



Ankara University
SCHOOL OF MEDICINE

The First Medical School In The Republic of Turkey (1945)

Health level indicators

Value of information in support of public health

Measuring the health of population

Information systems and community diagnosing

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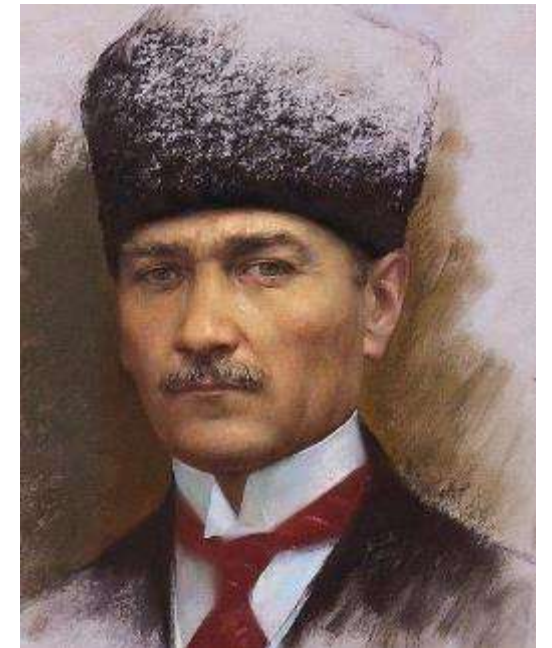
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24th October 2019, Ankara - TURKEY





Health Indicators

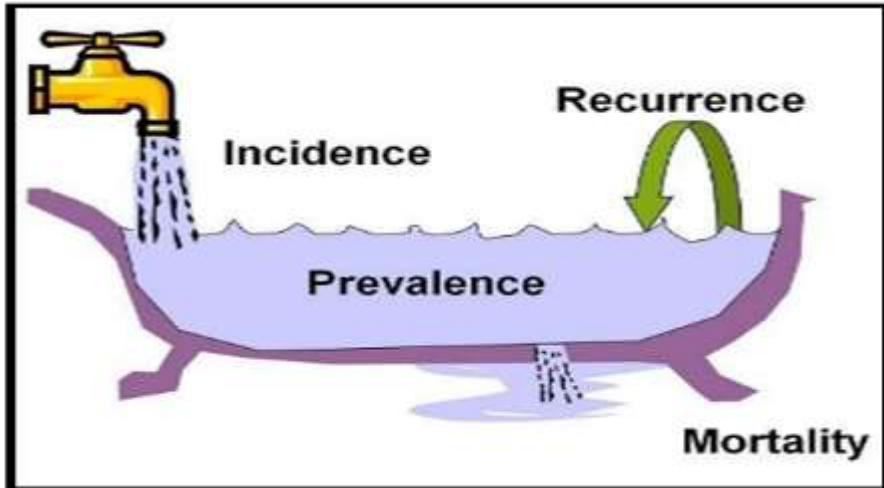
- Health indicators are used to measure health of a community
 - Health indicators can be used to compare health of two communities
 - It can be used to assess the health needs of a community
 - It is useful for monitoring and evaluation of health programmes

CHARACTERISTICS

- **Valid** – they should actually measure what they are supposed to measure.
- **Reliable** – the results should be the same when measured by different people in similar circumstances.
- **Sensitive** – they should be sensitive to changes in the situation concerned.
- **Specific** – they should reflect changes only in the situation concerned.
- **Feasible** – they should have the ability to obtain data when needed.
- **Relevant** – they should contribute to the understanding of the phenomenon of interest.

Indicators of health

- To measure health status.
- To compare
- To assess the health needs
- To plan & implement----
- To evaluate health care



INDICATORS OF HEALTH

- Indicator also termed as Index or Variable is only an indication of a given situation or a reflection of that situation.
- **Health Indicator is a variable, susceptible to direct measurement, that reflects the state of health of persons in a community.**
- Indicators help to measure the extent to which the objectives and targets of a programme are being attained.
- Numerical indication of the health of a given population derived from a specified composite formula.

CLASSIFICATION OF HEALTH INDICATORS

1. **Mortality Indicators.**
2. **Morbidity Indicators.**
3. **Disability Rates**
4. **Nutritional Status Indicators**
5. **Health care delivery indicators**
6. **Utilization rates**
7. **Indicators of social and mental health**
8. **Environmental health**
9. **Socioeconomic Indicators**
10. **Health policy Indicators**
11. **Indicators Of quality of life**
12. **Other Indicators**

INDICATORS OF HEALTH

- **Health status indicators measure different aspects** of the health of a population. Examples include life expectancy, infant mortality, disability or chronic disease rates.
- **Health determinant indicators measure things that** influence health. Examples include diet, smoking, water quality, income and access to health services

- ✓ A **health indicator** is a measure designed to summarize information about a given priority topic in population health or health system performance. Health indicators provide comparable and actionable information across different geographic, organizational or administrative boundaries and/or can track progress over time.
- ✓ *Health indicators support provinces/territories, regional health authorities and institutions as they monitor the health of their populations and track how well their local health systems function.*
- ✓ They help in monitoring key performance dimensions described in the Health System Performance Measurement Framework, which provides a common approach for managing health system performance across the country.

Why do we need to know the reasons people die?

Measuring how many people die each year and why they died is one of the most important means – along with gauging how diseases and injuries are affecting people – for assessing the effectiveness of a country's health system.

Cause-of-death statistics help health authorities determine the focus of their public health actions. A country in which deaths from heart disease and diabetes rise rapidly over a period of a few years, for example, has a strong interest in starting a vigorous programme to encourage lifestyles to help prevent these illnesses. Similarly, if a country recognizes that many children are dying of pneumonia, but only a small portion of the budget is dedicated to providing effective treatment, it can increase spending in this area.

High-income countries have systems in place for collecting information on causes of death. Many low- and middle-income countries do not have such systems, and the numbers of deaths from specific causes have to be estimated from incomplete data. Improvements in producing high quality cause-of-death data are crucial for improving health and reducing preventable deaths in these countries.

<https://www.who.int/en/news-room/fact-sheets/detail/the-top-10-causes-of-death>, Access date: 24th 10 2019

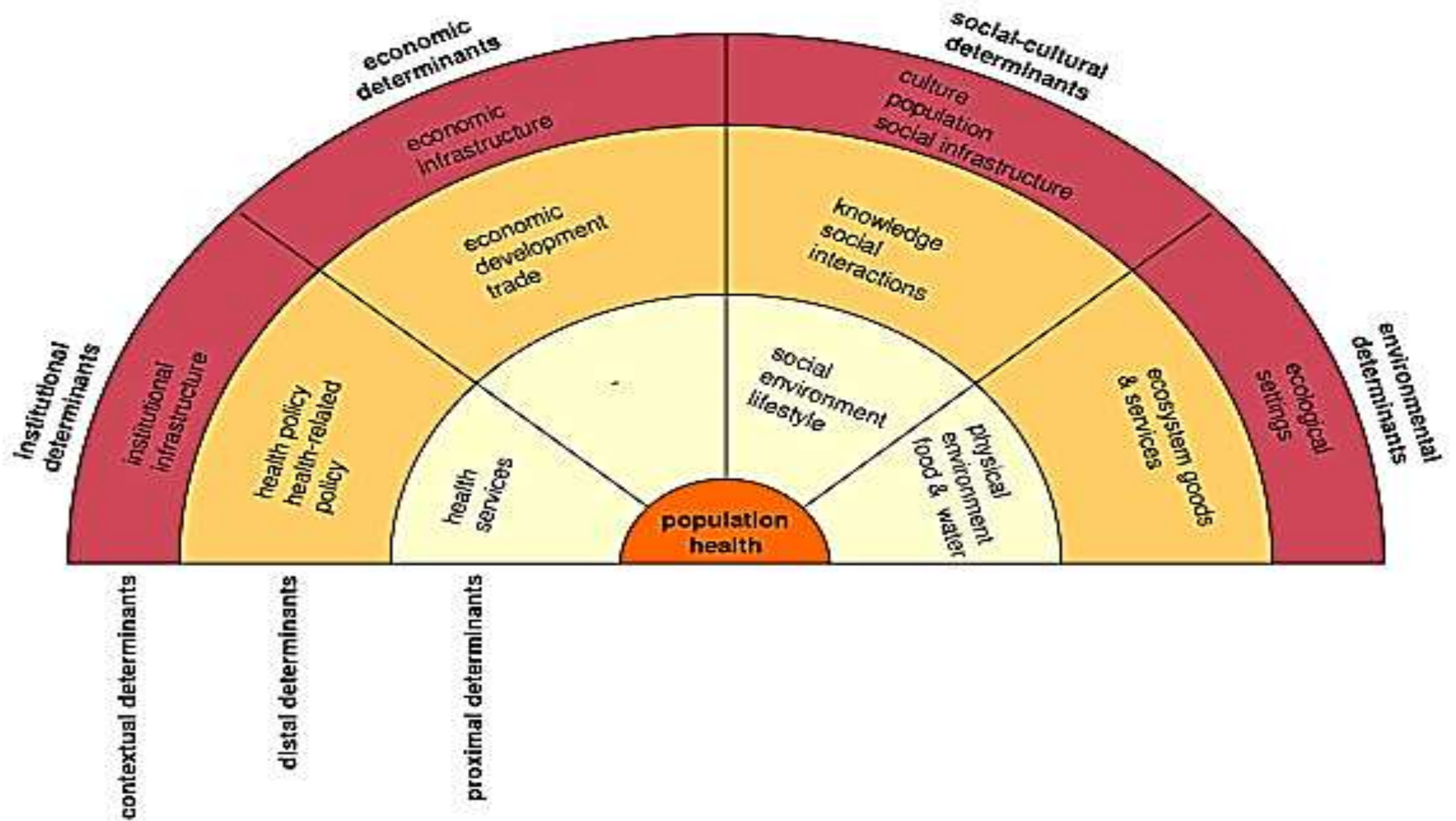
Universal health coverage (UHC)

WHO uses 16 essential health services in 4 categories as indicators of the level and equity of coverage in countries:

Reproductive, maternal, newborn and child health:

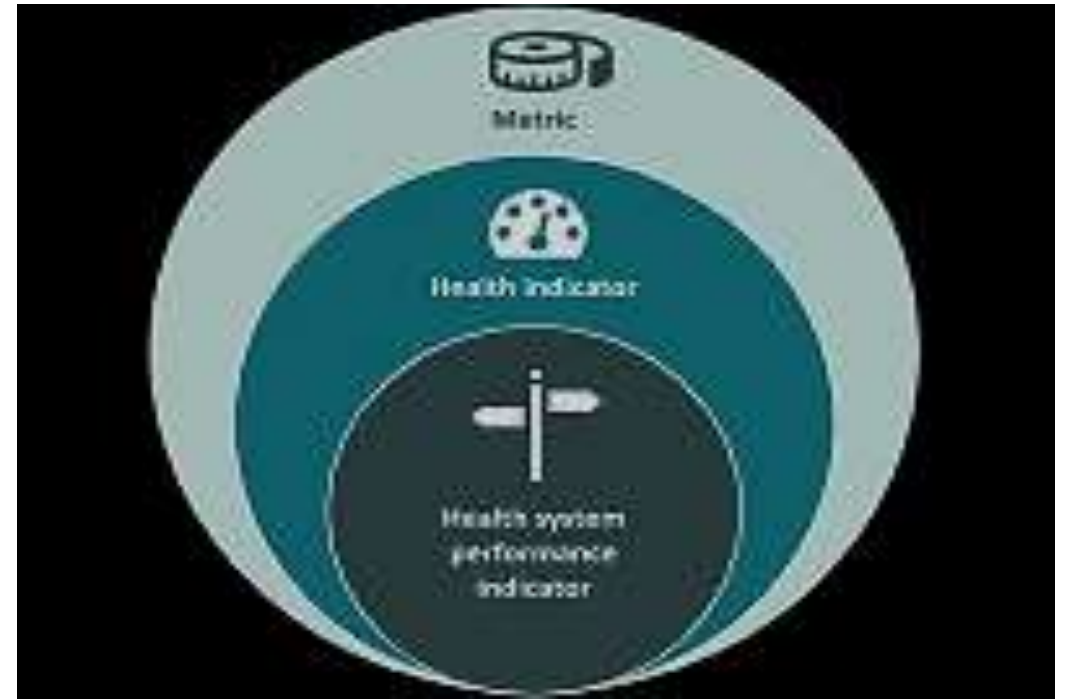
- family planning
- antenatal and delivery care
- full child immunization
- health-seeking behaviour for pneumonia.

