Goal 3: Good Health and Well-Being

Maternal Mortality

Child Mortality

Disease

Substance and Tobacco Use

Road Traffic Accidents

Family Planning

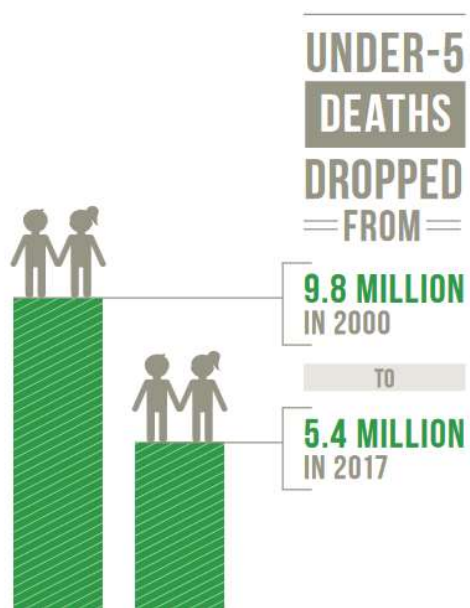Vaccines and Medicine

Air, Water, and Soil Pollution

Health Worker Employment

UNDER-5 **DEATHS** DROPPED FROM

9.8 MILLION IN 2000

TO

5.4 MILLION IN 2017

Location

4 out of 5 deaths of children under age 5 occur in Sub-Saharan Africa and Southern Asia

Poverty

Children born into poverty are almost twice as likely to die before age 5

Mothers

Children of mothers with any education are more likely to survive than children of mothers with no education

https://www.un.org/sustainabledevelopment/health/

Maternal Health

Mortality Proportion

The proportion of mothers that do not survive childbirth in developing regions is 14 times higher than in developed regions

Health Care

Only half of women in developing regions receive the recommended amount of health care they need
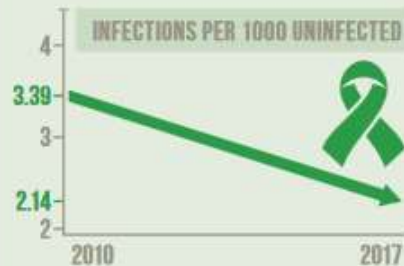
Improvement

Maternal mortality has fallen by 37% since 2000

https://www.un.org/sustainabledevelopment/health/

THE INCIDENCE OF **HIV** AMONG ADULTS 15−49 YEARS OLD IN SUB-SAHARAN AFRICA DECLINED BY **37%** BETWEEN 2010 AND 2017

INFECTIONS PER 1000 UNINFECTED

4 –
3.39 –
3 –
2.14 –
2 –

2010   2017

HIV

77.3 million people have become infected with HIV since the start of the epidemic.
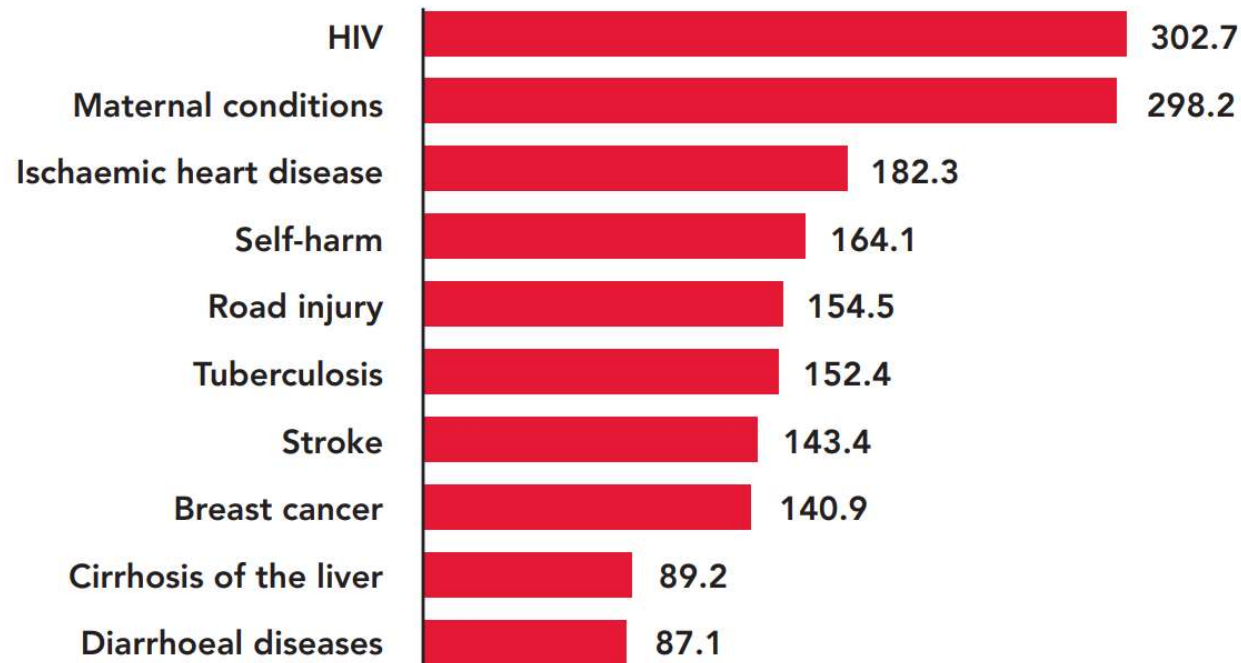
Mortality

