Global Health 101

Richard Skolnik

Objectives

- Why is global health important?
- What perspectives should one use to consider global health issues?
- What do people get sick, disabled, and die from?
- What are the critical challenges to improving health, especially in LMICs?
- How can these challenges be addressed in cost-effective, doable, sustainable and fair ways?

Main Messages

- Your goal and metric in global health must be: *achieve the maximum health for your population, in fair ways, at least cost*
- The health of anyone, anywhere is the health of everyone, everywhere
- There has been some important progress in improving health
- There remain, however, substantial unfinished and emerging agendas
- Substantial equity issues also remain
- A large share of deaths and DALYS are preventable by addressing a small number of risk factors
- However, LMICs must also address intersectoral issues and establish effective and efficient UHC as fast as possible

Why is Global Health Important?

- Ethical dimensions
- Impacts on the productivity of individuals and countries
- Links with economic and social development
- Implications for global security and freedom
- Huge expenditures by people and governments
- Lack of respect for boundaries – the health of anyone, anywhere is the health of everyone, everywhere

Guiding Principles for Considering Global Health

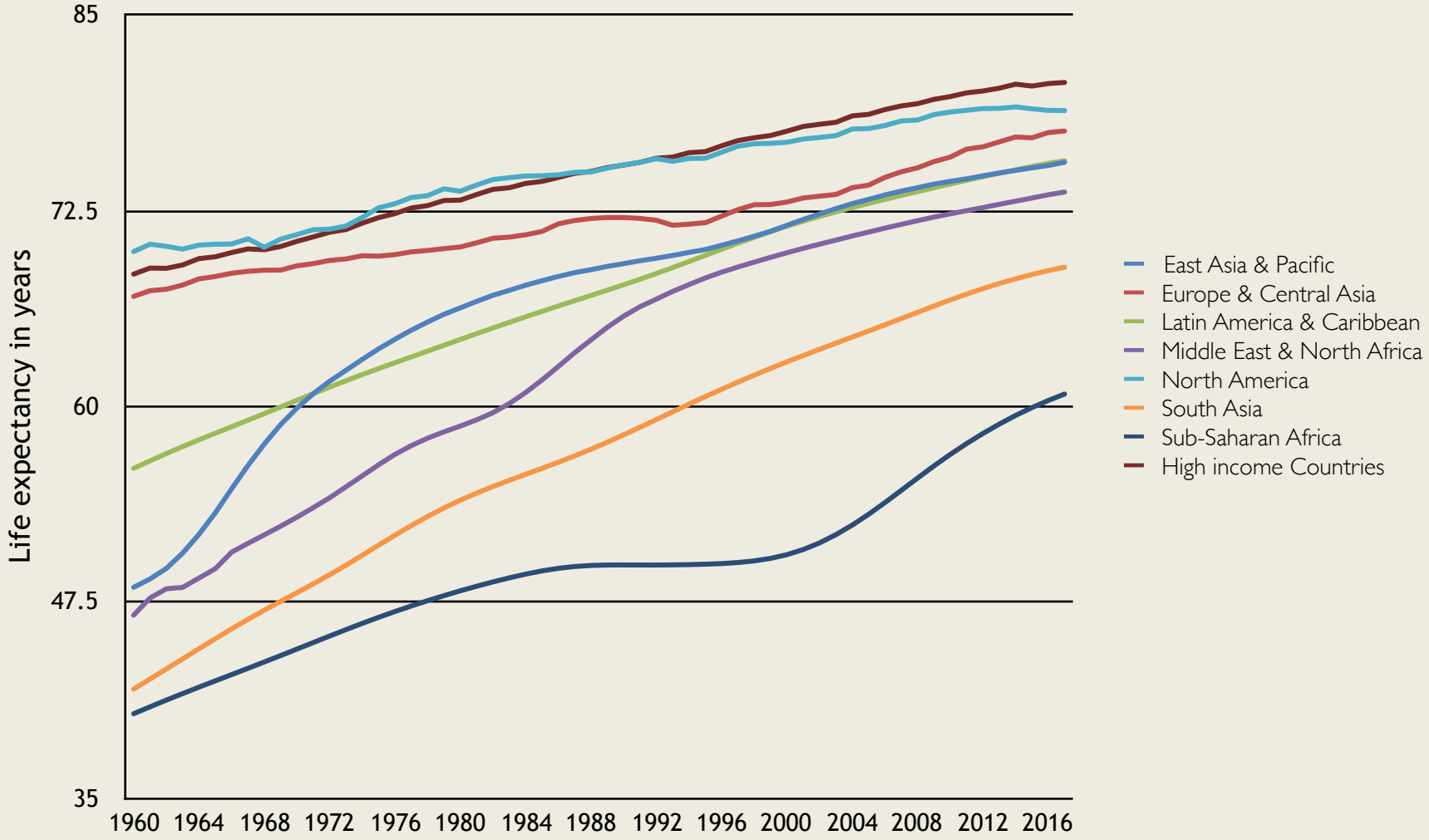
- Think like a Minister of Finance who believes in Human Capital
- If you only have $100, how will you spend it to maximize your people's health – at least cost and in the fairest possible ways?
- In LICs, how will you bury old people instead of young people, make the transition as fast as possible, and do it at the least cost?
- In HICs, how will you help people live long and healthy lives?
- Always question your fundamental assumptions
- HOW you spend money is more important than HOW MUCH you spend

THE HEALTH OF THE WORLD AN OVERVIEW

Some Good News

37%	INCREASE IN GLOBAL LIFE EXPECTANCY FROM 1960 TO 2016
44%	FEWER MATERNAL DEATHS IN 2015 THAN IN 1990
62%	DECREASE IN CHILD DEATHS BETWEEN 1960 AND 2016
58%	DECREASE IN MALARIA MORTALITY AMONG UNDER-5 CHILDREN BETWEEN 1990 AND 2017
53 MILLION	TB DEATHS AVERTED FROM 200—2016 THROUGH SUCCESSFUL DIAGNOSIS AND TREATMENT
3 BILLION	CHILDREN HAVE BEEN IMMUNIZED AGAINST POLIO, WITH ONLY 22 CASES OF WILD POLIOVIRUS IN 2017
900,000	FEWER HIV/AIDS DEATHS IN 2016, COMPARED TO 2005
99.9%	REDUCTION OF GUINEA WORM CASES, FROM 3.5 MILLION IN 1986 TO ONLY 30 IN 2017

Change in Life Expectancy at Birth for World Bank Regions and High-Income Countries, 1960-2017

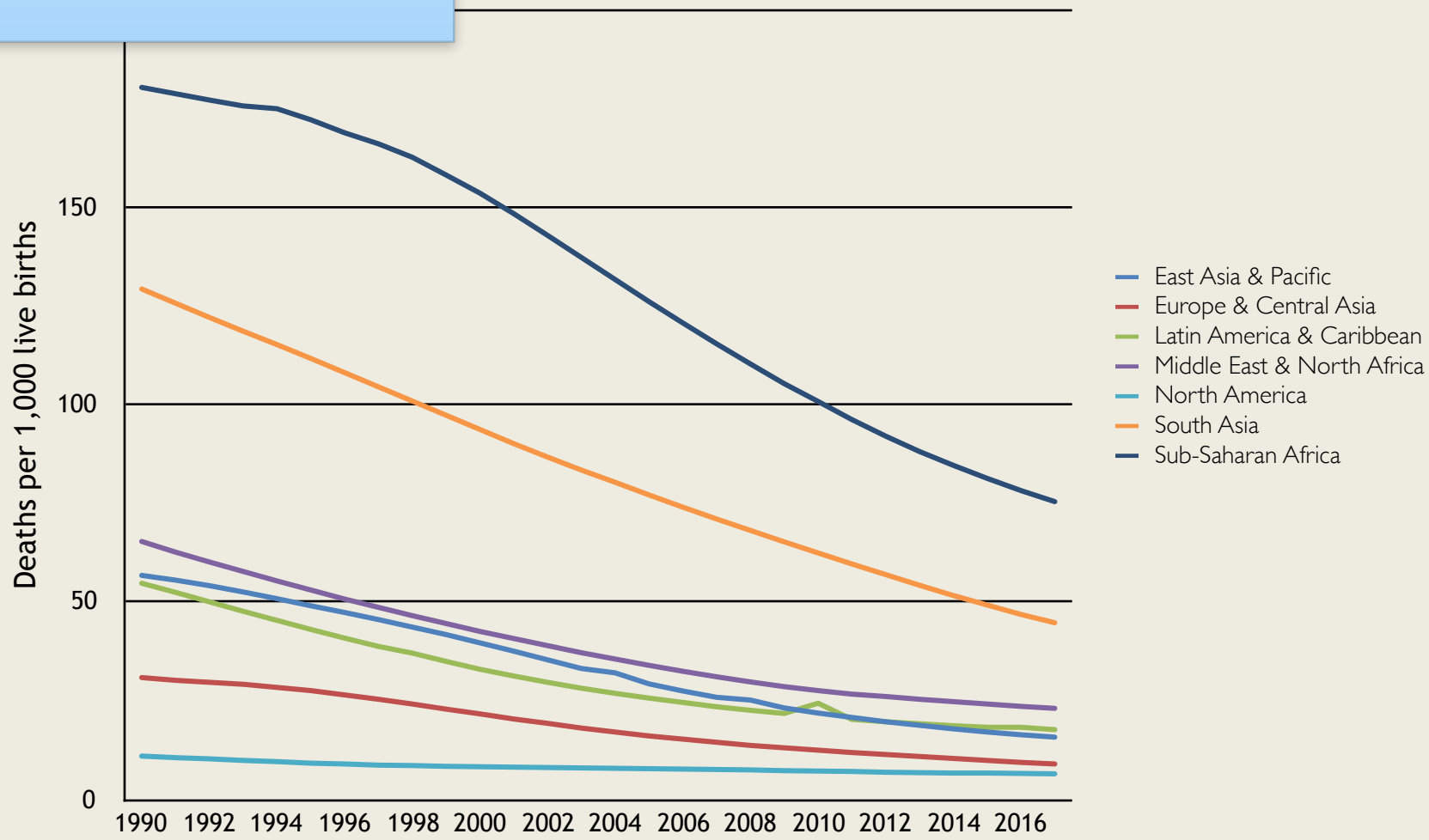


Source: The World Bank. (n.d.). Data: Life Expectancy at Birth (years). Retrieved from https://data.worldbank.org/indicator/SP.DYN.LE00.IN

Same here

Diksha Brahmbhatt
Did the same for this graph

r-Five Child Mortality, by World Bank
7



Source: World Bank. World Development Indicators. Available at: http://data.worldbank.org/indicator