[http://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-\(uhc\)](http://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc)),
01.09.2018



Mortality Indicators

- Crude death rates
- Infant mortality rates
- Maternal mortality rates
- Child mortality rates.
- Proportional mortality rates.



Metric : *Information that is quantifiable and is reported as a number.*

Has value and many uses but cannot be compared.

Health indicator : *Puts metrics into some kind of context, usually using a ratio (per X) and is designed to ensure comparability (e.g., by being risk-adjusted or standardized). Directionality may or may not exist.*

Health system performance indicator : *A health indicator that has a desired direction (e.g., lower is better).*

Morbidity indicators

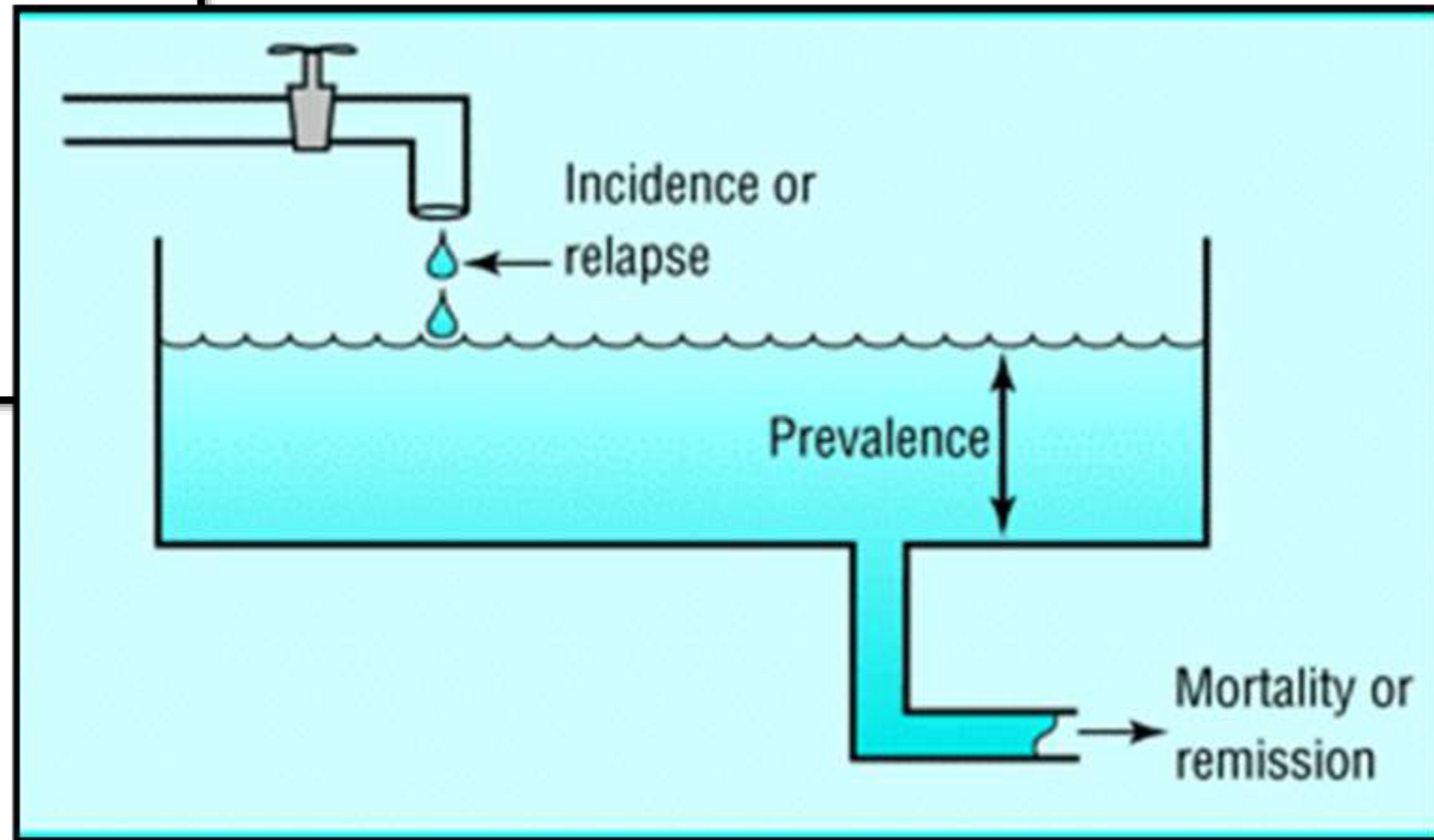
- Incidence rate
- Prevalence rate.
- Notification rate.
- Out patients attendance rate.
- Hospital admission rate
- Duration of stay in the hospital.

Cases of cold infections in class 4J : Class size = 20

January	February	March
→	→ → → →	→ →
What is the period prevalence during February?		6/20=30.0%
What is the point prevalence on the 28 th February?		1/20=5.0%
What is the incidence in February?		4/18=22.2%

Disability rates

- Event type
 - No of days of restricted activity.
 - Bed disability days.
 - Sickness absenteeism.
- Person type
 - Limitation of mobility.
 - Limitation of daily activity.



DALY

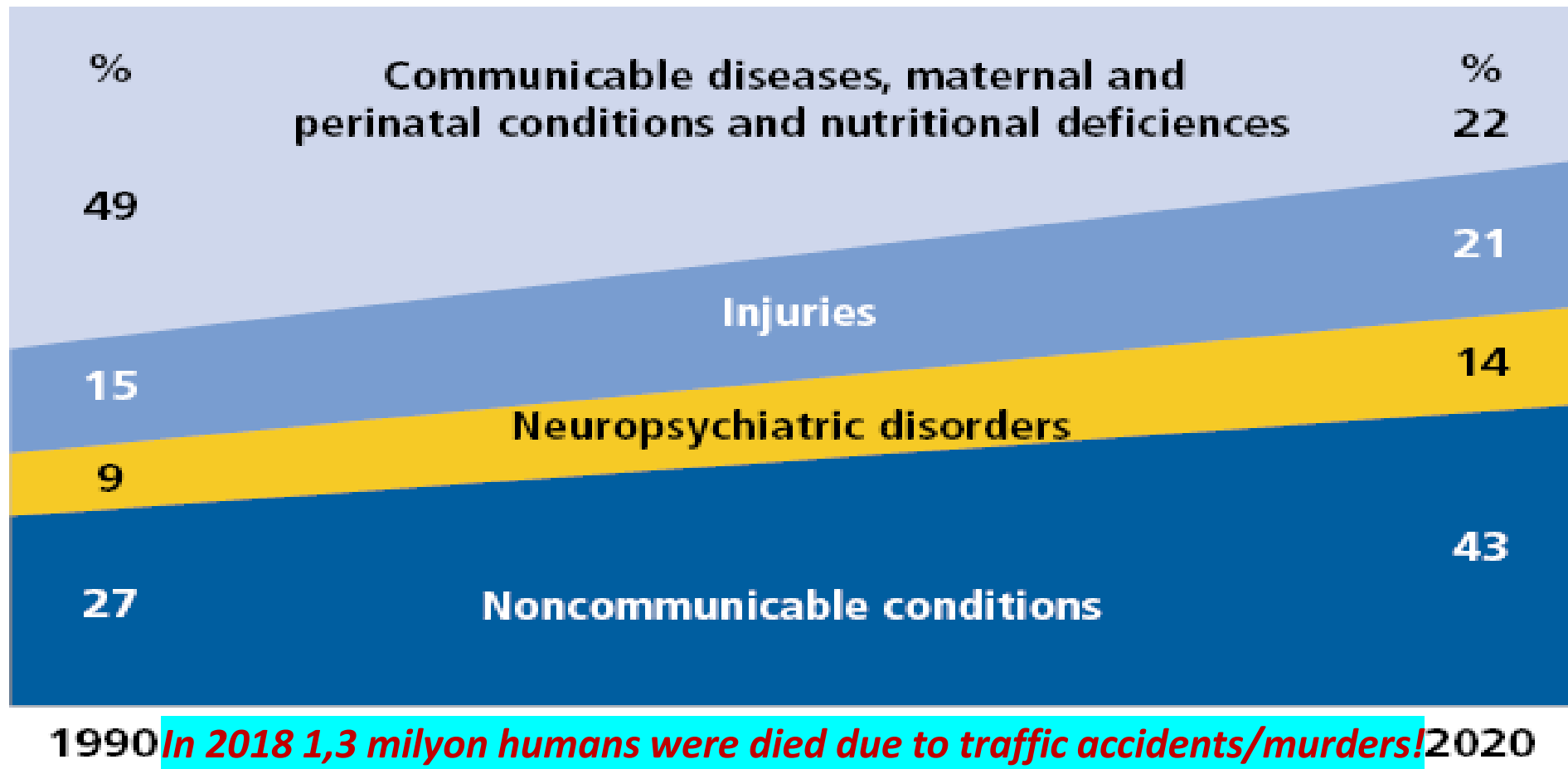
Disability Adjusted Life Year is a measure of overall disease burden, expressed as the cumulative number of years lost due to ill-health, disability or early death

$$= \begin{matrix} \text{YLD} \\ \text{Years Lived with Disability} \end{matrix} + \begin{matrix} \text{YLL} \\ \text{Years of Life Lost} \end{matrix}$$



DALYs, by broad cause group 1990-2020 in developing countries (baseline scenario)

DALY = Disability-Adjusted Life Year



Source: WHO, Evidence, Information and Policy, 2000

Increasing burden of noncommunicable diseases and injuries change in rank order of DALYs for the 15 leading causes

(baseline scenario)

1999 Disease or Injury	2020 Disease or Injury
1. Acute lower respiratory infections	1. Ischaemic heart disease
2. HIV/AIDS	2. Unipolar major depression
3. Perinatal conditions	3. Road traffic injuries
4. Diarrhoeal diseases	4. Cerebrovascular disease
5. Unipolar major depression	5. Chronic obstructive pulmonary disease
6. Ischaemic heart disease	6. Lower respiratory infections
7. Cerebrovascular disease	7. Tuberculosis
8. Malaria	8. War
9. Road traffic injuries	9. Diarrhoeal diseases
10. Chronic obstructive pulmonary disease	10. HIV
11. Congenital abnormalities	11. Perinatal conditions
12. Tuberculosis	12. Violence
13. Falls	13. Congenital abnormalities
14. Measles	14. Self-inflicted injuries
15. Anaemias	15. Trachea, bronchus and lung cancers

DALY = Disability-adjusted life year

Source: WHO, Evidence, Information and Policy, 2000

24.10.2019

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WORLD HEALTH ORGANIZATION



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WHO : *The number of people living with depression increased by more than 18% between 2005 and 2015.*

- **Depression: Let's talk**
- **World Health Day**, celebrated on **7 April** every year to mark the anniversary of the founding of WHO, provides us with a unique opportunity to mobilize action around a specific health topic of concern to people all over the world.
- The theme of 2017 World Health Day campaign is **d e p r e s s i o n .**



Healthy life expectancy (HALE) at birth

- **Healthy life expectancy (HALE)** is a form of health expectancy that applies disability weights to health states to compute the equivalent number of years of life expected to be lived in full health.