35.4 million people have died from AIDS-related illnesses since the start of the epidemic

Malaria

Over 6.2 million malaria deaths have been averted between 2000 and 2015, primarily of children under five years of age in sub-Saharan Africa. The global incidence rate has fallen by an estimated 37 per cent and the mortality rates by 58 per cent.

https://www.un.org/sustainabledevelopment/health/

AIDS-related illnesses are the leading cause of death among 15–49-year-old females globally (hundred thousands)

Cause	Deaths
HIV	302.7
Maternal conditions	298.2
Ischaemic heart disease	182.3
Self-harm	164.1
Road injury	154.5
Tuberculosis	152.4
Stroke	143.4
Breast cancer	140.9
Cirrhosis of the liver	89.2
Diarrhoeal diseases	87.1

Source: Global health estimates 2016: deaths by cause, age, sex, by country and by region, 2000–2016. Geneva, World Health Organization; 2018.

https://www.unaids.org/sites/default/files/media_asset/2019_women-and-hiv_en.pdf

Great document for visuals and shocking facts relating to women and AIDS

Target

- By 2030, reduce the **global maternal mortality** ratio to less than 70 per 100,000 live births

Indicators

- Maternal mortality ratio
- Proportion of births attended by skilled health personnel

https://sustainabledevelopment.un.org/sdg3

Maternal mortality ratio, 1990
Maternal mortality ratio is the number of women who die from pregnancy-related causes while pregnant or within 42 days of pregnancy termination per 100,000 live births. SDG Target 3.1 is to reduce global maternal deaths to less than 70 per 100,000 live births and all countries less than 140 per 100,000 live births.
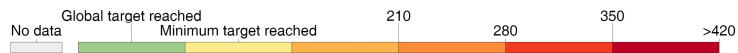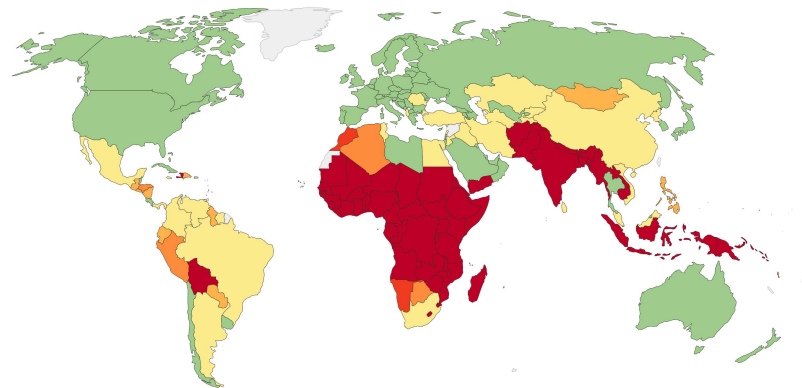
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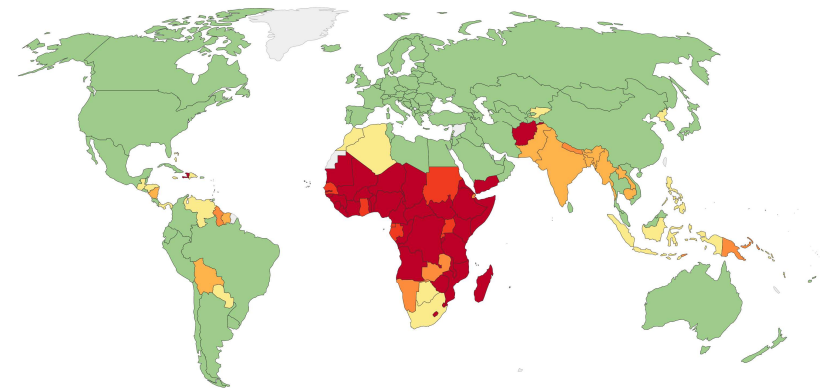
Source: World Bank