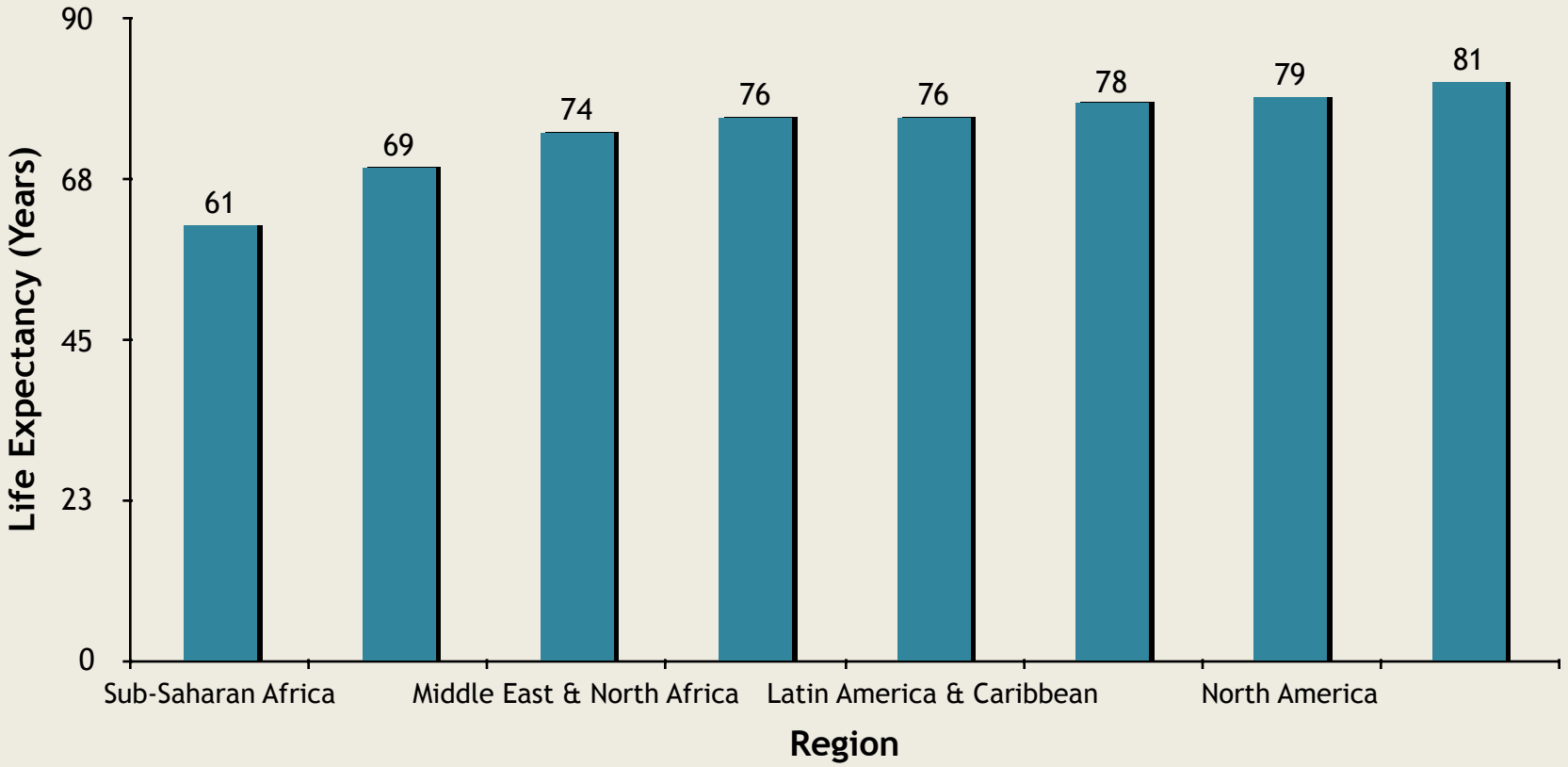
Some Less Good News

5.6 MILLION	UNDER-5 CHILD DEATHS IN 2016
1.3 MILLION	TB DEATHS AMONG HIV-NEGATIVE PEOPLE IN 2017, IN ADDITION TO 374,000 PEOPLE LIVING WITH HIV
~50%	SHARE OF CHILD DEATHS RELATED TO UNDERNUTRITION
435,000	MALARIA DEATHS IN 2017
940,000	DEATHS CAUSED BY AIDS IN 2017
303,000	MATERNAL DEATHS IN 2015
1.8 MILLION	NEW HIV INFECTIONS IN 2017
~ 1 BILLION	PEOPLE INFECTED WITH ROUNDWORM

Snapshot of Global Health Status: Key Health Status Indicators

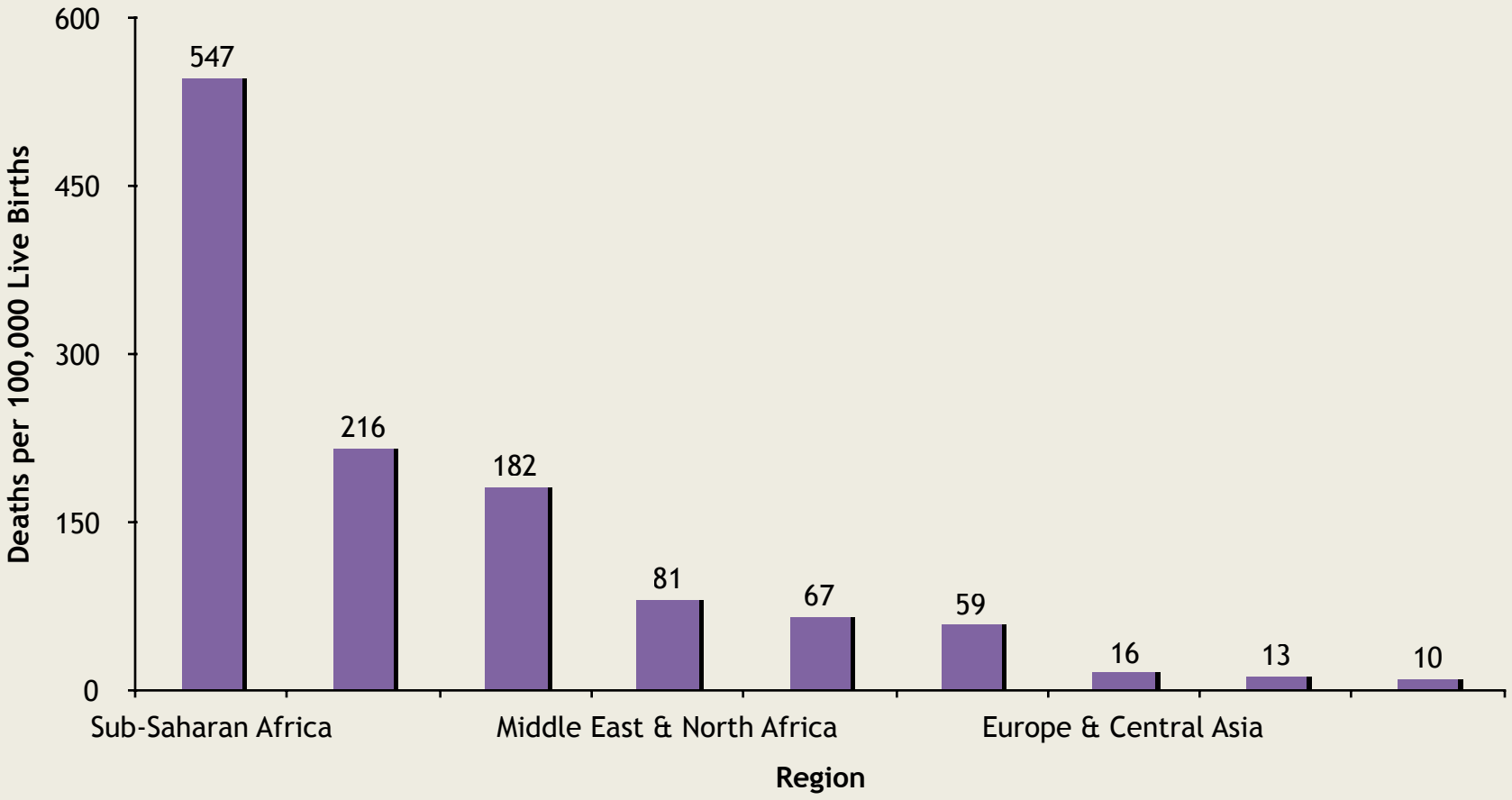
- Life expectancy
- Maternal mortality ratio
- Neonatal mortality rate
- Infant mortality rate
- Under-five mortality

Life Expectancy at Birth, By World Bank Regions and for High-Income Countries, 2017



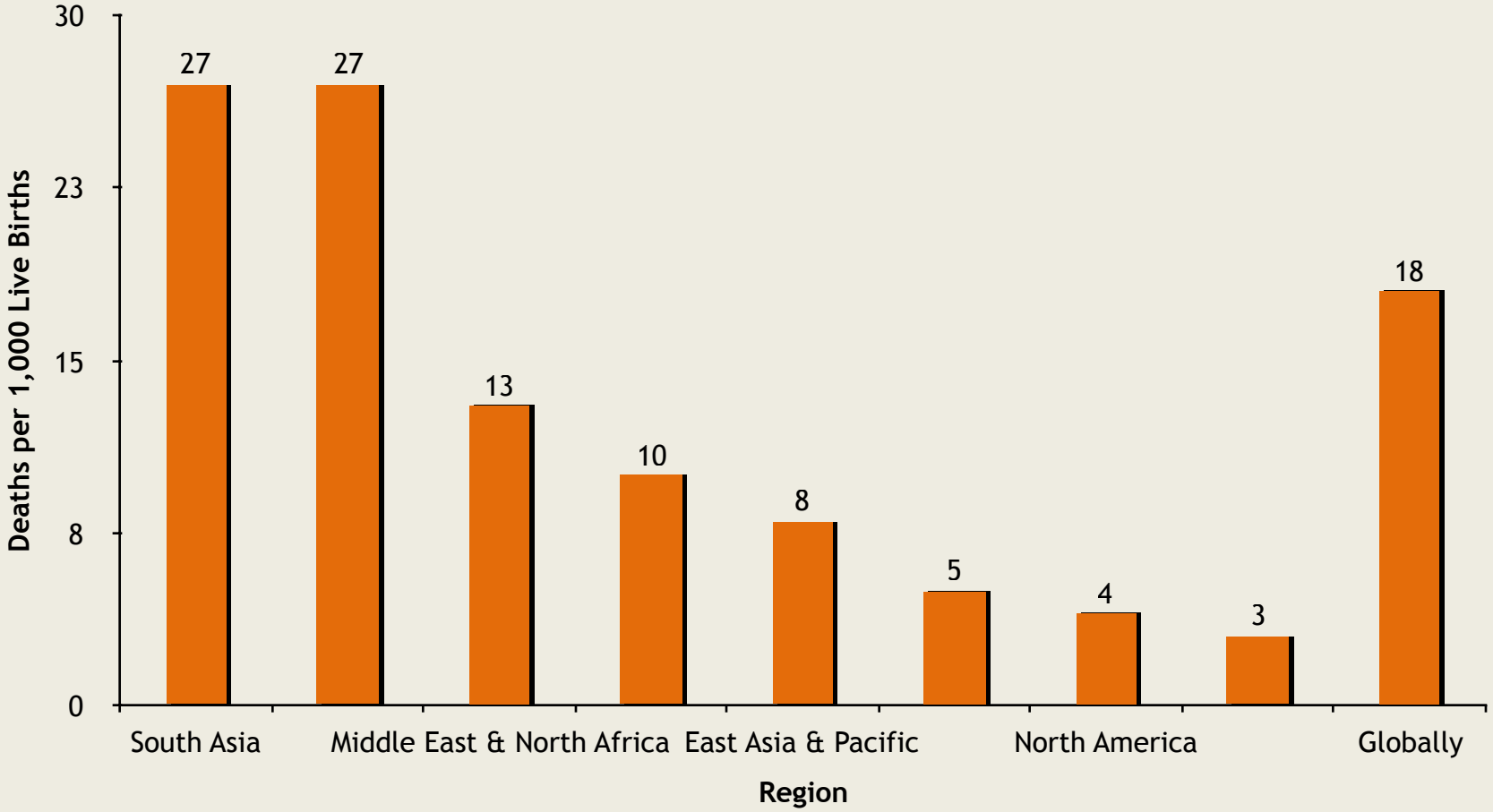
Source: World Bank. (n.d.). Data: Life expectancy at birth, total (years). Retrieved from https://data.worldbank.org/indicator/SP.DYN.LE00.IN

Maternal Mortality Ratios for World Bank Regions, High-Income Countries, and Globally, 2015



Source: Data from The World Bank. Data: Maternal mortality ratio. Data from the World Bank. http://data.worldbank.org/indicator/SH.STA.MMRT/countries/1W-8S-Z4-ZJ-XD-Z7-ZG?display=graph.