Good health years

poor health years

- Overall, **global HALE** at birth in 2013 for males and females combined was 62 years, 7 years lower than total life expectancy at birth. In other words, *poor health* resulted in a loss of nearly 7 years of healthy life, on average globally.

Global HALE at birth for females was only 4 years greater than that for males. In comparison, female life expectancy at birth was almost 5 years higher than that for males.

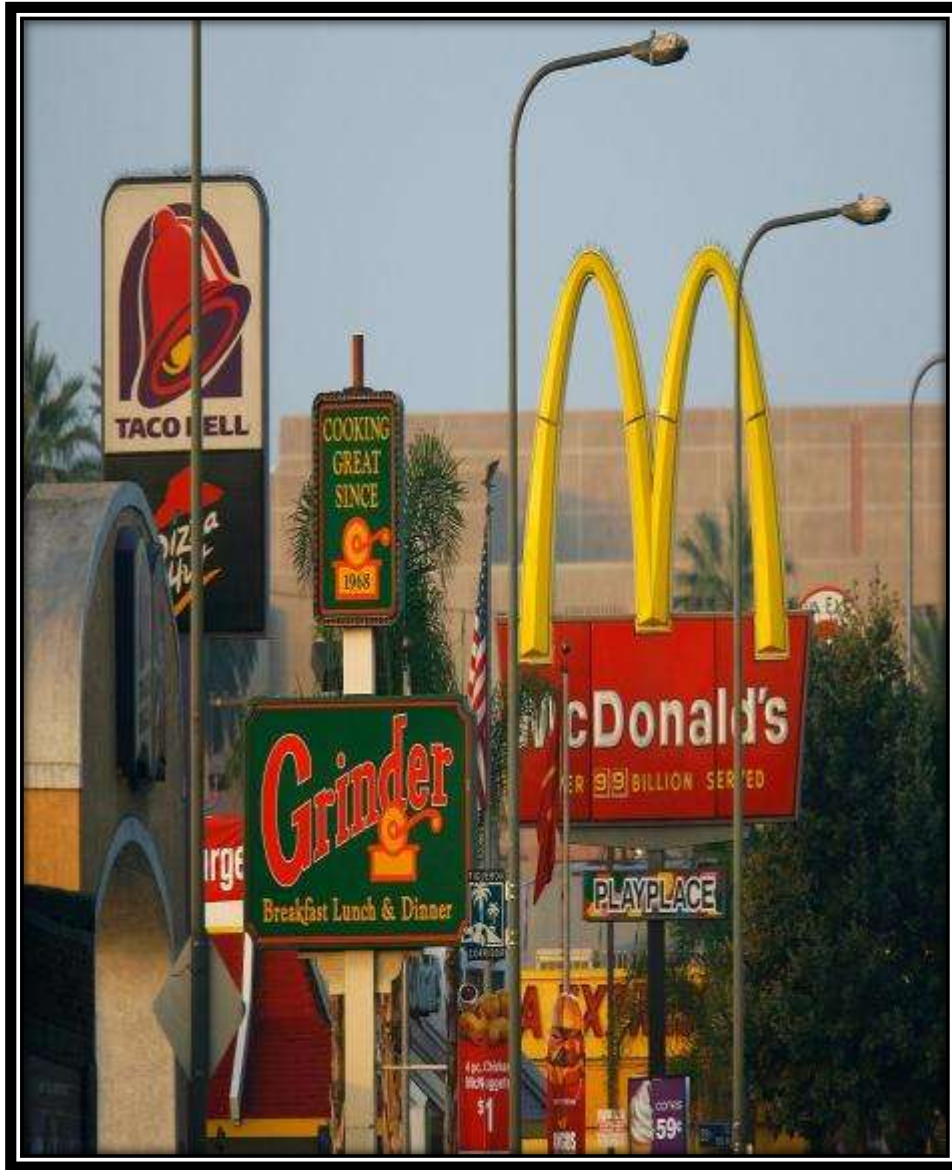
http://www.who.int/gho/mortality_burden_disease/life_tables/hale_text/en/ 23.12.15

Nutritional status indicators

- Incidence of LBW
- Incidence of LBW
- Anthropometric measurements of < 5
mid arm circumference
height & weight with age



CRUDE DEATH RATE is the total number of deaths to residents in a **specified geographic area** (country, state, county, etc.) divided by the total population for the **same geographic area** (for a **specified** time period, usually a calendar year) and multiplied by 1000.



821+ million HUNGER, >1 billion obes! «A strange bi-polarity!!

HOW SAFE IS YOUR FOOD?

From farm to plate, make food safe



WORLD HEALTH DAY

7 April 2015 | #safefood



HOW SAFE IS YOUR FOOD?



From farm to plate,
make food safe

WORLD HEALTH DAY 2015
From farm to plate, make food safe

<http://www.who.int/campaigns/world-health-day/2015/en/>, 7.4.15

Undernourishment around the world



- ◆ 805 million people estimated to be suffering from chronic hunger in 2012–14, down 100 million in the last decade.
- ◆ The vast majority, 791 million, live in developing countries.

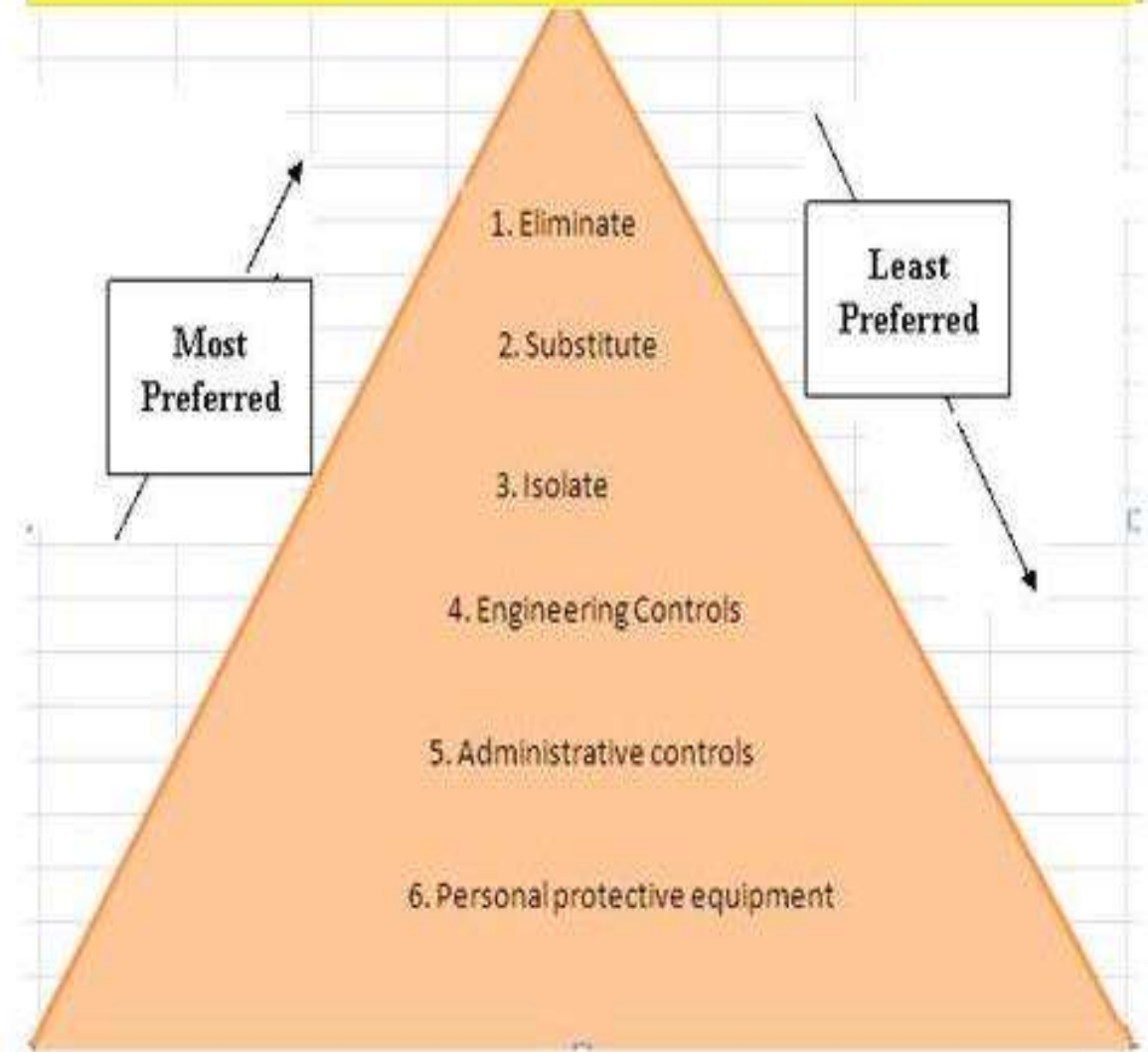


Health care delivery indicators

- Doctor : Population. 1:2500
- Nurse: Population 1:5000
- Health worker: Population 1:3000
- Sub centers: Population 1:3000
- P H C : Population 1:30000

The **crude birth rate** (CBR) is equal to the number of live **births** (b) in a year divided by the total midyear population (p), with the ratio multiplied by 1,000 to arrive at the number of **births** per 1,000 people.

Hierarchy of Control Measures



Indicators of social & mental health

- Rates of crimes--- murder, theft, suicides, Prostitution, gambling, drug abuse....
- Rates of accidents.
- Rate of divorces, family violence

Maternal mortality ratio
the number of maternal
deaths per *live births*

Numerator: Maternal deaths

Denominator: Live births

Maternal
Death



Health policy indicators

- Proportion of the budget (NGP) spent on...

Health services—

RCH, RNTCP, ICDS, Pulse polio

Health related services—

Water supply

Sanitation.

Nutrition

Housing.