- Decrease from 385 of 100,000 women died because of childbirth in 1990 to 216 in 2015
    - key performance indicator for efforts to improve the health and safety of mothers before, during, and after childbirth
- Improvements in Asia, South America, and a little in Africa with more health coverage and access

Target

- By 2030, **end preventable deaths of newborns and children** under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births

Indicators

- Under-five mortality rate
- Neonatal mortality rate

https://sustainabledevelopment.un.org/sdg3

Child mortality rate, 1990

Under-five mortality rate is the probability per 1,000 that a newborn baby will die before reaching age five, if subject to age-specific mortality rates of the specified year. SDG Target 3.2 is to reduce child mortality to at least as low as 25 per 1,000 live births by 2030.

Our World in Data

No data | Target reached | 37.5% | 50% | 75% | 100% | 125% | >150%
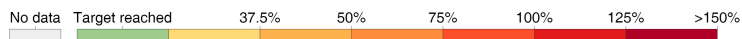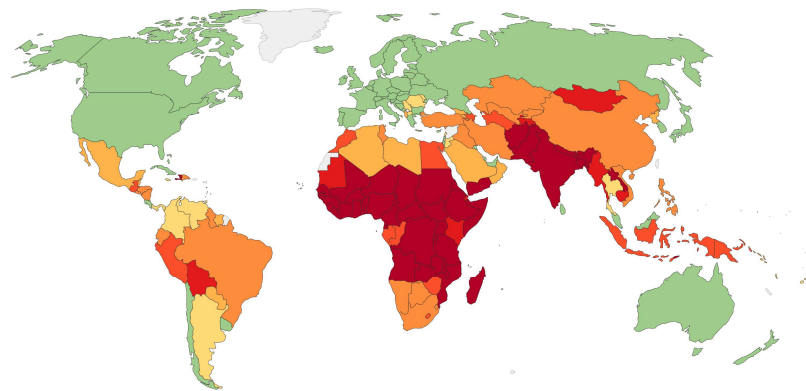
Child mortality rate, 2017

Under-five mortality rate is the probability per 1,000 that a newborn baby will die before reaching age five, if subject to age-specific mortality rates of the specified year. SDG Target 3.2 is to reduce child mortality to at least as low as 25 per 1,000 live births by 2030.
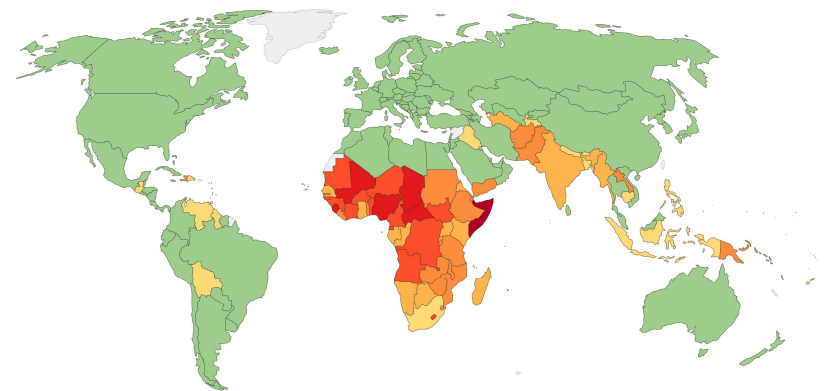
Our World in Data

No data | Target reached | 37.5% | 50% | 75% | 100% | 125% | >150%

- In 1990, world rate for probability of death per 1000 was 93.3, and in 2017 was 39.10
  - Nearly half of these are in newborns and could have been prevented with simple, affordable interventions
- Goal is 25

https://www.who.int/news-room/fact-sheets/detail/children-reducing-mortality

Neonatal mortality rate, 1990

Neonatal mortality rate is the number of neonates dying before reaching 28 days of age, per 1,000 live births in a given year. SDG Target 3.2 is to reduce neonatal mortality rates to at least as low as 12 per 1,000 live births by 2030.