Neonatal Mortality Rates for World Bank Regions, High-Income Countries, and Globally, 2017

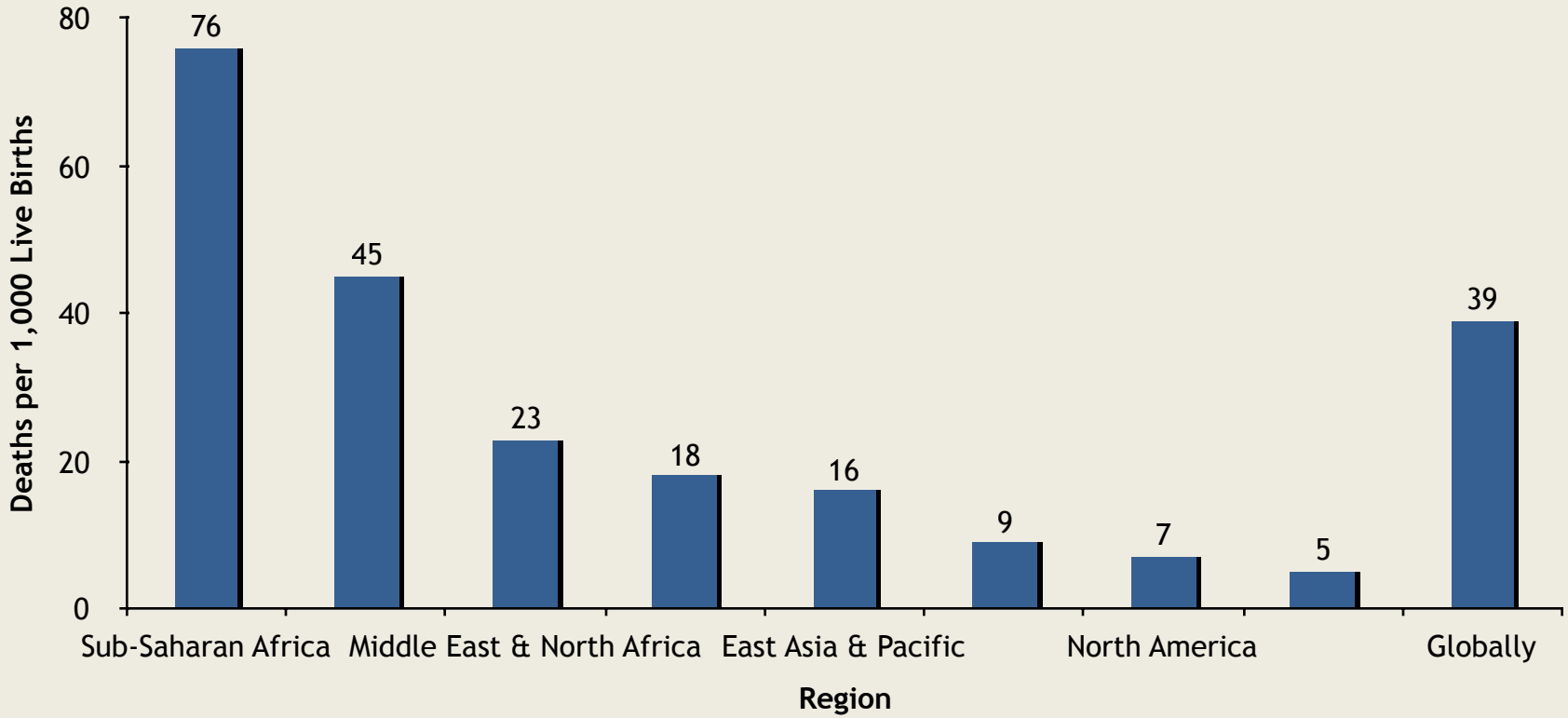


The World Bank. Data. *Mortality rate, neonatal (per 1,000 live births)*. Retrieved from https://data.worldbank.org/indicator/SH.DYN.NMRT?end=2016&locations=Z4-Z7-XU-ZG-8S-ZQ-ZJ&start=2016&view=bar

Infant Mortality Rates for World Bank Regions, High-Income Countries, and Globally, 2017

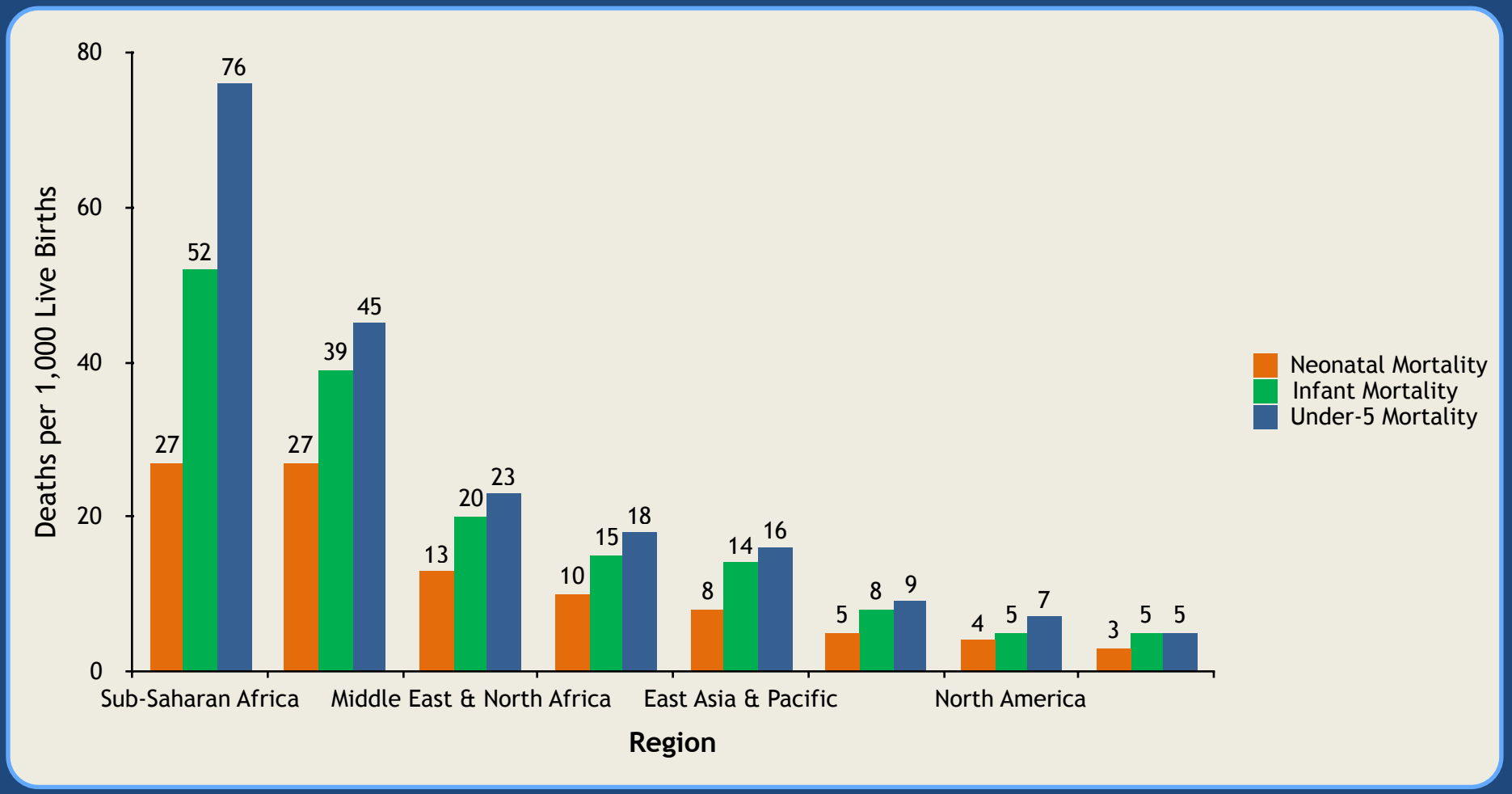
The World Bank. Data. *Mortality rate, infant (per 1,000 live births)*. Retrieved from https://data.worldbank.org/indicator/SP.DYN.IMRT.IN?end=2016&locations=Z4-ZG-8S-ZJ-Z7-ZQ-

Under-Five Child Mortality Rates for World Bank Regions, High-Income Countries, and Globally, 2017



The World Bank. Data. Mortality rate, under-5 (per 1,000 live births). Retrieved from https://data.worldbank.org/indicator/SH.DYN.MORT?end=2016&locations=Z4-Z7-ZJ-ZG-8S-XU-

Neonatal, Infant, and Under-Five Child Mortality Rates, by World Bank Region and for High-Income Countries, 2017



The World Bank. Data. Mortality rate, infant (per 1,000 live births), Mortality rate, under-5 (per 1,000 live births), Mortality rate, neonatal (per 1,000 live births). Retrieved from https://

BURDEN OF DISEASE

Leading Causes of Death for Low-Income Countries and High-Income Countries, 2017

Rank	Low-Income Countries
1	Neonatal disorders
2	Lower respiratory infections
3	Diarrheal diseases
4	Ischemic heart disease
5	Malaria
6	Tuberculosis
7	Stroke
8	HIV/AIDS
9	Congenital defects
10	Road injuries

Rank	High-Income Countries
1	Ischemic heart disease
2	Alzheimer's disease
3	Stroke
4	Tracheal, bronchus, and lung cancer
5	COPD
6	Lower respiratory infections
7	Colon and rectum cancer
8	Chronic kidney disease
9	Diabetes
10	Cirrhosis

Institute of Health Metrics and Evaluation. (n.d.). GBD Compare: Viz Hub. Retrieved from https://vizhub.healthdata.org/gbd-compare/.

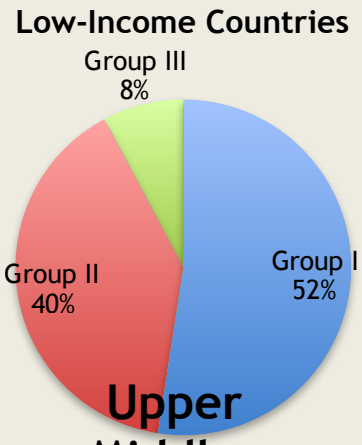
Leading Causes of Death, Globally, 1990 and 2017

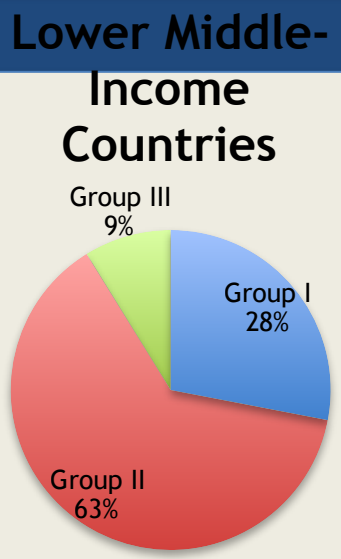
1990	
Rank	Disease
1	Ischemic heart disease
2	Stroke
3	Lower respiratory infections
4	Diarrheal diseases
5	COPD
6	Tuberculosis
7	Neonatal preterm birth
8	Road injuries
9	Lung cancer
10	Alzheimer's disease and other dementias

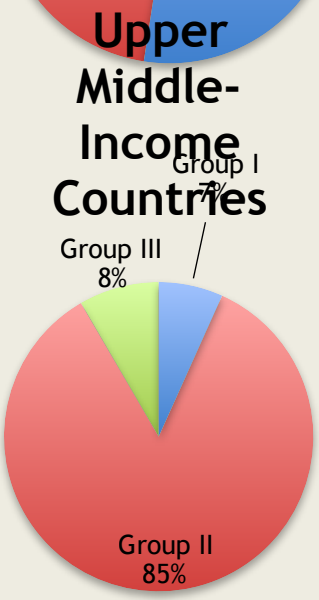
2017	
Rank	Disease
1	Ischemic heart disease
2	Stroke
3	COPD
4	Lower respiratory infections
5	Alzheimer's disease and other dementias
6	Tracheal, bronchus, and lung cancer
7	Neonatal disorders
8	Diarrheal diseases
9	Diabetes
10	Cirrhosis

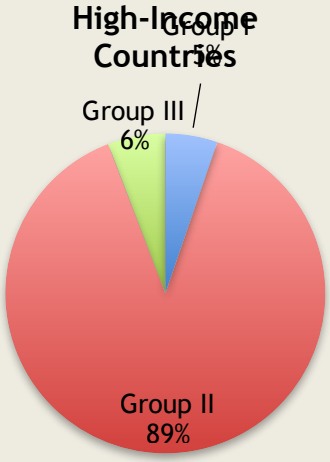
Institute of Health Metrics and Evaluation. (n.d.). GBD Compare: Viz Hub. Retrieved from https://vizhub.healthdata.org/gbd-compare/.