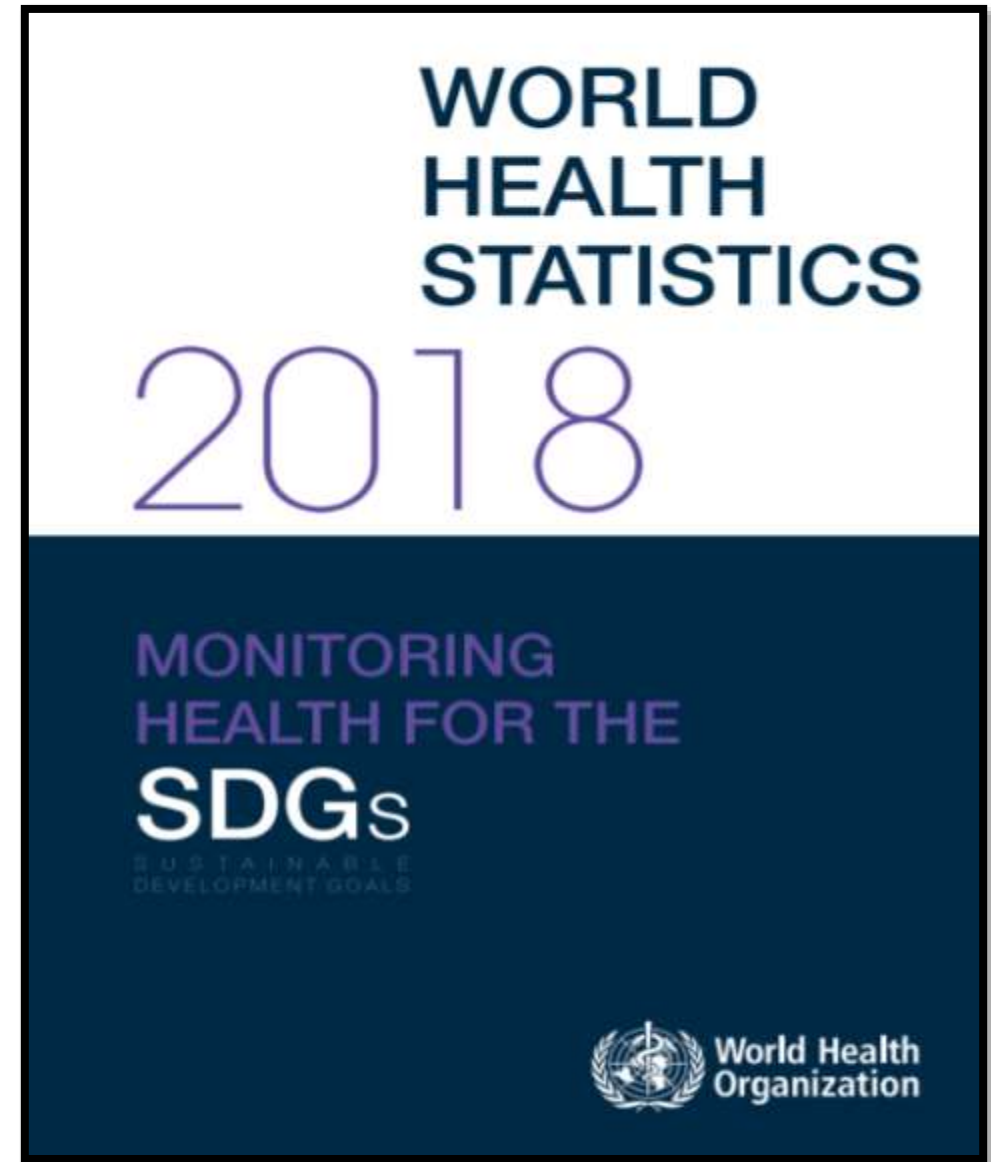
Community development.

The infant mortality rate is the number of deaths under one year of age occurring among the live births in a given geographical area during a given year, per 1,000 live births occurring among the population of the given geographical area during the same year.

Socioeconomic indicators

- Growth rate of population.
- Per capita income / GNP.
- Percentage of people below poverty line.
- Level of unemployment.
- Dependency ratio.
- Literacy rate.
- Family size.

*The World Health Statistics series is WHO's annual snapshot of the state of the world's health. This 2018 edition contains the latest available data for 36 health-related **Sustainable Development Goal** (SDG) indicators. It also links to the three SDG-aligned strategic priorities of the WHO's 13th General Programme of Work: Achieving **universal health coverage**, addressing **health emergencies** and promoting healthier populations.*



https://www.who.int/gho/publications/world_health_statistics/2018/EN_WHS2018_TOC.pdf?ua=1

- Thus there is no single comprehensive indicator to assess or to measure the health status of country.
- Each indicator reflects one aspect of health.
- Ideal indicator is yet to be developed.

Environmental indicators

- Indicators relating pollution of air, water, noise, soil, radiation solid waste...
- Percentage of houses having ..
safe water supply.
adequate sanitary facilities.

Thus there is no single comprehensive indicator to assess or to measure the health status of country.

Utilization rates

- Proportion of infants “fully immunized”
- Proportion of mothers with adequate ANC.
- Proportion of Deliveries conducted by TBA.
- “Bed occupancy” rate in the hospital.
- Coverage with insecticidal spraying.

OTHER INDICATORS

☐ Health For All Indicators

- For monitoring the progress towards the goal of Health For All by 2000 , the WHO had listed the following four categories of indicators.

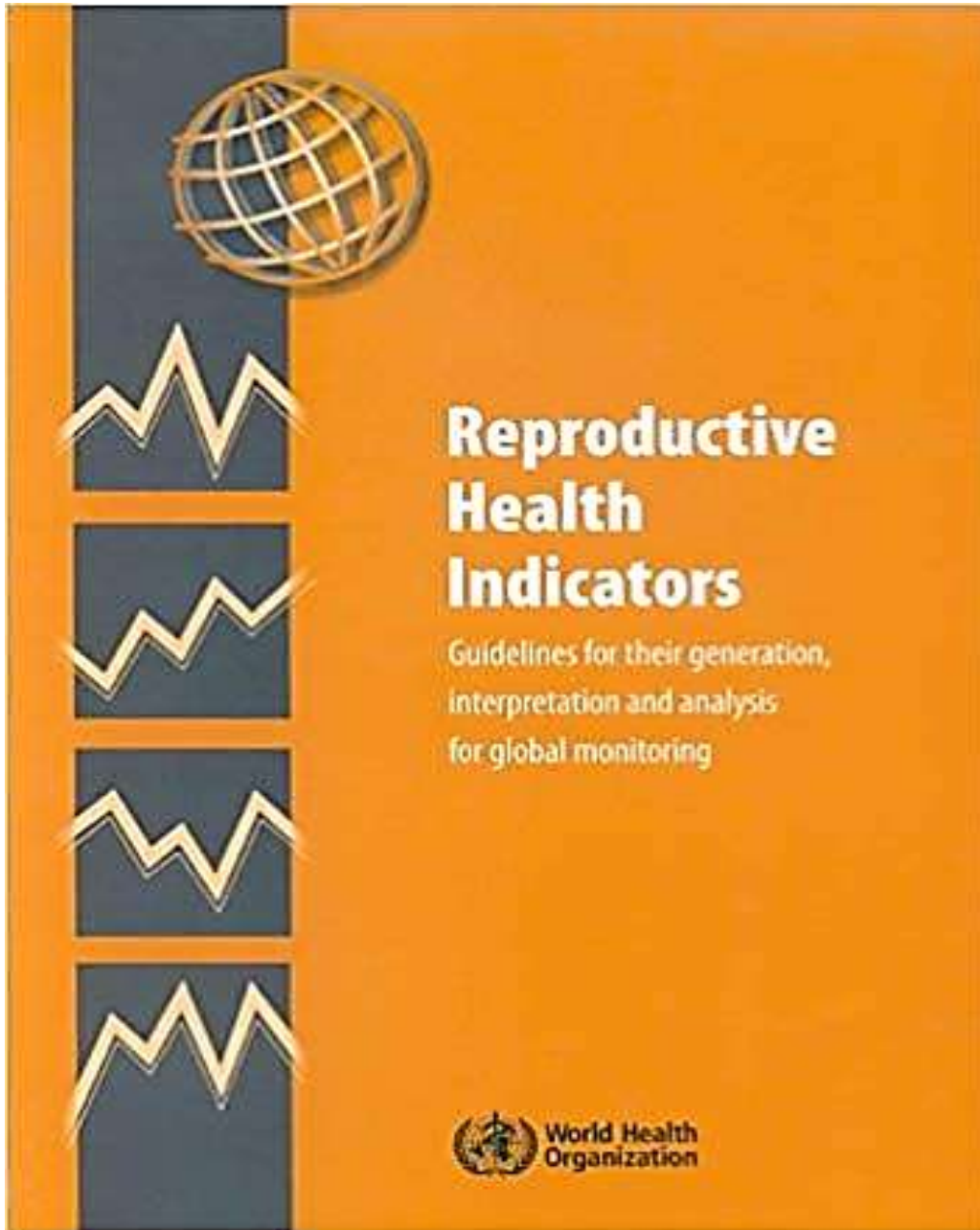
1. Health policy indicators

- Political commitment to HFA
- Resource allocation
- Degree of equity of distribution of health services
- Community involvement
- Organisational framework and managerial process