No data   Target reached   15   20   30   40   >50
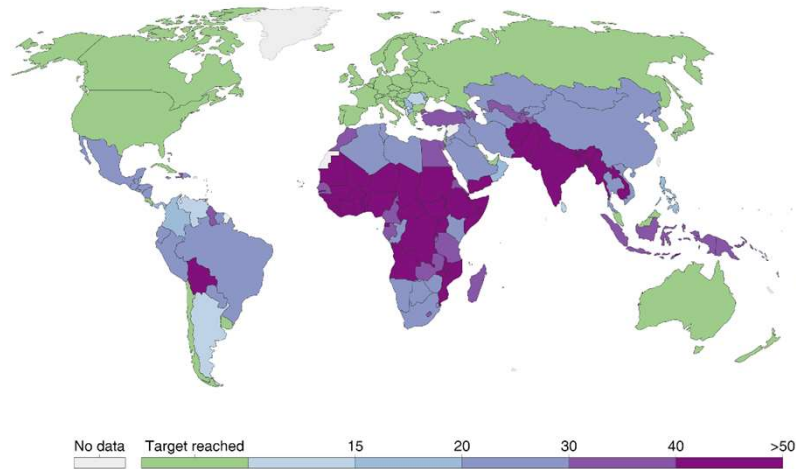
Source: World Bank   CC BY

Neonatal mortality rate, 2017

Neonatal mortality rate is the number of neonates dying before reaching 28 days of age, per 1,000 live births in a given year. SDG Target 3.2 is to reduce neonatal mortality rates to at least as low as 12 per 1,000 live births by 2030.
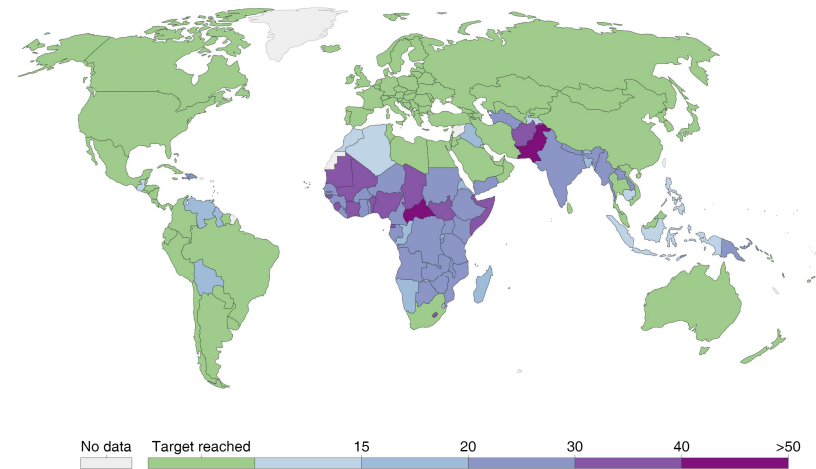
No data   Target reached   15   20   30   40   >50

Source: World Bank   CC BY

- For world in 1990 the neonatal mortality rate was 36.6 and in 2017 was 18
  - Taken with previous slide:
    - 1990: 93 overall with 36.6 neonatal
    - 2017: 39 overall with 18 neonatal
- Goal is 12

Target

- By 2030**, end the epidemics** of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

Indicators

- Number of new **HIV** infections per 1,000 uninfected population, by sex, age and key populations
- **Tuberculosis** incidence per 1,000 population
- **Malaria** incidence per 1,000 population
- **Hepatitis B** incidence per 100,000 population
- Number of people requiring interventions against **neglected tropical diseases**

https://sustainabledevelopment.un.org/sdg3

Malaria incidence (per 1,000 population at risk), 2015
Incidence of malaria is the number of new cases of malaria in a year per 1,000 population at risk. SDG Target 3.3 is to end the epidemic of malaria.
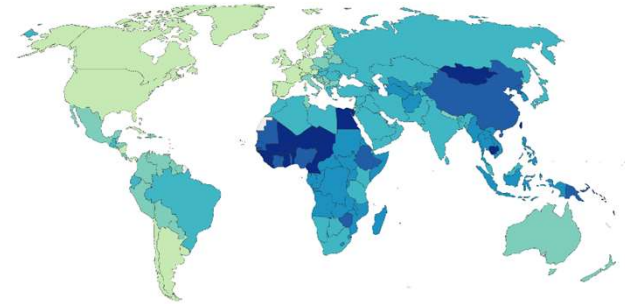
No data 0   9   25   50   100 250 >500