Distribution of the Cause of Death, by World Bank Country Income Group, 2017









Group I: Communicable, Maternal, Neonatal, and Nutritional Causes

Group II: Non-Communicable Diseases

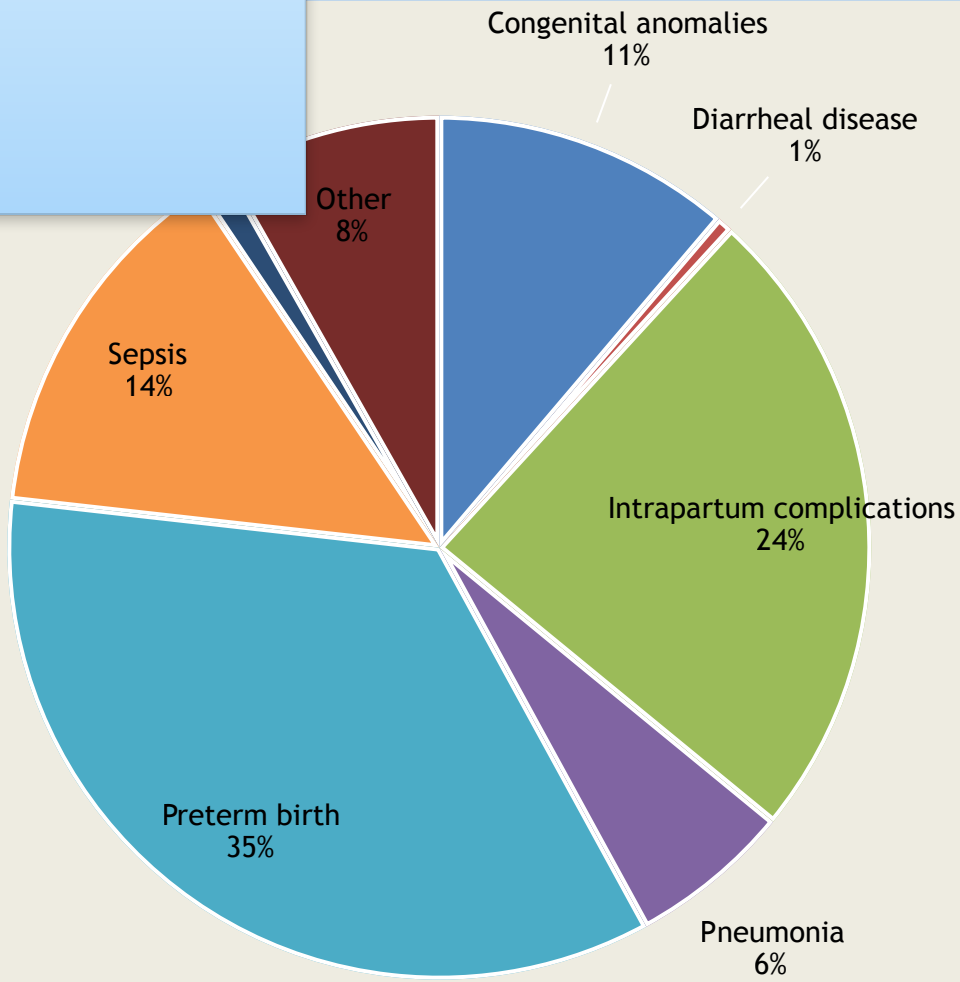
Group III: Injuries

Institute of Health Metrics and Evaluation. (n.d.). GBD Compare: Viz Hub. Retrieved from https://vizhub.healthdata.org/gbd-compare/.

Causes of Neonatal Death, Globally, By Percentage, 2017

Should we use this one in the MCH talk? Where is birth asphyxia counted?

Diksha Brahmbhatt

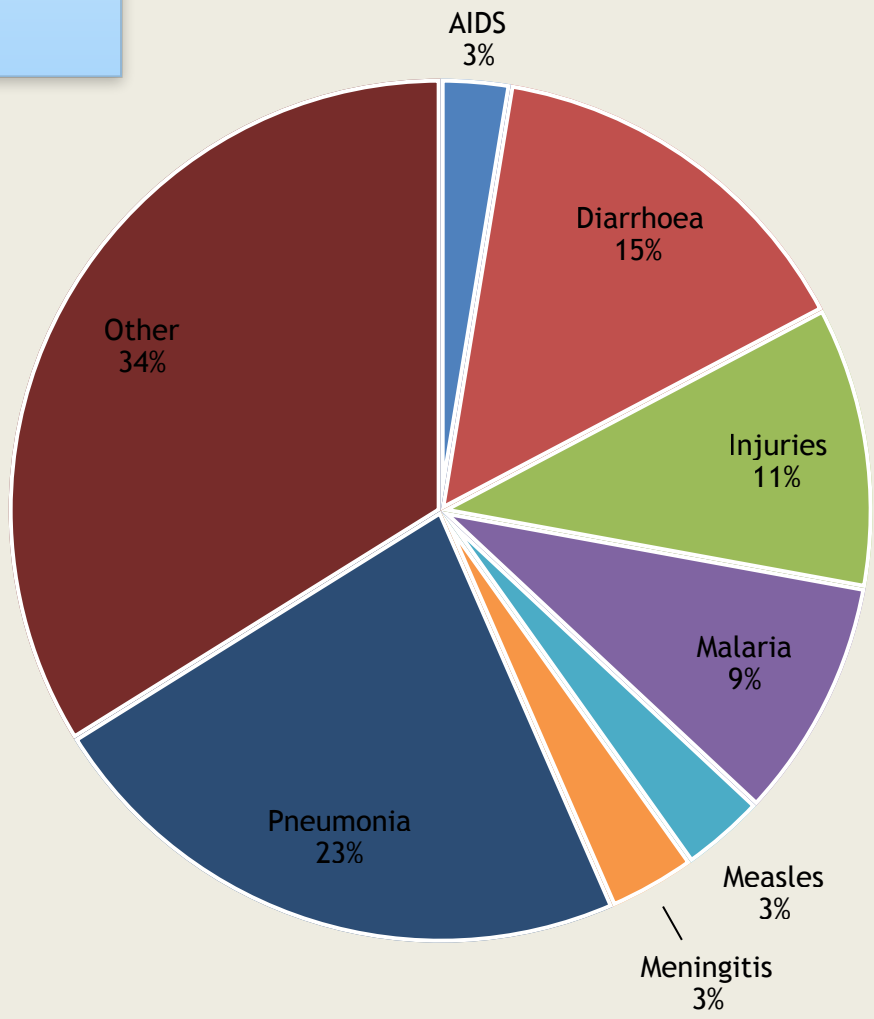


UNICEF. (2017). Child Mortality Estimates. Retrieved from https://data.unicef.org/topic/child-survival/under-five-mortality/#data.

Same question here

Richard Skolnik
Bout using this one in the other slide set

onatal Under-Five Child Death By Percentage, 2017



UNICEF. (2017). Child Mortality Estimates. Retrieved from https://data.unicef.org/topic/child-survival/under-five-mortality/#data.

Leading Causes of DALYs for Low-Income Countries and High-Income Countries, 2017

Rank	Low-Income Countries
1	Neonatal disorders
2	Lower respiratory infections
3	Malaria
4	Diarrheal diseases
5	HIV/AIDS
6	Congenital defects
7	Tuberculosis
8	Ischemic heart disease
9	Protein energy malnutrition
10	Meningitis

Rank	High-Income Countries
1	Ischemic heart disease
2	Low back pain
3	Stroke
4	Tracheal, bronchus, and lung cancer
5	COPD
6	Diabetes
7	Alzheimer's disease
8	Headache disorders
9	Falls
10	Drug use disorders

Institute of Health Metrics and Evaluation. (n.d.). GBD Compare: Viz Hub. Retrieved from https://vizhub.healthdata.org/gbd-compare/.

Leading Causes of DALYs, Globally, 1990 and 2017

1990	
Rank	Disease
1	Lower respiratory infections
2	Diarrheal diseases
3	Ischemic heart disease
4	Neonatal preterm birth
5	Stroke
6	Measles
7	Congenital defects
8	Neonatal encephalopathy
9	Tuberculosis
10	Road injuries

2017	
Rank	Disease
1	Neonatal disorders
2	Ischemic heart disease
3	Stroke
4	Lower respiratory infections
5	COPD
6	Diarrheal diseases
7	Road injuries
8	Diabetes
9	Low back pain
10	Congenital birth defects

Institute of Health Metrics and Evaluation. (n.d.). GBD Compare: Viz Hub. Retrieved from https://vizhub.healthdata.org/gbd-compare/.

RISK FACTORS

Leading Risk Factors for Death in Low-Income Countries and High-Income Countries, 2017

Rank	Low Income Countries
1	Low birth weight and short gestation
2	High blood pressure
3	Child growth failure
4	Particulate matter pollution
5	High fasting plasma glucose
6	Unsafe water
7	Unsafe sex
8	Unsafe sanitation
9	No access to handwashing facility
10	Smoking

Rank	High-Income Countries
1	High blood pressure
2	Smoking
3	High fasting plasma glucose
4	High body-mass index
5	High LDL cholesterol
6	Impaired kidney function
7	Low whole grains
8	Alcohol use
9	High sodium
10	Particulate matter pollution

Institute of Health Metrics and Evaluation. (n.d.). GBD Compare: Viz Hub. Retrieved from https://vizhub.healthdata.org/gbd-compare/.

Leading Risk Factors for Deaths, Globally, 1990 and 2017

1990	
Rank	Risk Factor
1	High blood pressure
2	Smoking
3	Ambient particulate matter
4	Child growth failure
5	High fasting plasma glucose
6	Low birth weight and short gestation
7	High cholesterol
8	Diet high in sodium
9	High body-mass index
10	Diet low in whole grains

2017	
Rank	Risk Factor
1	High blood pressure
2	Smoking
3	High fasting plasma glucose
4	High body-mass index
5	Particulate matter pollution
6	High LDL cholesterol
7	Diet high in sodium
8	Diet low in whole grains
9	Alcohol use
10	Impaired kidney function

Institute of Health Metrics and Evaluation. (n.d.). GBD Compare: Viz Hub. Retrieved from https://vizhub.healthdata.org/gbd-compare/.

Leading Risk Factors for DALYs in Low-Income Countries and High-Income Countries, 2017

Rank	Low-Income Countries
1	Low birth weight and short gestation
2	Child growth failure
3	Particulate matter pollution
4	Unsafe water
5	Unsafe sanitation
6	No access to handwashing facility
7	Unsafe sex
8	High blood pressure
9	High fasting plasma glucose
10	Vitamin A deficiency

Rank	High-Income Countries
1	Smoking
2	High fasting plasma glucose
3	High body-mass index
4	High blood pressure
5	Alcohol use
6	High LDL cholesterol
7	Drug use
8	Low whole grains
9	Particulate matter pollution
10	Impaired kidney function

Institute of Health Metrics and Evaluation. (n.d.). GBD Compare: Viz Hub. Retrieved from https://vizhub.healthdata.org/gbd-compare/.

Leading Risk Factors for DALYs, Globally, 1990 and 2017

Rank	1990
	Risk Factor
1	Child growth failure
2	Low birth weight and short gestation
3	Particulate matter pollution
4	Smoking
5	High systolic blood pressure
6	Unsafe water source
7	Unsafe sanitation
8	Vitamin A deficiency
9	High fasting plasma glucose
10	No access to handwashing facility

Rank	2017
	Risk Factor
1	High blood pressure
2	Smoking
3	Low birth weight and short gestation
4	High fasting plasma glucose
5	High body-mass index
6	Particulate matter pollution
7	Alcohol use
8	Child growth failure
9	High LDL cholesterol
10	Diet low in whole grains

Institute of Health Metrics and Evaluation. (n.d.). GBD Compare: Viz Hub. Retrieved from https://vizhub.healthdata.org/gbd-compare/.