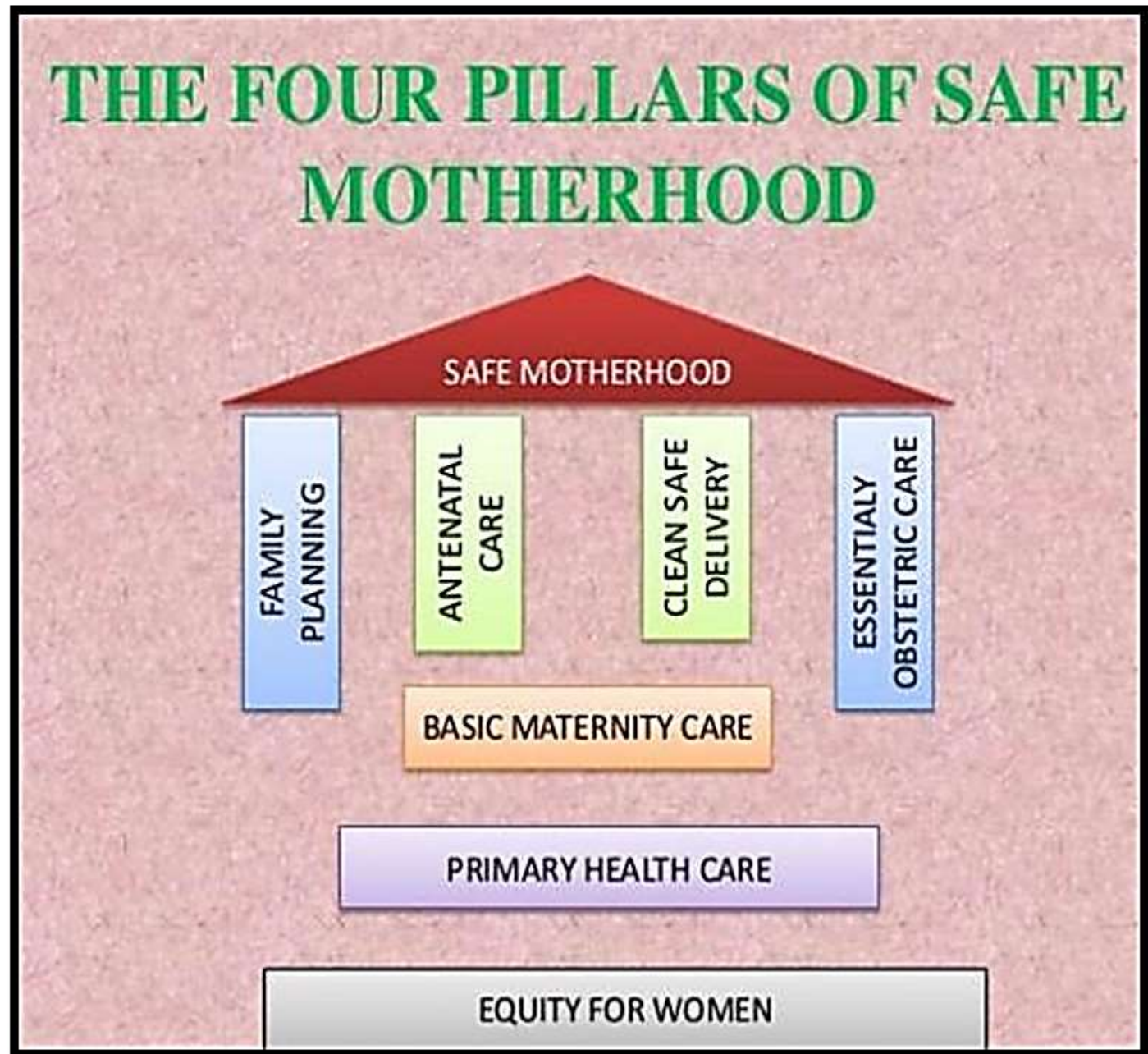
Overview of Behavior

- **Definition:** the thing that a person or animal does. According to www.idoceanline.com
- **Rating of Control:** 5
- **Selling Point:** Behavior can be controlled in some ways but not others. Your attitude has a impacts your behavior a lot. If you have a good attitude towards something, then you are more likely to do it (example: exercise is a good thing and should be done often. If you think that it is good, you are more likely to do it).





10/24/2019



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Data Sources and Collection Methods

Source	Method	Example
Individual persons	<ul style="list-style-type: none">• Questionnaire• Survey	<ul style="list-style-type: none">• Foodborne illness outbreak• CDC's National Health and Nutrition Examination Survey• Health data on U.S. residents
Environment	<ul style="list-style-type: none">• Samples from the environment (river water, soil)• Sensors for environmental changes	<ul style="list-style-type: none">• Collection of water from area streams — check for chemical pollutants• Air-quality ratings
Health care providers	<ul style="list-style-type: none">• Notifications to health department if cases of certain diseases are observed	<ul style="list-style-type: none">• Report cases of meningitis to health department
Nonhealth-related sources (financial, legal)	<ul style="list-style-type: none">• Sales records• Court records	<ul style="list-style-type: none">• Cigarette sales• Intoxicated driver arrests

Socioeconomic Indicators

- indirect indicators of health.
- These include rate of population increase, level of unemployment, dependency ratio, literacy rates, especially female literacy rates, family size, etc.

Health Policy Indicators

- The most important indicator of political commitment is “allocation of adequate resources.”
- The relevant indicators are proportion of gross national product (GNP) spent on health services, proportion of GNP spent on health-related activities and proportion of total health resources devoted to primary health care.

Rate Formula

To calculate a rate, we first need to determine the frequency of disease, which includes

- the number of cases of the illness or condition
- the size of the population at risk
- the period during which we are calculating the rate

$$\text{Rate (\%)} = \frac{\text{number of cases}}{\text{population at risk}} \times 100$$

The Total Fertility Rate (TFR)

is the average number of children that would be born alive to a woman during her lifetime if she were to pass through her childbearing years having births according to the current schedule of age-specific fertility rates. To calculate the TFR, one sums the single year ASFRs.

Social Determinants of Health

RESULT: Increase access and placement to stable and safe housing

INDICATORS:

- » # Homeless in our region
- » % recidivism rate for individuals in housing placement services
- » % Vacancy rate
- » % Rent Burden

STRATEGIES:

- » Diversion Programs
- » Education campaigns for tenant and landlord rights and responsibilities
- » Advocate for mandatory rental inspection criteria
- » Advocate for anti-income discrimination act
- » Link vocational training programs to rehab of old units
- » Target population transitioning out of jail
- » Scale community based care utilizing CHWs and Supportive Housing model

RESULT: Increase opportunities to stabilize income

INDICATORS:

- » % people living under federal 300% poverty level
- » % of adults who increase employment gains or non-employment cash income over time
- » % households with savings account

STRATEGIES:

- » Financial literacy classes in K-12 education
- » Increase opportunities for adult financial education
- » Increase supportive employment opportunities
- » Scale Community Based Care – link folks with a CHW who can navigate

RESULT: Increase access to transportation through innovative partnerships

INDICATORS:

- » % public transportation use
- » # missed appointments due to transportation
- » # traffic related accidents, injuries, and death
- » % streets walkable or bikable
- » % ADA accessible

STRATEGIES:

- » Complete Street road planning which welcomes non-car transportation and ADA accessibility
- » Integrate individual and family transportation assessment at all points of care
- » Collaborate with transit partners across the region to ensure transportation patterns reflect geographical health access

STRATEGIC AIM

Develop strong community systems that link the social determinants to health care, to improve community health.

RESULT: Improve education attainment

INDICATORS:

- » % Graduation rates
- » % School discipline rates
- » # Teacher-to-student representation ratios

STRATEGIES:

- » Champion education for school providers in trauma informed care
- » Place nurses and/or CHWs in school to assess children and families and link to services
- » Increase before and after school supportive services
- » Increase cultural competency trainings in school, and advocate for school leadership that is representative of student population

RESULT: Increase access to healthy, affordable food

INDICATORS:

- » # of people entering hospitals as malnourished
- » % living in food desert
- » % average sugar intake

STRATEGIES:

- » Mobile markets bring healthy food to food deserts
- » Scratch cooking in all schools
- » Increase opportunity for meal prep education, for kids and adults
- » Increase community gardens and greenspaces to integrate food production in urban centers
- » Scale community based care using CHW to link folks to food service and meal support

RESULT: Increase community access to socially supportive peer-groups.

INDICATORS:

- » % with feeling of support (Community Survey)
- » # funding for community events
- » % households close to community gathering space

STRATEGIES:

- » Increase opportunities for "Meet Your Neighbors"
- » Increase community gathering spaces
- » Directory of community support venues and groups
- » Increase civics education to increase community knowledge of policy process

Operational indicators

- lead indicators in their subthemes to monitor progress
- robust & available for min 3 years for most MSs

Headline indicators

- Monitor the overall performance related to key objectives
- widely used indicators with a high communicative and educational value
- robust & available for min 5 years for most MSs

Explanatory indicators

- breakdowns of higher level indicators (e.g. by gender or income group etc.) for both headline and operational indicators
- Useful for monitoring progress in specific subthemes or towards specific objectives
- Intended for a more specialised audience

Level 1
indicator

Level 2
indicator

Level 3
indicator

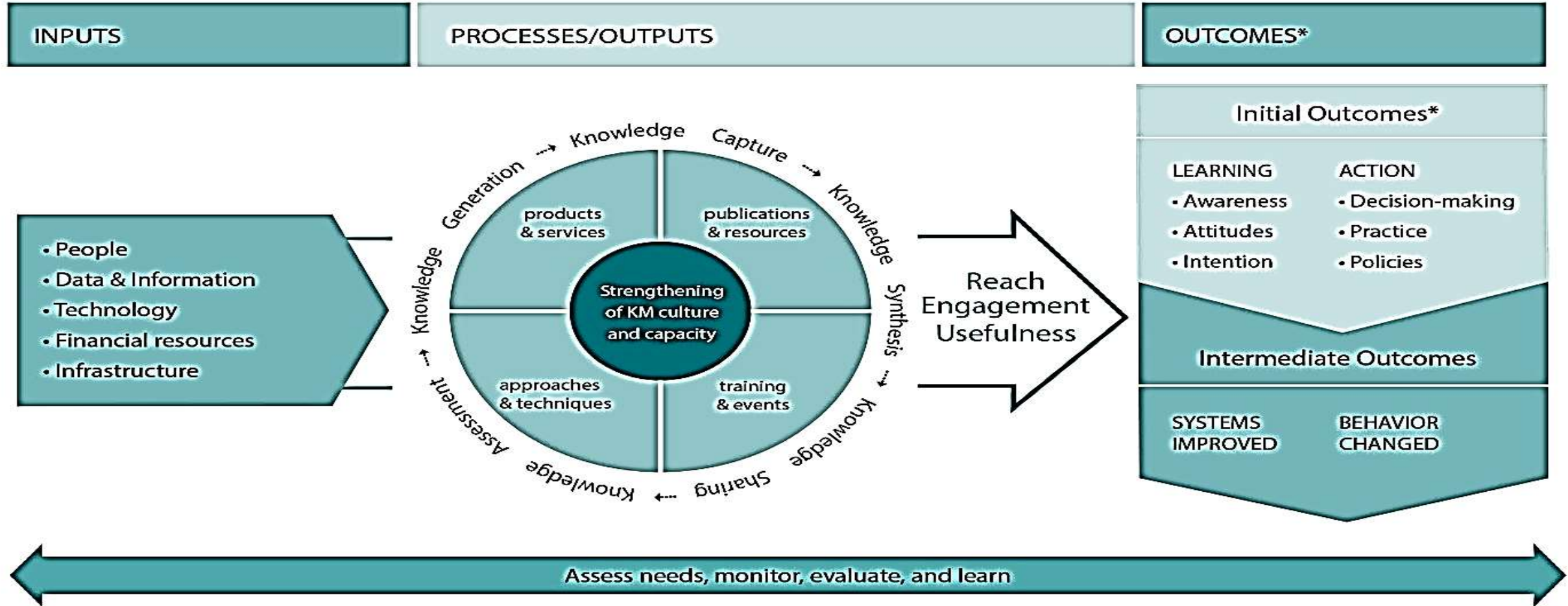
Contextual indicators

Contextual indicators are part of the set, but either do not monitor directly a particular objectives, or they are not policy responsive.

Indicators under development either already exist, but are of insufficient quality or coverage

Knowledge Management for Global Health Logic Model

Problem Statement > Lack of knowledge limits quality of health policy, programs, services and practices.