Source: World Bank   CC BY

Drug Treatment to cure
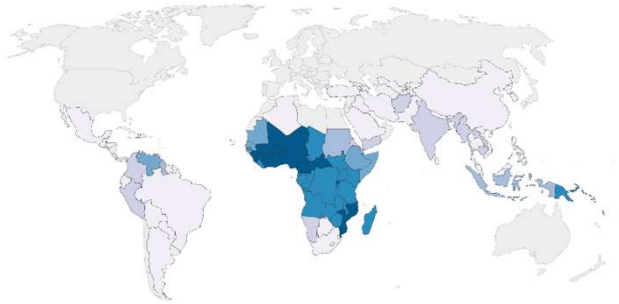
Hepatitis B incidence rate, 2015
Incidence of hepatitis B, measured as the number of new cases of hepatitis B per 100,000 individuals in a given population. SDG Target 3.3 is to combat heptatitis by 2030.

No data 0   100 250 500 1,000 2,000 3,000 4,000 >5,000

Source: IHME, Global Burden of Disease   CC BY

Vaccine at birth to prevent

Tuberculosis incidence (per 100,000 people), 2015
Incidence of tuberculosis is the estimated number of new and relapse tuberculosis cases arising in a given year, expressed as the rate per 100,000 population. All forms of TB are included, including cases in people living with HIV.
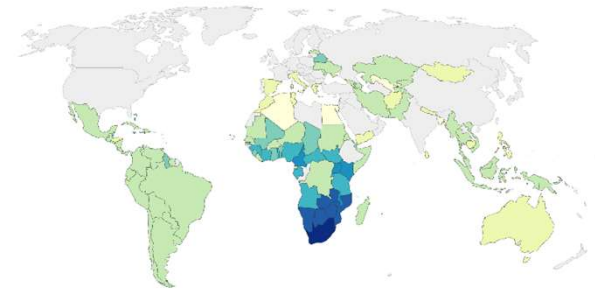
No data 0   20   25   50   100 250 500 >750

Source: World Bank   CC BY

Vaccine in targeted locations to prevent
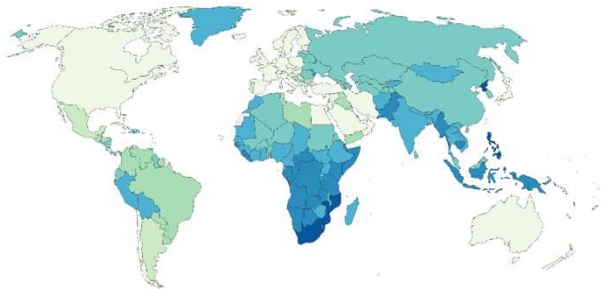
Incidence of HIV per 1,000 uninfected adults, 2015
Number of new HIV infections among uninfected populations ages 15-49 expressed per 1,000 uninfected population in the year before the period.

No data 0   0.02 0.1 0.5   1   2.5   5   10   >15

Source: UNAIDS   CC BY

Antiretroviral therapy
To live longer
No cure or vaccine

https://sdg-tracker.org/good-health

Target

- By 2030, **reduce by one third premature mortality** from **non-communicable diseases** through prevention and treatment and promote mental health and well-being

Indicators

- Mortality rate attributed to **cardiovascular disease, cancer, diabetes or chronic respiratory disease**
- **Suicide** mortality rate

https://sustainabledevelopment.un.org/sdg3

Mortality from non-communicable diseases, 2016

Mortality from CVD, cancer, diabetes or CRD is the percent of 30-year-old-people who would die before their 70th birthday from any of cardiovascular disease, cancer, diabetes, or chronic respiratory disease, assuming that s/he would experience current mortality rates at every age and s/he would not die from any other cause of death (e.g., injuries or HIV/AIDS).
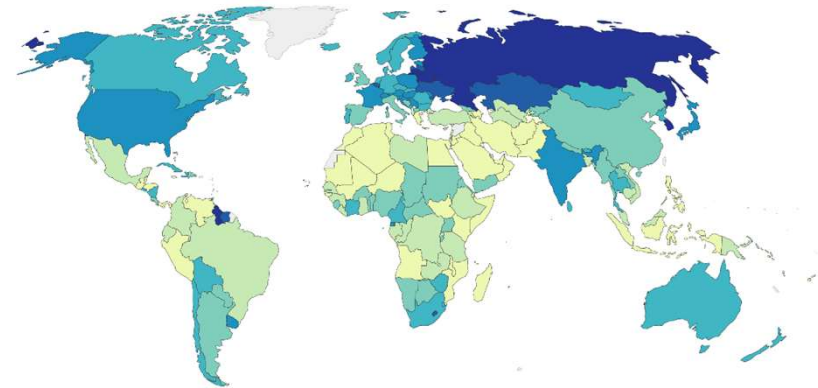
Our World in Data