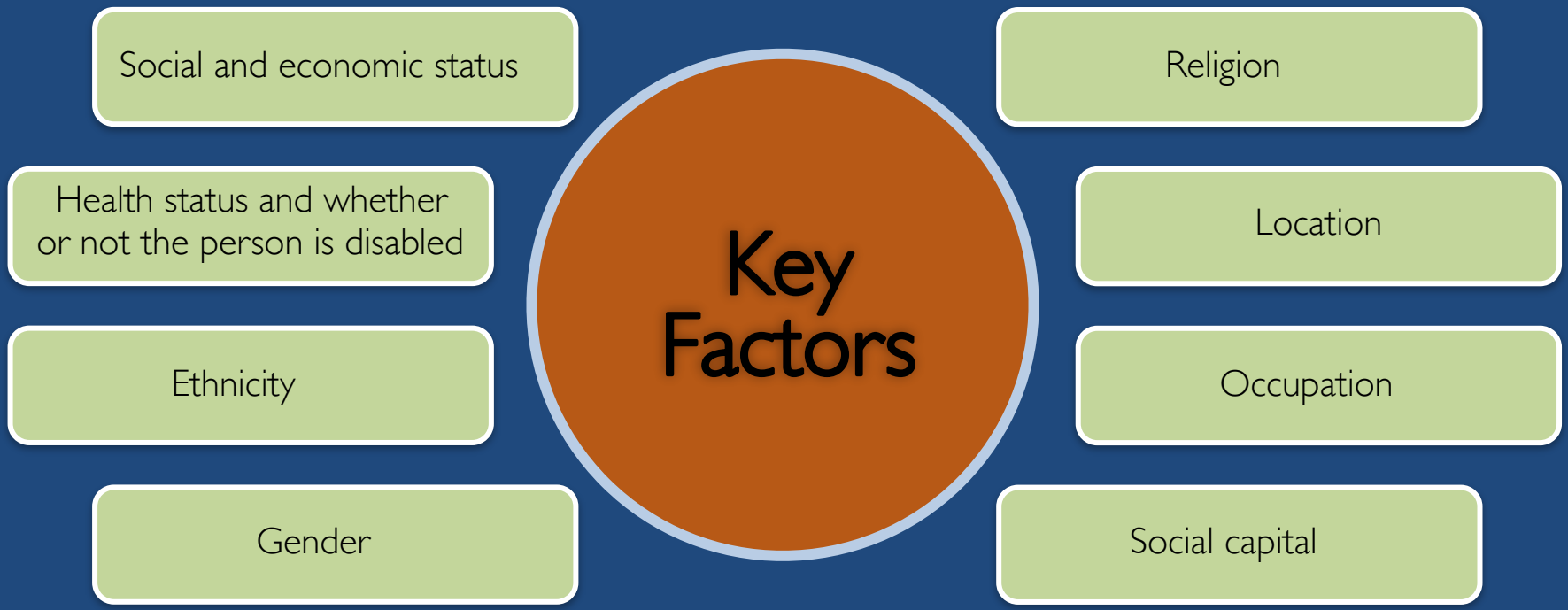
HEALTH EQUITY

Equity, Inequality, and Health Disparities

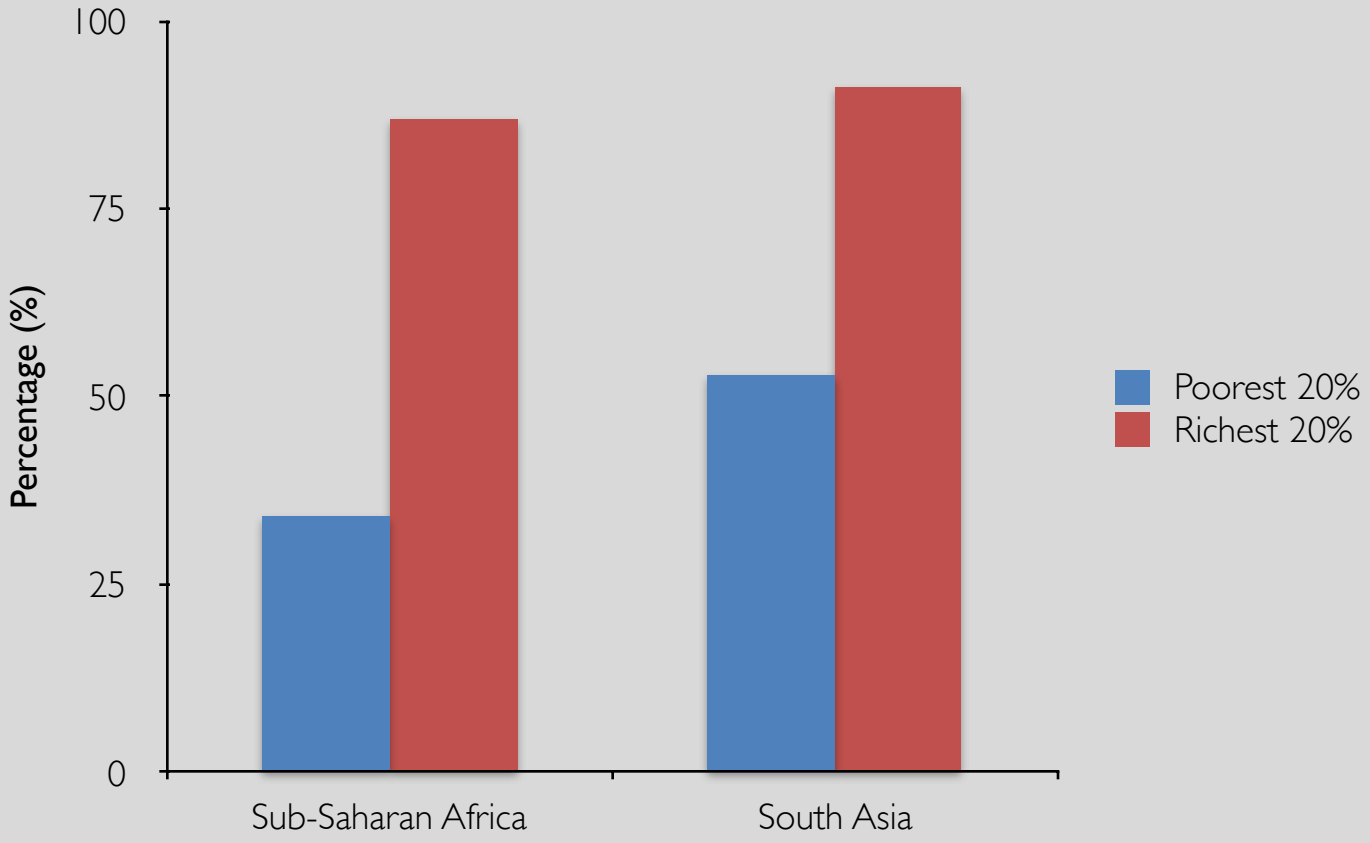
Equity	• Includes fairness concerns about achievement of health and the capability to achieve good health, not just the distribution of health care
Inequality	• Differences in health status or in the distribution of health determinants between different population groups
Health Disparities	• Differences in health that are closely linked with social or economic disadvantage

Sources: Equity from Whitehead, M. (1992). The concepts and principles of equity and health. International Journal of Health Services, 22, 429–445; Inequality from World Health Organization. (n.d.). Health impact assessment. Glos- sary of terms used. Retrieved December 4, 2014, from http://www.who.int /hia/about/glos/en/index1.html; Health Disparity from Centers for Disease Control and Prevention. Social determinants of health. Definitions. Retrieved December 4, 2014, from http://www.cdc.gov /socialdeterminants/Definitions.html.

Key Factors Associated with Health Disparities

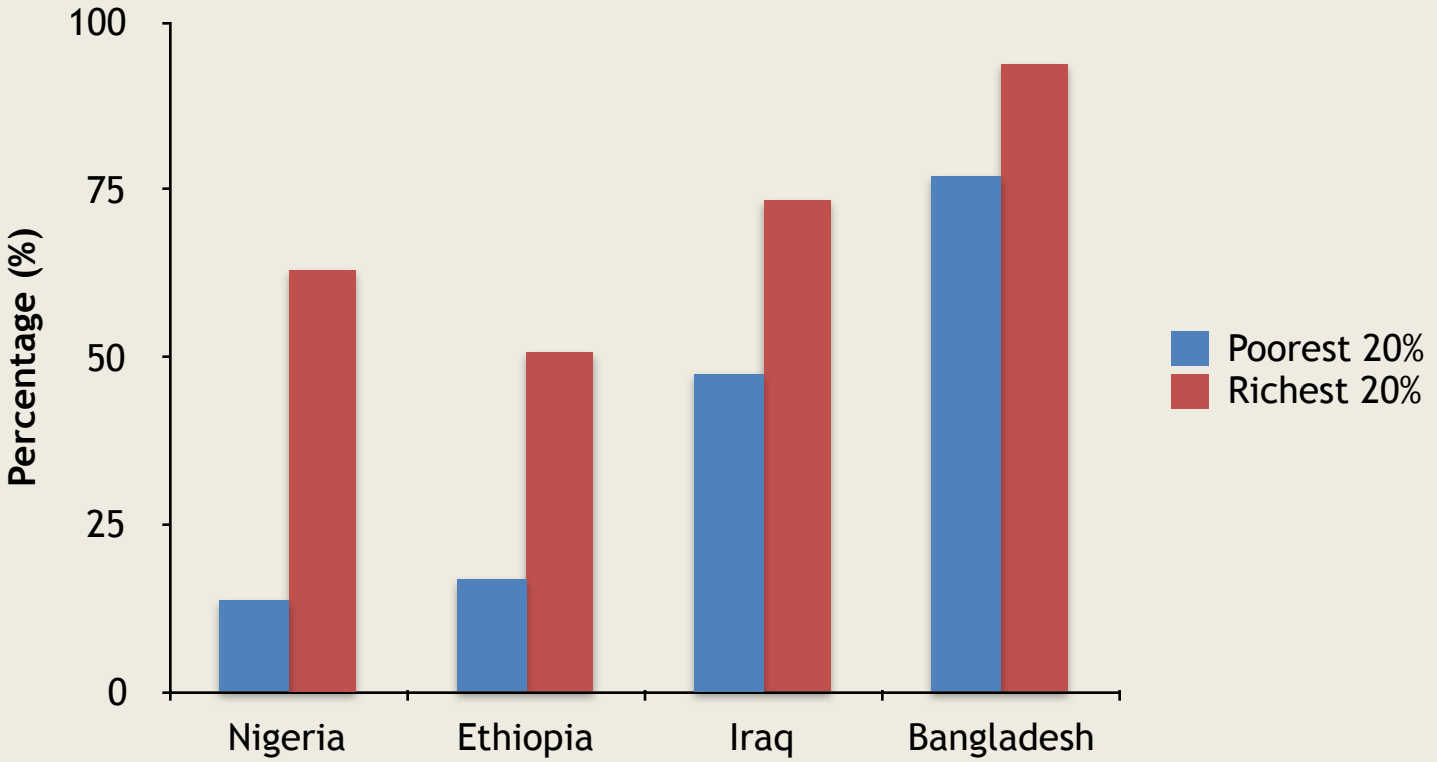


Percentage of Births Attended by Skilled Personnel, by Income Quintile, 2011-2016, for Selected Regions



UNICEF. (2017). *The State of the World's Children 2017: Children in a Digital World.* Retrieved from https://www.unicef.org/publications/files/SOWC_2017_ENG_WEB.pdf.