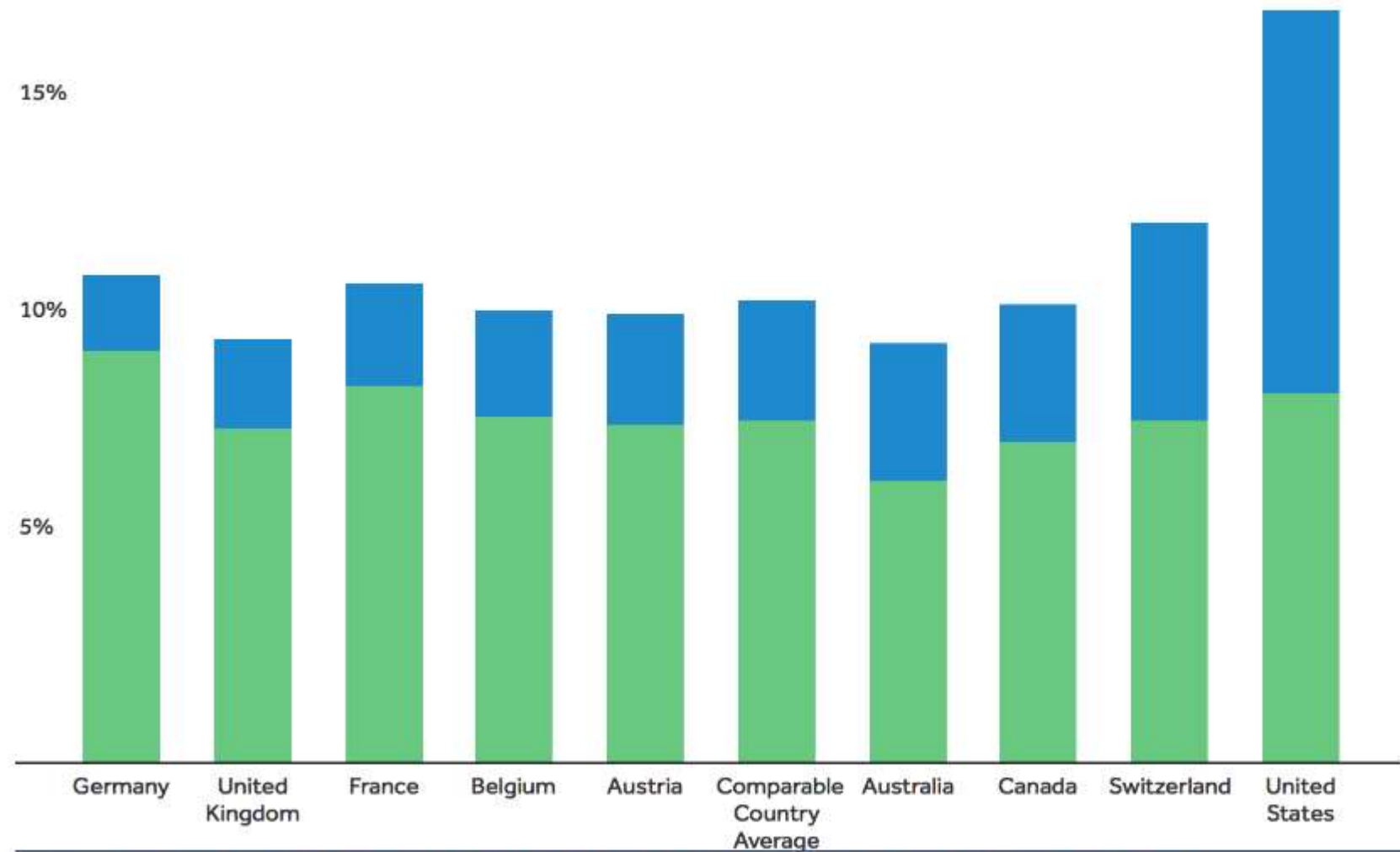


Long-Term Outcome > Health practices and health outcomes improved through effective knowledge management.

Strategic goals	Fields	Core indicators
Continuously improved population health	1. Health level	Life expectancy at birth
Key health risk factors under effective control		Infant mortality rate
Increased capacity for healthcare service delivery		Under-5 mortality rate
Expanded healthcare industry		Maternal mortality rate
Better developed institutional arrangements for health promotion		Proportion of people meeting the national physical fitness standard
	2. Healthy life	Level of health literacy in the population
		Number of people taking physical exercise
	3. Health services and security	Premature mortality from main non-communicable diseases
		Number of registered doctors and nurses per 1000 population
		Percentage of out-of-pocket expenditure in total health expenditure
	4. Healthy environment	Percentage of days with good air quality in cities at the prefecture level or above
		Percentage of surface water at or above level III
	5. Health industry	Total size of the healthcare industry

Total health expenditures as percent of GDP by public vs. private spending, 2016

Public Private



Source: Kaiser Family Foundation analysis of data from OECD (2017), "OECD Health Data: Health expenditure and financing: Health expenditure indicators", OECD Health Statistics (database) (Accessed on March 20, 2017). • Get the data • PNG

Peterson-Kaiser
Health System Tracker



<http://www.oecd.org/health/health-systems/health-at-a-glance-19991312.htm>,
13.02.2018

<http://www.euro.who.int/en/data-and-evidence/european-health-report/european-health-report-2015/european-health-report-2015-the-targets-and-beyond-reaching-new-frontiers-in-evidence.-highlights>

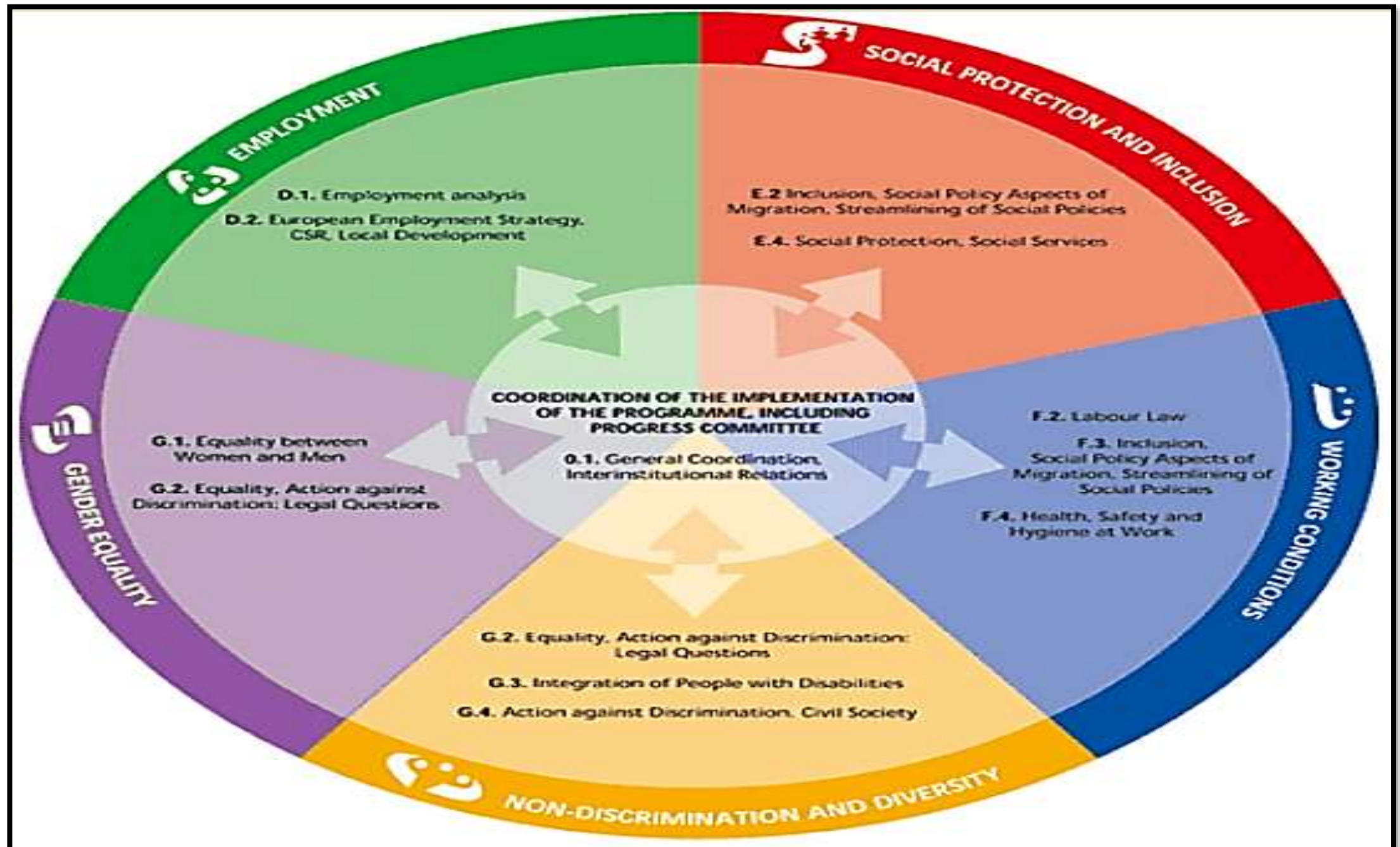
The European health report 2015

Targets and beyond – reaching new frontiers in evidence

The European Health Report is a flagship publication, published every three years.

The 2012 report set the baseline for monitoring progress towards the six targets of the European policy framework, Health 2020. The 2015 report presents the progress made since the baseline. An assessment of the available data on all the targets reveals that the European Region is on track, but much potential remains for further health gains and reductions in