No data 0%   5%   10%   15%   20%   30%   40%   50%
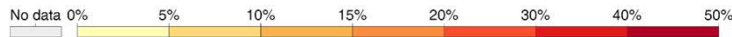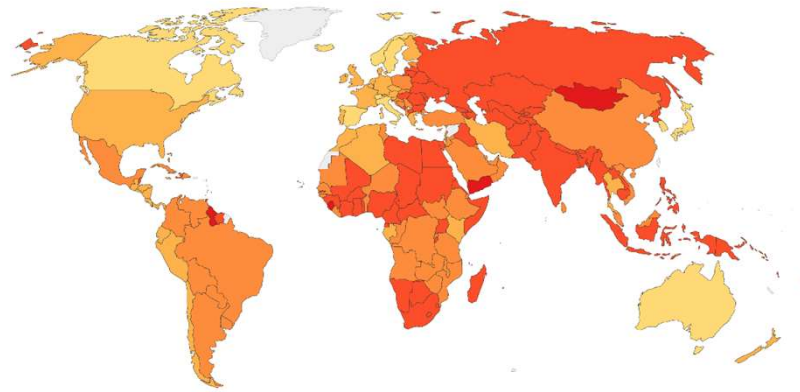
Source: World Bank   CC BY

Suicide death rates, 2016

Suicide mortality rate is the number of suicide deaths in a year per 100,000 population.

Our World in Data

No data   0   2.5   5   7.5   10   15   20   25   35   45   55

Source: World Bank   OurWorldInData.org/suicide/ • CC BY

- People to die before 70 of cardiovascular disease, cancer, or diabetes, chronic respiratory disease
- Dispersed in comparison to other risks

- Suicides per 100,000
- World rate is 10.63
- Higher in developed nations generally

Target

- Strengthen the **prevention and treatment of substance abuse**, including narcotic drug abuse and harmful use of alcohol

Indicators

- **Coverage of treatment** interventions (pharmacological, psychosocial and rehabilitation and aftercare services) for substance use disorders
- **Harmful use of alcohol**, defined according to the national context as alcohol per capita consumption (aged 15 years and older) within a calendar year in litres of pure alcohol

https://sustainabledevelopment.un.org/sdg3

Alcohol consumption per person, 2016
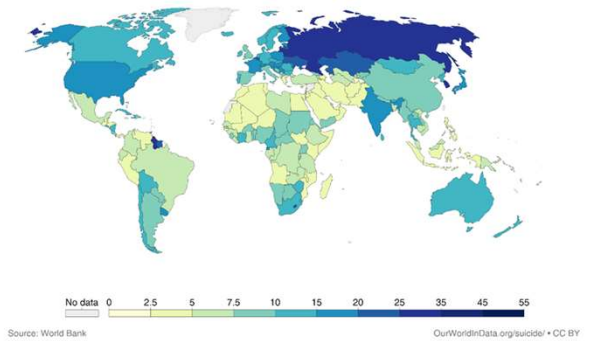Consumption of alcohol is measured in litres of pure alcohol per person aged 15 or older.
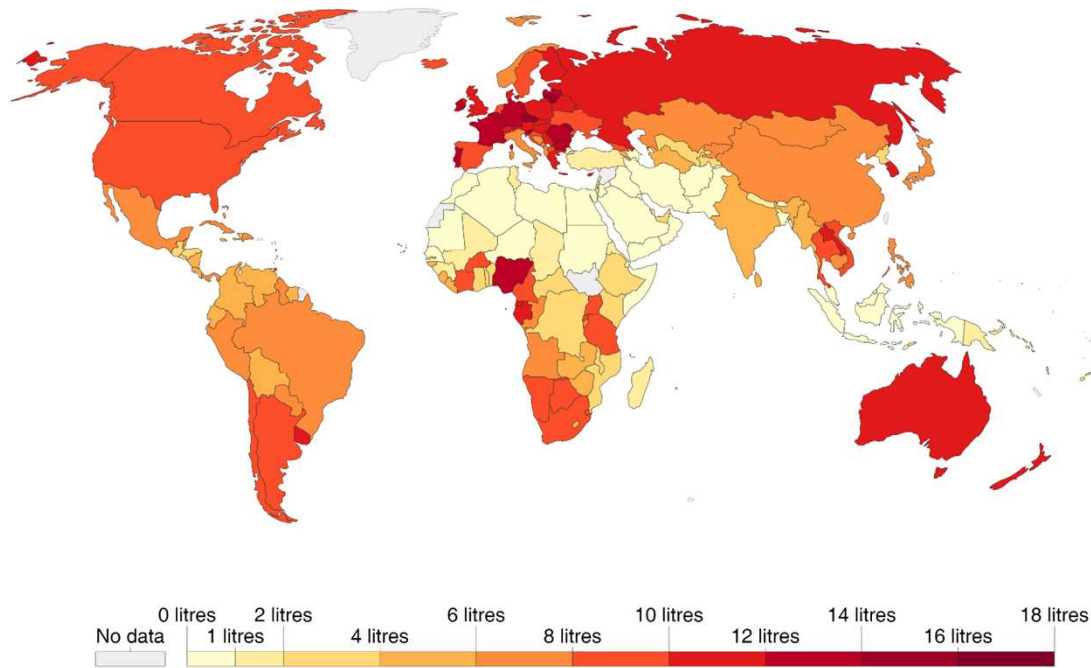
- More associated with suicide than any other measure
- Also developed nations