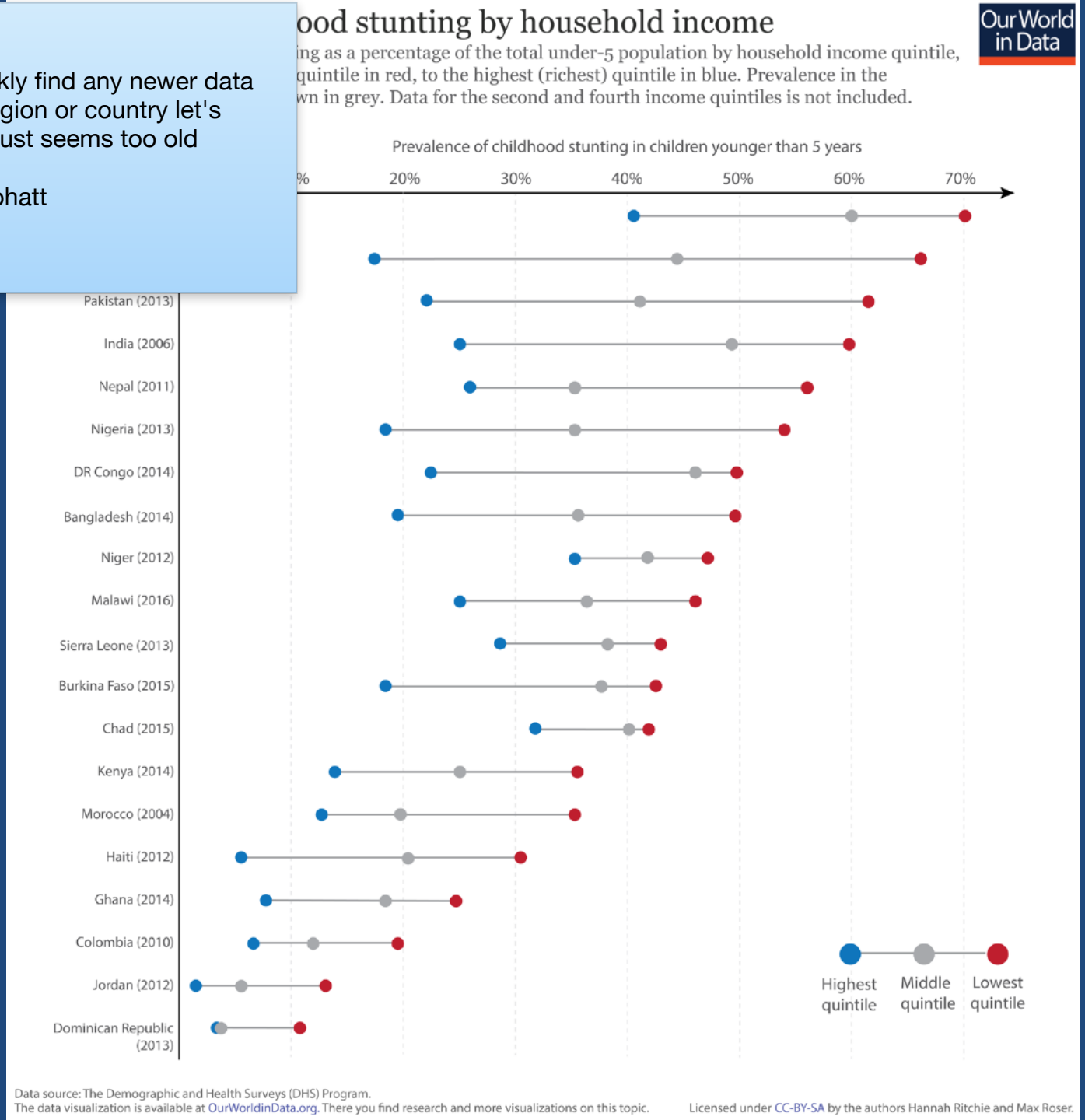
Coverage of Measles Immunization by Income Quintile, for Selected Regions, 2011



Restrepo-Méndez, M. C., Barros, A. J., Wong, K. L., Johnson, H. L., Pariyo, G., França, G. V., ... & Victora, C. G. (2016). Inequalities in full immunization coverage: trends in low-and middle-income countries. *Bulletin of the World Health Organization*, *94*(11), 794.

If you can quickly find any newer data even for one region or country let's use this .. this just seems too old

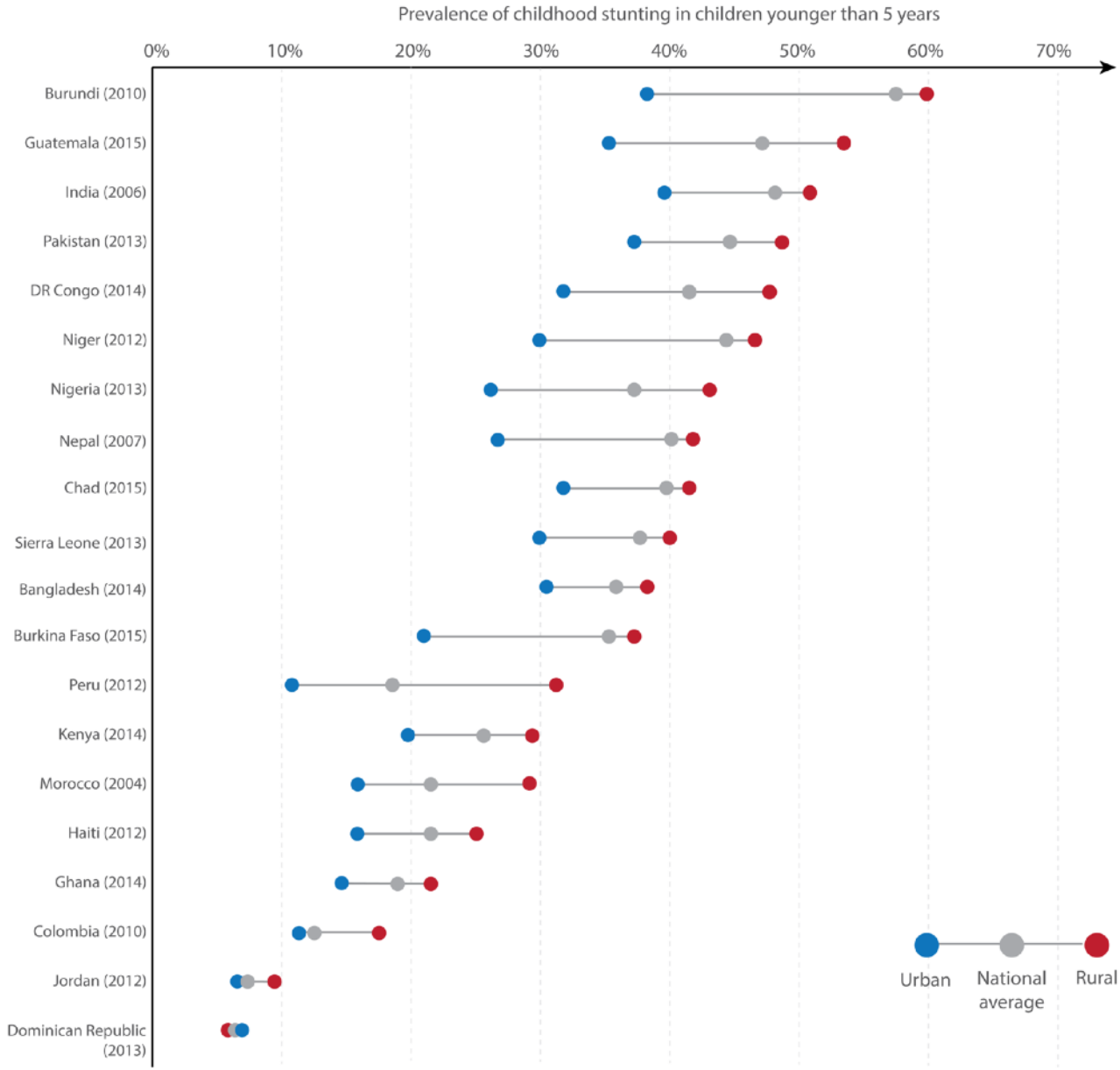
Diksha Brahmbhatt



Prevalence of childhood stunting by rural-urban setting

The prevalence of childhood stunting as a percentage of the total under-5 population in rural (shown in red) relative to urban settings (shown in blue). The average prevalence of stunting for each country is also shown in grey.

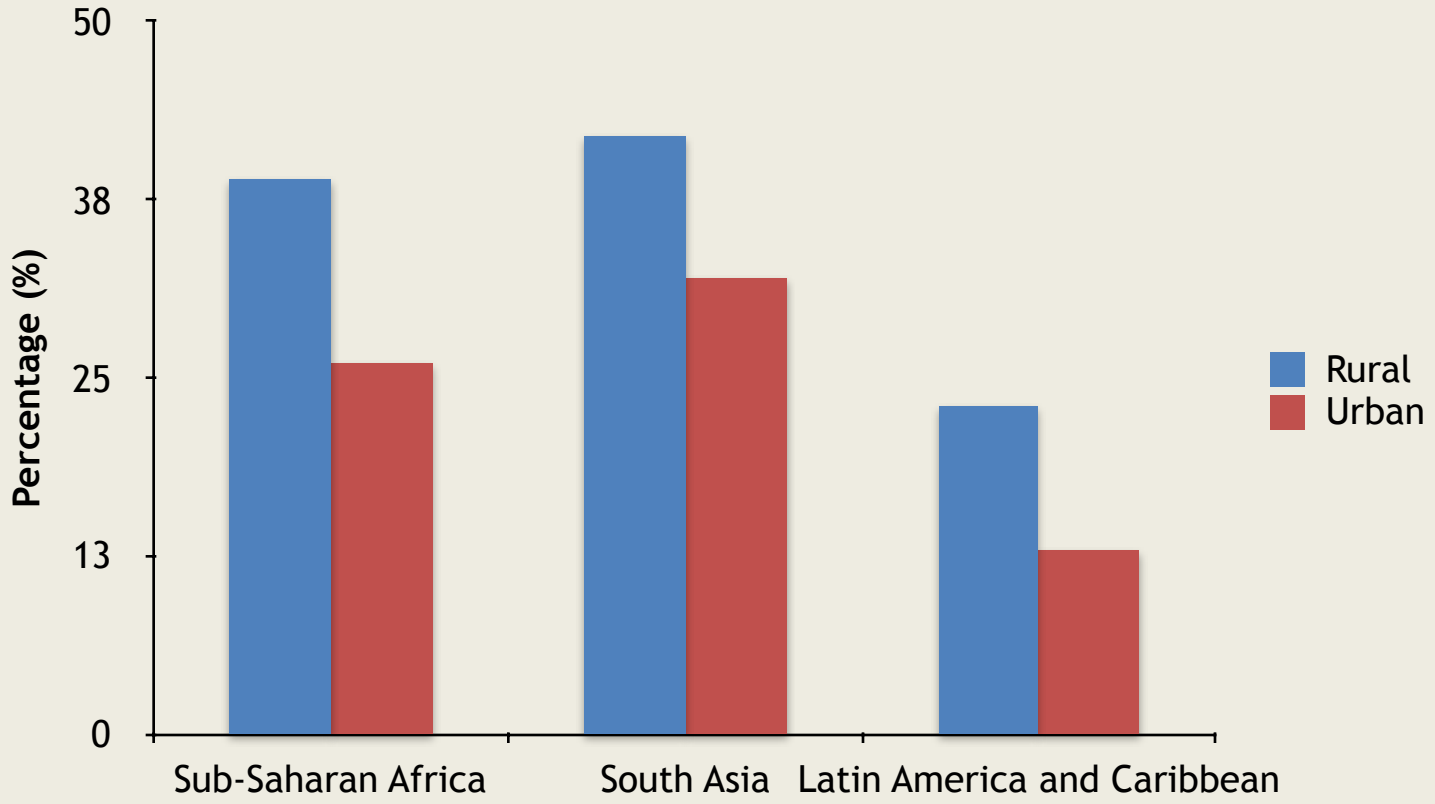
Our World in Data



Data source: The Demographic and Health Surveys (DHS) Program.
The data visualization is available at OurWorldinData.org. There you find research and more visualizations on this topic.