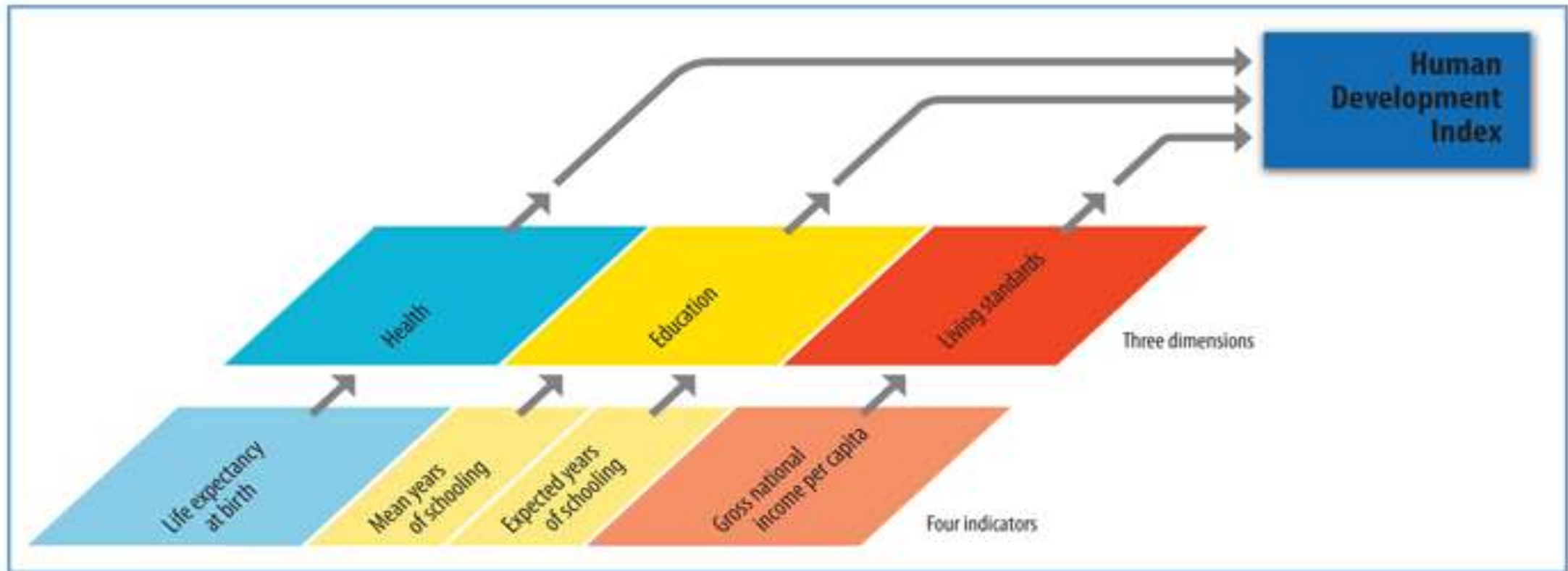
inequalities. → →



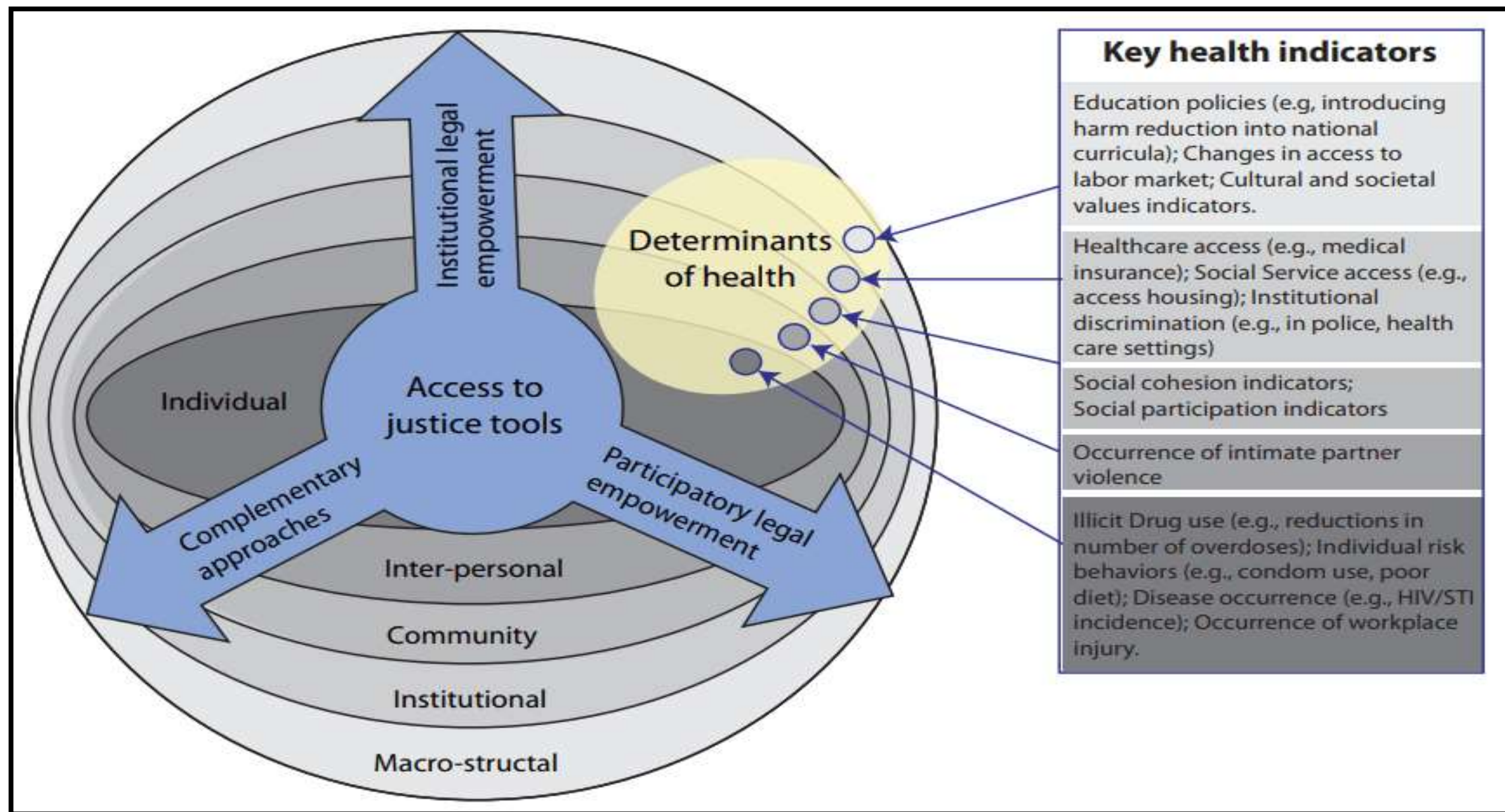
The Human development index looks at three main factors – living standards, health and education

Components of the Human Development Index

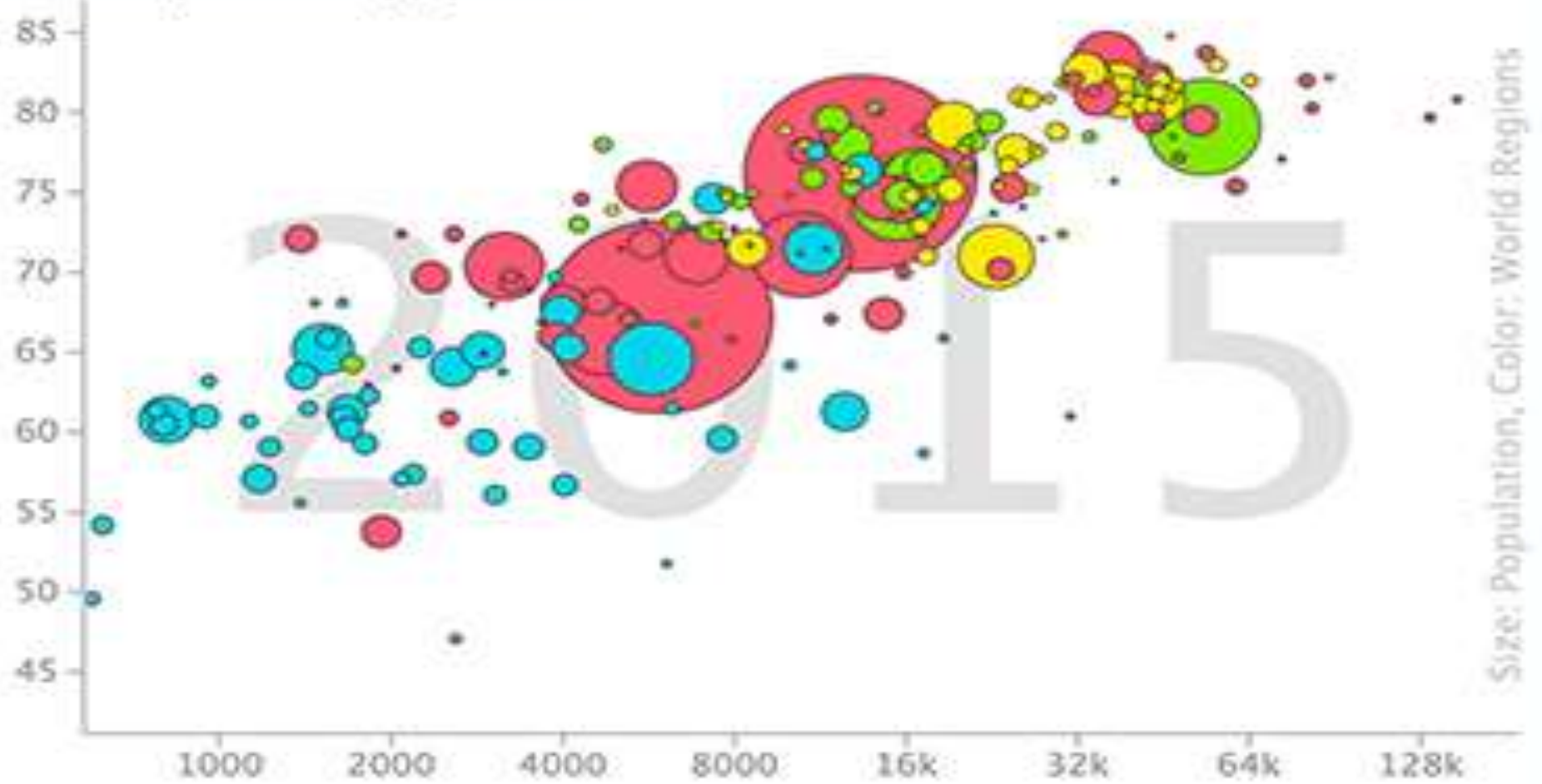
The HDI—three dimensions and four indicators



Note: The indicators presented in this figure follow the new methodology, as defined in box 1.2.



Life expectancy, years



Income per person, \$/year (GDP/capita)



Under-five mortality rates

The **under-five mortality rate** is the probability (expressed as a **rate** per 1,000 live births) of a child born in a specified year dying before reaching the age of five if subject to current age-specific **mortality rates**.

Under 5 proportionate mortality rate is the proportion of under 5 mortality to total deaths.
And this rate is most precious indicator.

4. Proportional Mortality Ratio

(a) *Proportional mortality from a specific disease*

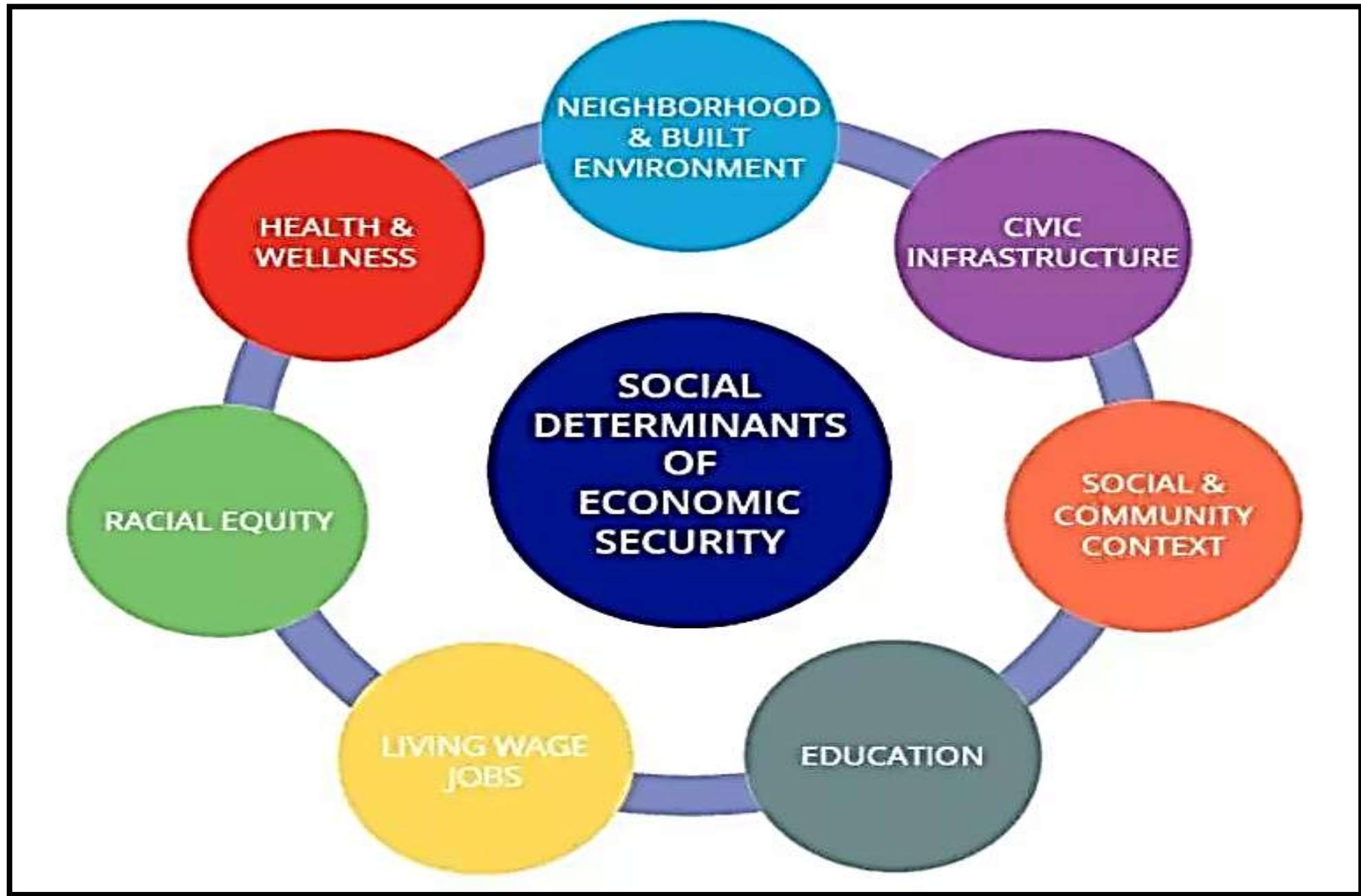
$$= \frac{\text{Number of deaths from the specific disease in a year}}{\text{Total deaths from all causes in that year}} \times 100$$