Suicide death rates, 2016
Suicide mortality rate is the number of suicide deaths in a year per 100,000 population.

Source: World Bank

CC BY

Target

- By **2020**, **halve** the number of global deaths and injuries from **road traffic accidents**

Indicators

- Death rate due to road traffic injuries

https://sustainabledevelopment.un.org/sdg3

Road traffic deaths

Total number of deaths from road traffic incidents, including vehicle drivers or passengers, motorcyclists, cyclists and pedestrians. SDG Target 3.6 is to halve the global number of deaths from road incidents by 2020 (from 2010 levels).

SDG Target 3.6 (halving global road deaths by 2020)

World
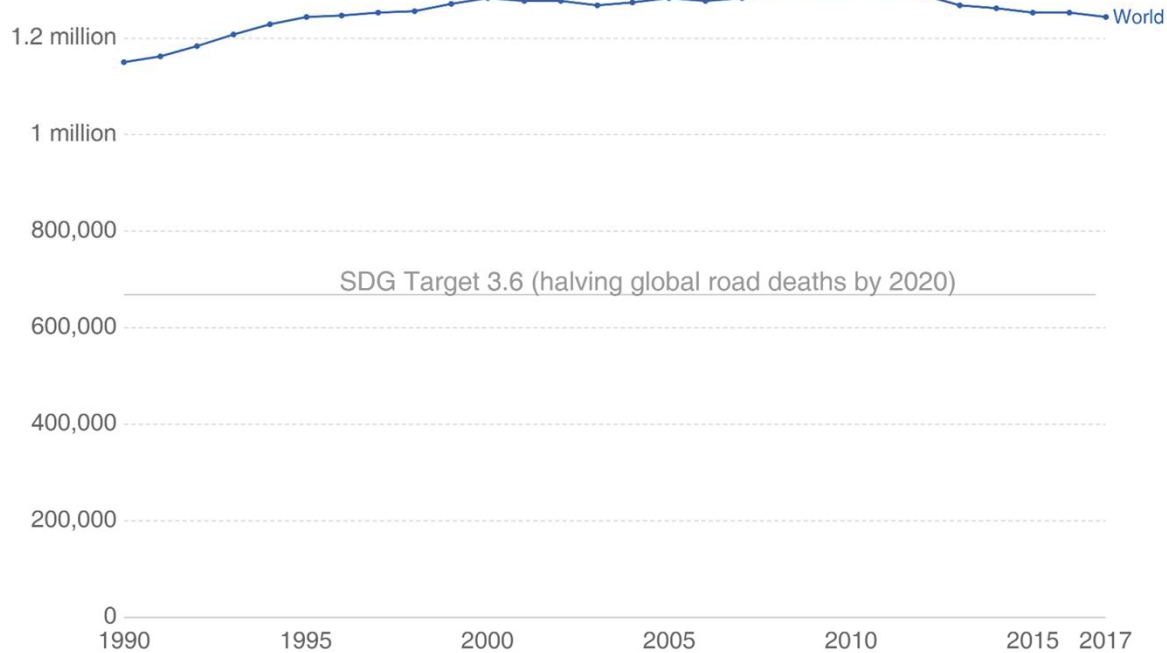
- Not on track at all for a 2020 goal (or any)
- Increased slightly

Target

- By 2030, ensure **universal access to sexual and reproductive health-care services**, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes

Indicators

- Proportion of women of reproductive age (aged 15-49 years) who have their **need for family planning satisfied** with modern methods
- **Adolescent birth rate** (aged 10-14 years; aged 15-19 years) per 1,000 women in that age group

https://sustainabledevelopment.un.org/sdg3

Demand for family planning satisfied by modern methods, 2017
The percentage of married women ages 15-49 years whose need for family planning is satisfied with modern methods.