Licensed under CC-BY-SA by the authors Hannah Ritchie and Max Roser.

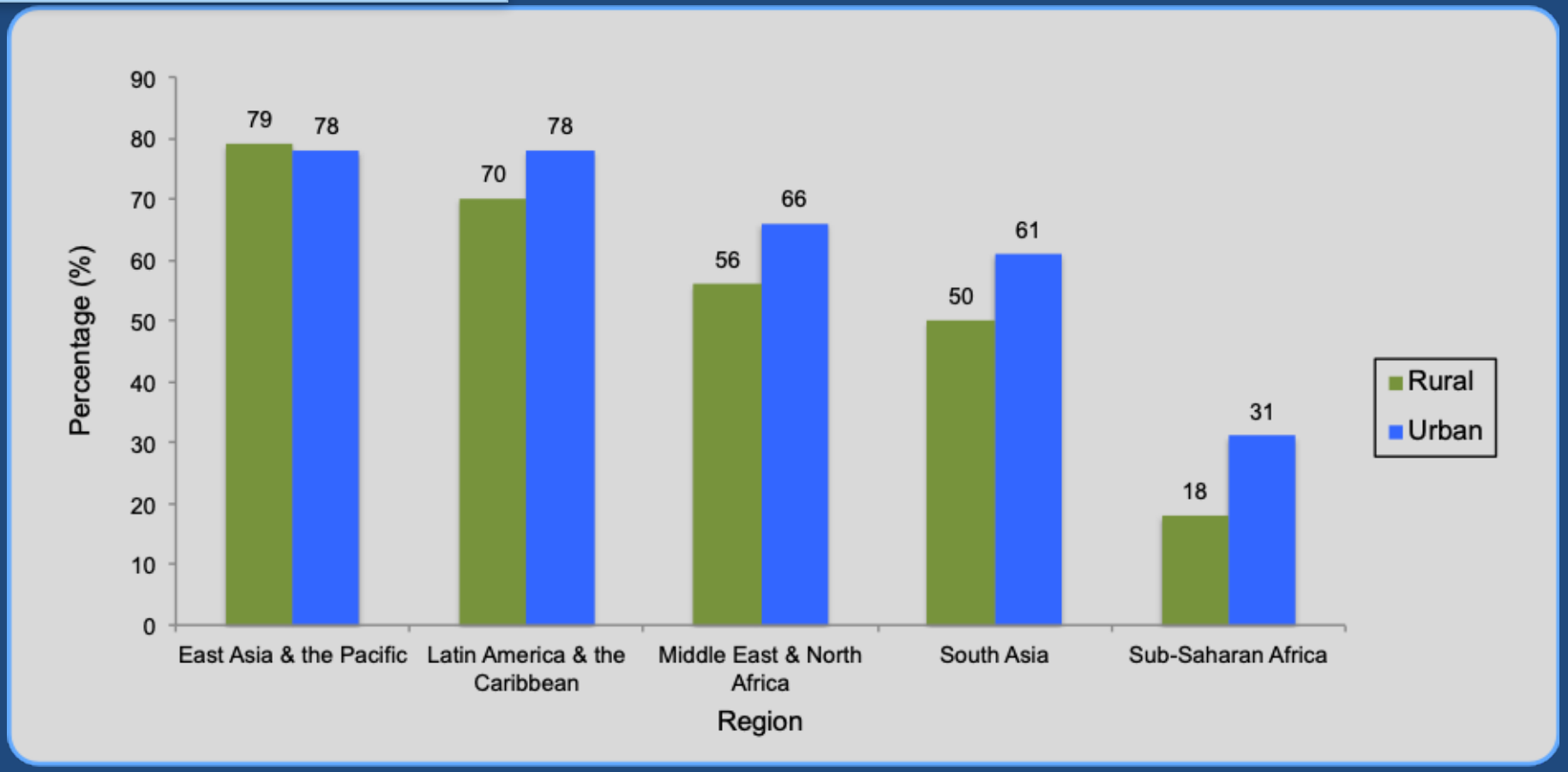
Percentage of Stunted Children, 0-5 years, by Location, for Selected Regions, 2011-2016



UNICEF. (2017). *The State of the World's Children 2017: Children in a Digital World.* Retrieved from https://www.unicef.org/sowc2017/.

Update for some countries of regions if you can find the data in 5 minutes or less .. otherwise leave alone since it comes from a classic study

15-49, Married or in Union, Who Are Using ation, for World Bank Regions, 2003-2009



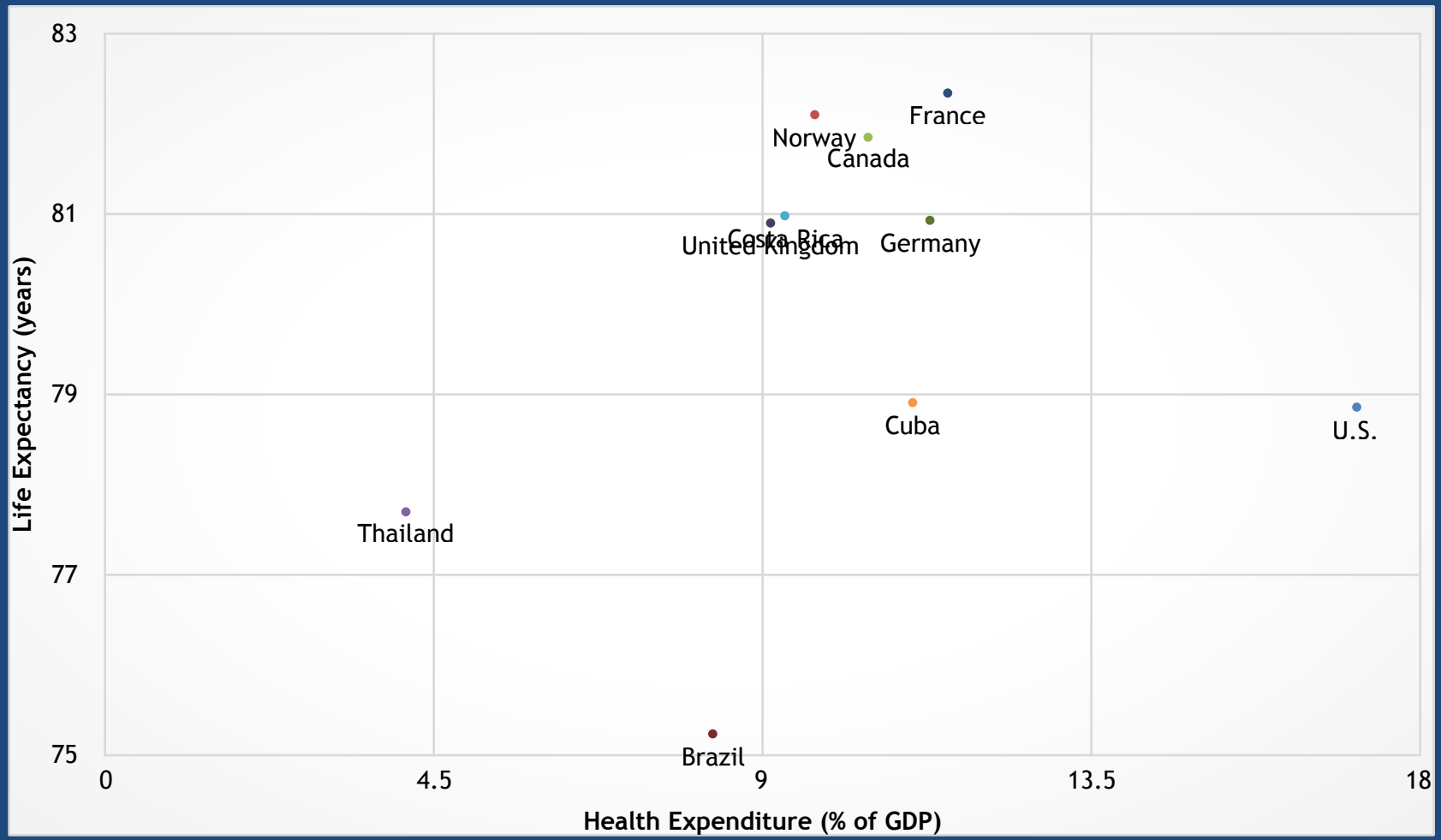
Source: UNICEF. Progress for Children: Achieving the MDGs with Equity. Available at: http://www.unicef.org/media/files/Progress_for_Children-No.9_EN_081710.pdf. Accessed September 17, 2010. ; Adapted from Skolnik, R. L. (2015). Global health 101. Burlington, MA: Jones & Bartlett Learning. p.62.

HEALTH SYSTEMS OVERVIEW

Perspective/Metric

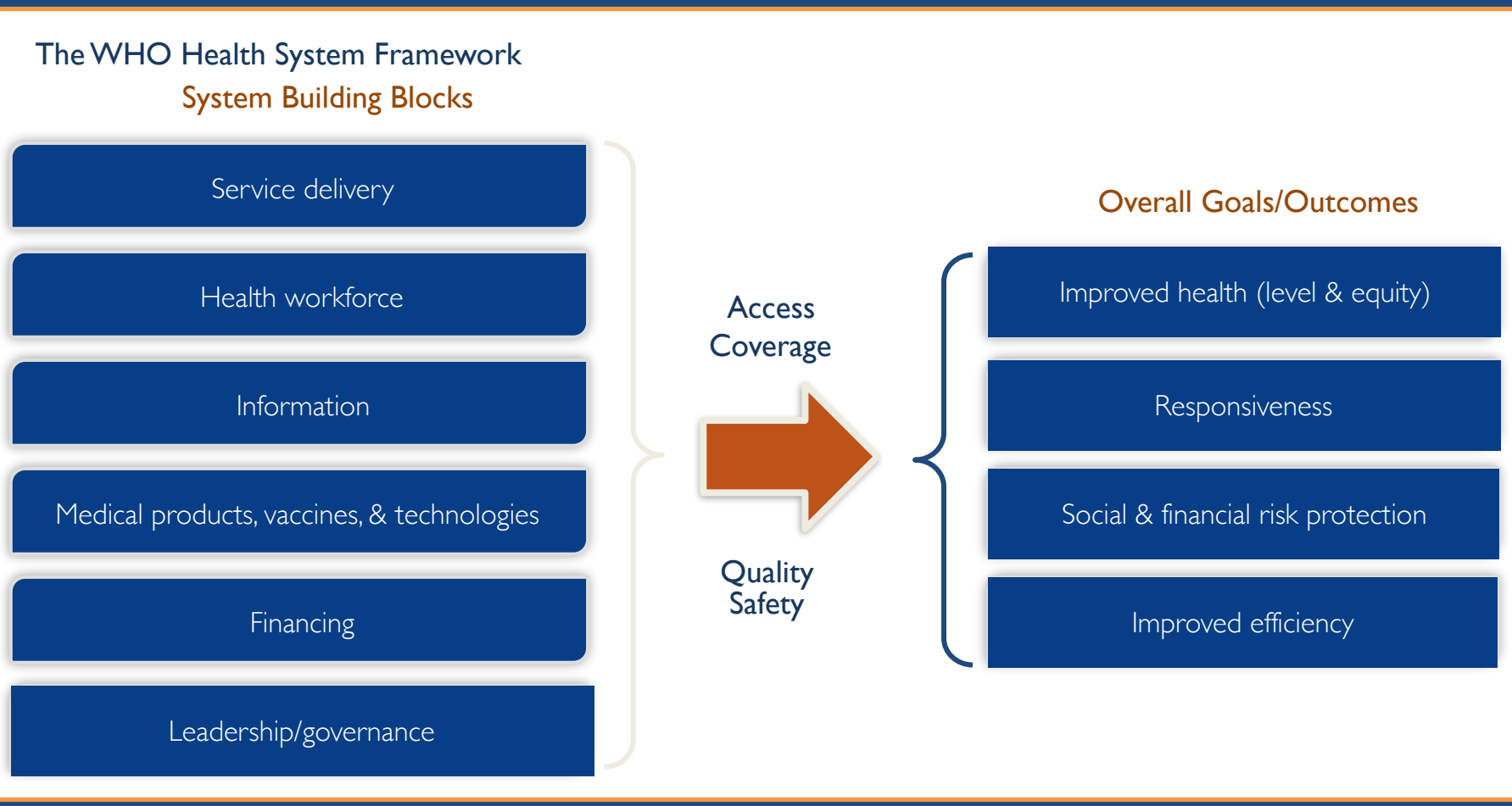
The goal is to achieve the **MAXIMUM** health for the population, in **FAIRLY** distributed ways, for the **LEAST** cost.

