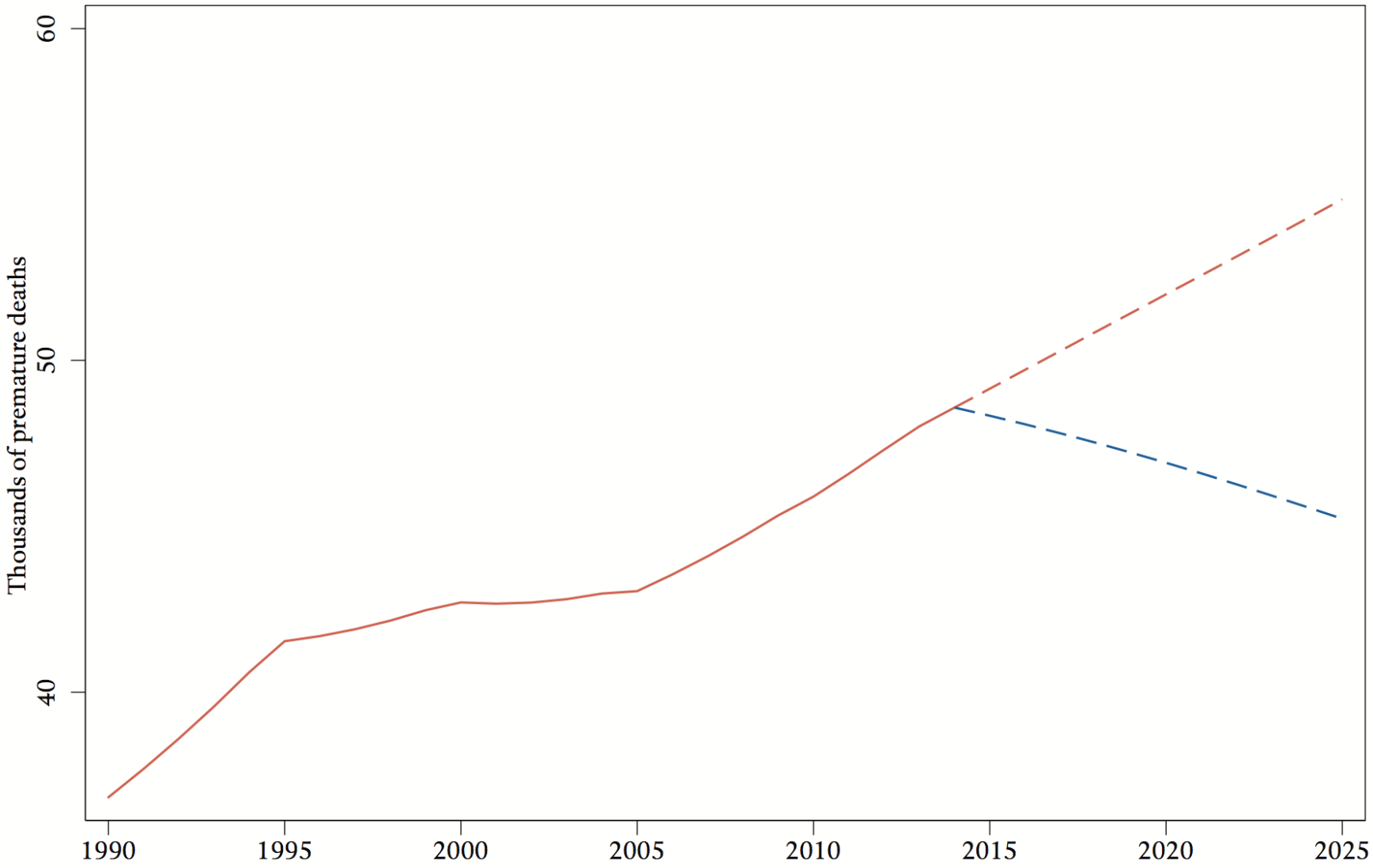
Associations Among Country Wealth, Noncommunicable Disease Risk Factors, And Premature Adult Mortality

Risk factor	Effect of a 10% increase in GDP per capita on risk factor (%)	Effect of a 10% increase in risk factor on adult mortality (%)
Household air pollution	−0.3	0.3*
Inactivity	0.0	−0.5
Sodium intake	0.0	0.7
Binge drinking	2.3****	0.5***
Ambient particulate matter	0.6***	1.3****
Obesity	0.2*	1.1***
Smoking	−0.1	1.7****

SOURCE Authors' calculations. **NOTE** GDP is gross domestic product. *$p < 0.10$ ***$p < 0.01$ ****$p < 0.001$


Premature Cervical Cancer Deaths in 49 Priority Countries
Thousands of premature deaths
50
60
70
1990
1995
2000
2005
2010
2015
2020
2025

Premature Leukemia Deaths in 49 Priority Countries



The red dashed line is a linear projection based on country-specific rates. The blue dashed line is a counterfactual based on observed average historic rates of high-income countries

Thank you!

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