- E.g. PMR at age 50 & above

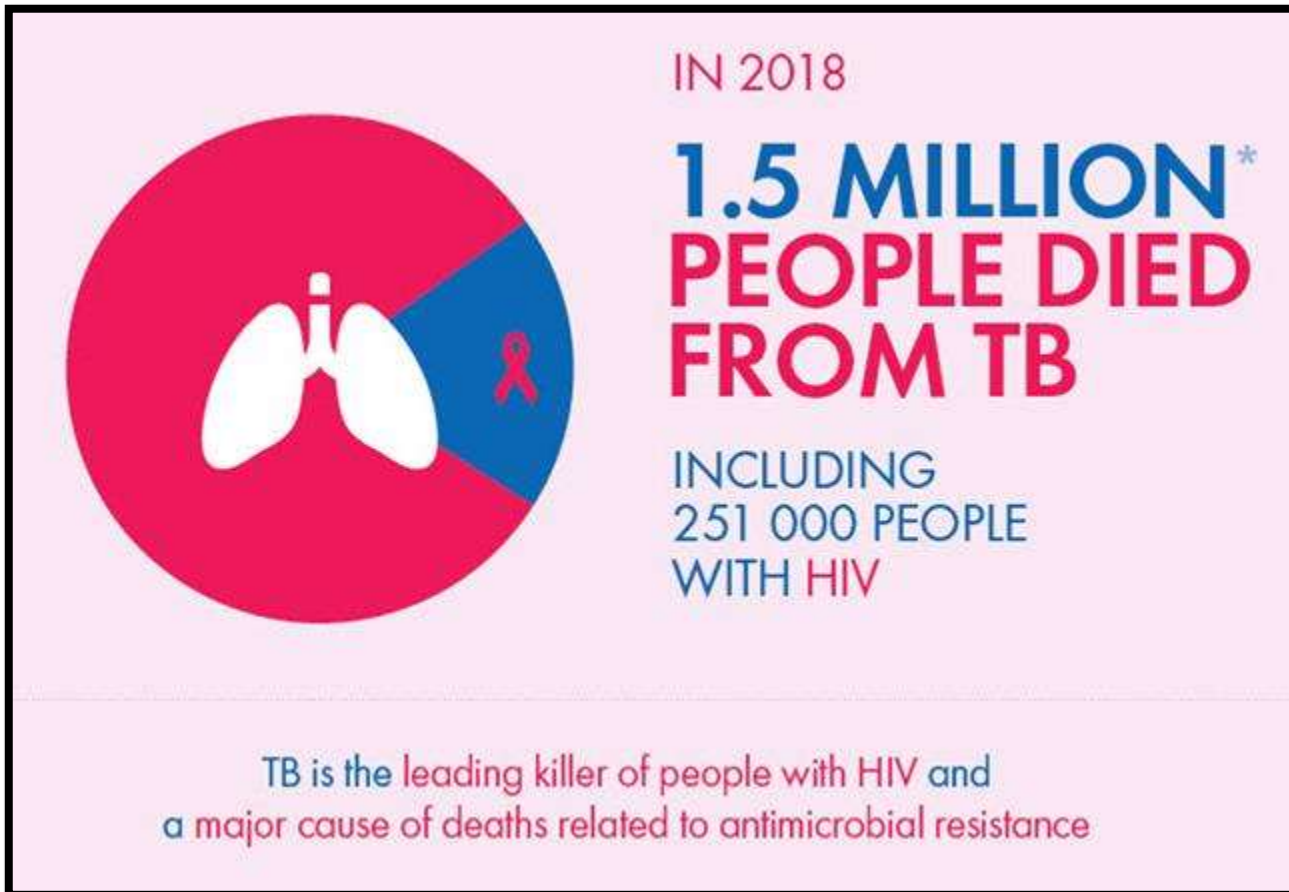
$$\text{PMR} = \frac{\text{No. of deaths of persons aged 50 years and above}}{\text{Total deaths of all age groups in that year}} \times 100$$

- E.g. Under- 5 proportionate mortality rate

$$\text{PMR} = \frac{\text{No. of deaths of under 5 years of age in the given year}}{\text{Total no deaths of during the same period}} \times 100$$



7 million receive lifesaving treatment for TB but 3 million still miss out



- WHO's **Global Tuberculosis Report**, released today (17.10.19), highlights that a record 7 million people received life-saving treatment for TB in 2018.
- However, around *3 million of people with TB are still not getting the care they need.*

Tackling drug resistance : Drug resistance remains another impediment to ending TB. In 2018, there were an estimated half a million new cases of drug-resistant TB. Only one in three of these people was enrolled in treatment.

Severe underfunding, lack of access to care jeopardize at-risk populations

17 October 2019 <https://www.who.int/news-room/detail/17-10-2019-7-million-people-receive-record-levels-of-lifesaving-tb-treatment-but-3-million-still-miss-out>



Essential Health Benefits



Plans must cover 10 categories of mandated essential health benefits:

Essential Health Benefit Categories

1	2	3	4	5	6	7	8	9	10
Ambulatory patient services	Emergency Services	Maternity and newborn care	Pediatric services including dental and vision care	Rehabilitative/habilitative services and devices	Mental health and substance use disorder services, including behavioral health treatment	Preventive and wellness services and chronic disease management	Hospitalization	Prescription Drugs	Laboratory services

Community Diagnosis

(community assessment)

is the foundation for improving and promoting the health of **community** members.

The role of **community** assessment is to identify factors that affect the health of a population and determine the availability of resources within the **community** to adequately address these factors.

COMMUNITY DIAGNOSIS: DEFINITION

Identification and quantification of health problems in a community as a whole in terms of mortality and morbidity rates and ratios, and identification of their correlates for the purpose of defining those at risk or those in need of health care.

<https://youtu.be/azbaxrg75A4>

<https://youtu.be/kbSf4xeXwrE>

These 2 videos are advised to be watched and discussed about..

OBJECTIVES OF COMMUNITY DIAGNOSIS

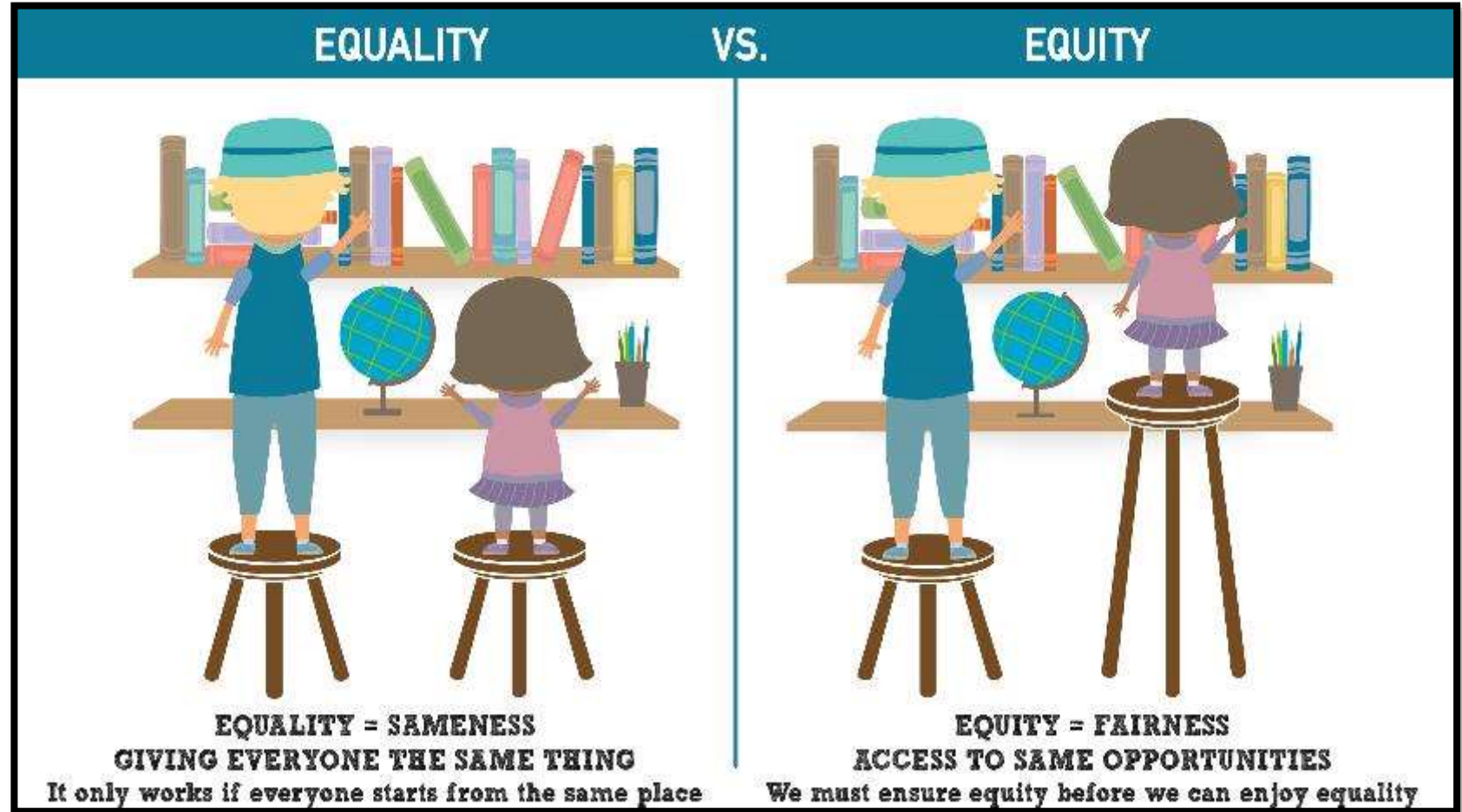
- Analyze the health status.
- Evaluate the health resources, services, and systems of care.
- Assess attitudes toward community health services and issues.
- Identify priorities, establish goals, and determine courses of action to improve health status.
- Establish epidemiologic baseline for measuring improvement over time.

Steps of Conducting Community Diagnosis

- Determine the objective
- Define the study population
- Determine the data to be gathered
- Collect the data
- Develop the instrument
- Actual data gathering
- Data collation
- Data presentation
- Data analysis
- Problem identification
- Health status- mortality, morbidity, fertility
- Health resources-money, manpower, materials, institution
- Health related-environment, culture, economic political
- Prioritization of health problems.



Thank you for valuable participation....



Never forget; HEALTH is a Basic Human RIGHT!