Life Expectancy vs. Health Expenditure (% of GDP), 2015-2016



Source: World Bank Data. Health Expenditure, total (% of GDP) and Life Expectancy at Birth. Accessed March 15, 2018, from http://www.worldbank.org/

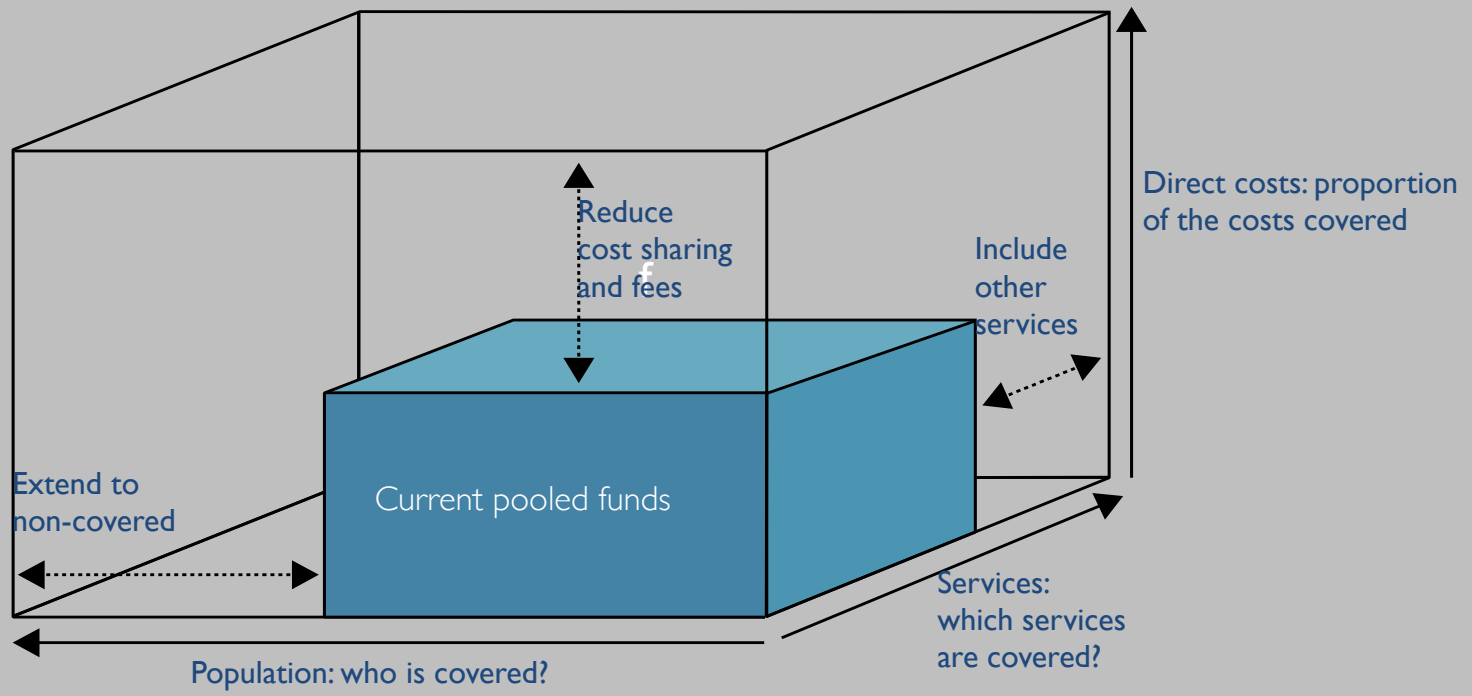
WHO Health System Framework



Adapted from: World Health Organization. Everybody's business: Strengthening health systems to improve health outcomes: WHO's framework for action. Geneva: World Health Organization; 2007.

The WHO Universal Health Coverage Framework

Three dimensions to consider when moving towards universal coverage



Adapted from: World Health Organization. Everybody's business: Strengthening health systems to improve health outcomes: WHO's framework for action. Geneva: World Health Organization; 2007.

Many Countries Pursuing Reforms at Various Stages

TABLE 6-8 Framework for Progress Toward Universal Health Coverage

	Group 1	Group 2	Group 3	Group 4
Status of UHC policies and programs	Agenda setting: piloting new programs and developing new systems	Initial programs and systems in place, implementation in progress; need for further systems development and capacity building to address remaining uncovered population	Strong political leadership and citizen demand lead to new investments and UHC policy reforms; systems and programs develop to meet new demands	Mature systems and programs: adaptive systems enable continuous adjustments to meet changing demands
Status of health coverage	Low population coverage at the early stage of UHC	Significant share of population gains access to services with financial protection but population coverage is not yet universal and coverage gaps in access to services and financial protection remain	Universal population coverage achieved but countries are focusing on improving financial protection and quality of services	Universal coverage sustained with comprehensive access to health services and effective financial protection
Countries	Bangladesh Ethiopia	Ghana Indonesia Peru Vietnam	Brazil Thailand Turkey	France Japan

Reproduced from Maeda, A., Araujo, E., Cashin, C., Harris, J., Ikegami, N., & Reich, M. R. (2014). *Universal health coverage for inclusive and sustainable development: A synthesis of 11 country case studies.* Washington, DC: World Bank Group. Retrieved from http://documents.worldbank.org/curated/en/575211468278746561/Universal-health-coverage-for-inclusive-and-sustainable-development-a-synthesis-of-11-country-case-studies

ADDRESSING CRITICAL CHALLENGES

Critical Challenges

- Key intersectoral issues
- Weak health systems and the lack of universal health coverage
- Health disparities
- The unfinished agenda
- Noncommunicable diseases
- Risks
- Other public goods

Key Intersectoral Issues

- Water, sanitation, and hygiene
- Tobacco
- Overnutrition/obesity
- Girls' Education

Addressing Key Intersectoral Issues

- Promote handwashing and increase access to clean water
- MPower package on tobacco and related package on alcohol
- Tax food and beverages high in sugar
- Cash transfers for girls' education

Key Health Systems Issues

- Enhance basic functions
- Strengthen workforce
- Improve effectiveness and efficiency
- Move toward universal coverage

Addressing Key Health Systems Issues

- Task-shifting
- Contracting in & contracting out
- Results based financing (RBF)
- Cash transfers (CCTs)
- Phase implementation

Key Challenges in Inequality and Inequity

- Health status
- Access to health services
- Coverage of health services
- Protection from financial risks because of health costs
- The extent to which the approach to financing health is fair
- The distribution of health benefits

Addressing Inequality and Inequity

- Measure
- Focus on marginalized groups
- Evaluate from an equity perspective

The Unfinished Agenda: Key Maternal Health Challenges

- Gender inequalities
- Child marriage
- Delaying age of first birth
- Access to contraception
- Complications during childbirth, such as maternal death and morbidity

Addressing Maternal Health

- Improve nutrition of adolescent girls
- Community-based interventions aimed at delaying age at marriage and first birth
- Improve access to culturally appropriate modern contraceptives & education on three-year birth intervals
- Promote skilled attendants at delivery
- Increase access and adherence to prenatal care: including micronutrient supplementation, monitoring of hypertension & diabetes, & tetanus vaccination
- Ensure emergency obstetric care available
- Improve follow-up of post-partum care & counseling

The Unfinished Agenda: Key Neonatal Health Challenges

- Nutritional status of mother
- Low birthweight
- Prematurity
- Child caring practices
- Deliveries attended by skilled birthing attendants

Addressing Neonatal Health

- Ensure healthy mothers, who are immunized against tetanus
- Ensure attended delivery with emergency care available
- Promote keeping the baby warm
- Increase awareness of the benefits of kangaroo mother care
- Monitor vaccination
- Promote immediate and exclusive breastfeeding on a local and societal level
- Implement community-based diagnosis & treatment of pneumonia
- Train community health workers on referral for emergency care if needed for sepsis, etc.

The Unfinished Agenda: Key Child Health Challenges

- Maternal health & neonatal health interventions
- Exclusive breastfeeding for six months and hygienic introduction of a diverse complementary diet
- Mother to child transmission of HIV
- Malaria
- Vaccine preventable diseases
- Hygienic introduction of a diverse complementary diet
- Diarrheal diseases
- Micronutrient deficiencies

Addressing Child Health Challenges

- Support maternal health & neonatal health interventions
- Promote exclusive breastfeeding for six months
- Prevention of maternal to child transmission of HIV
- Ensure early confirmed diagnosis & treatment for malaria
- Bednet uptake
- Universal immunization
- Promote hygienic introduction of a diverse complementary diet
- Train mothers on oral rehydration therapy with zinc
- Provide Vitamin A supplementation
- Community-based management of pneumonia

The Unfinished Agenda: Key Challenges in Communicable Diseases

- HIV
- TB
- Malaria
- NTDS

Addressing Communicable Diseases

- Mass drug administration for neglected tropical diseases
- Addressing the "Cascade of Care" in high quality ways for all forms of TB
- For HIV: Voluntary testing and counseling, Test and Treat, and Combination Prevention as Appropriate
- For Malaria: Bednets & early, confirmed diagnosis with Artemisinin-Combination Therapy (ACT), Intermittent treatment of pregnant women and infants, seasonal chemoprevention, as appropriate

Key Challenges in Noncommunicable Diseases

- Tobacco
- Alcohol
- Eating Behaviors
- Physical Activity
- Cancer Vaccines

Addressing Noncommunicable Diseases

- The mPower package on tobacco
- Analogous measures on alcohol
- Enable healthier foods & more exercise
- Treat to reduce cholesterol
- Cancer Vaccines-Hep B and HPV
- Reduce salt consumption
- Aspirin for myocardial infarctions
- Treat hypertension
- Community-based approaches to diagnosis, psychosocial support, & treatment of mental disorders

Key Challenges in Preventing Epidemics and Antimicrobial Resistance

- Disease surveillance
- Surveillance of anti-microbial resistance
- Strengthened laboratory capacity
- Ability to respond nationally to emerging and re-emerging infections and anti-microbial resistance
- Rational use of pharmaceuticals

Preventing Epidemics and the Spread of Antimicrobial Resistance

- Have procedures in place beforehand
- Have mechanisms in place to mobilize quickly
- Engage local communities
- Raise awareness of the public of potential threats

Key Challenges in Public Goods

- The need for new diagnostics, drugs, & vaccines
- Gaps in cross-cutting surveillance
- The need for rapid response to disease outbreaks
- Financial gaps for countries with limited fiscal space

Addressing Public Goods

- Global collaboration
- Implementing push and pull interventions for product development
- Public-private partnerships
- Innovative financing mechanisms

Putting it All Together

- Achieve UHC
- Align Platforms for Service Delivery
- Implement Intersectoral and Fiscal Measures

Main Messages

- Your goal and metric in global health must be: *achieve the maximum health for your population, in fairly distributed ways, at least cost*
- The health of anyone, anywhere is the health of everyone, everywhere
- There has been some important progress
- There remains, however, a substantial unfinished agenda and an emerging agenda
- Substantial equity issues also remain
- A large share of deaths and DALYS are preventable by addressing a small number of risk factors
- The issue now is to address intersectoral issues and move as fast as possible to addressing key issues through effective and efficient UHC

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