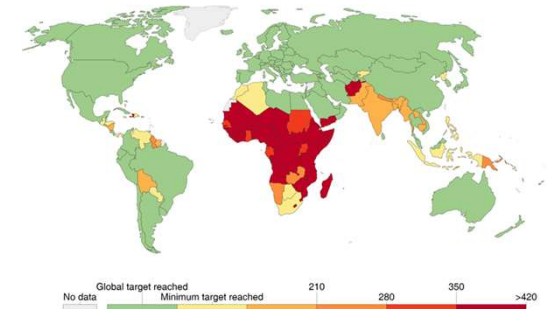No data 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Source: World Bank

CC BY
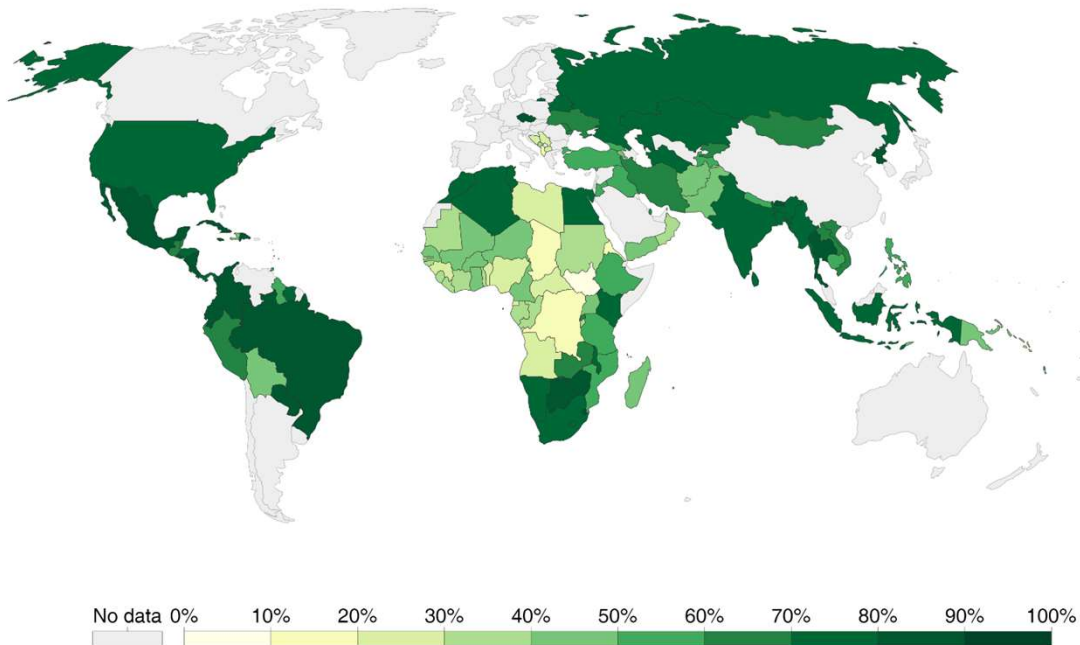
- Inversely correlated with maternal death rates
  - In 2008, contraceptive use averted approximately 44% of maternal deaths around the world
  - Less unsafe abortions- a leading cause of global maternal deaths
- Family planning means more control, access to healthcare, less complications

Maternal mortality ratio, 2015
Maternal mortality ratio is the number of women who die from pregnancy-related causes while pregnant or within 42 days of pregnancy termination per 100,000 live births. SDG Target 3.1 is to reduce global maternal deaths to less than 70 per 100,000 live births and all countries less than 140 per 100,000 live births.

No data   Global target reached   Minimum target reached   210   280   350   >420

Source: World Bank

CC BY

https://www.mhtf.org/topics/family-planning-maternal-health/

Adolescent birth rate per 1,000 women aged 15-19, 2016
Adolescent fertility rate is the number of births per 1,000 women aged 15-19.

- Associated with family planning, access to contraceptives
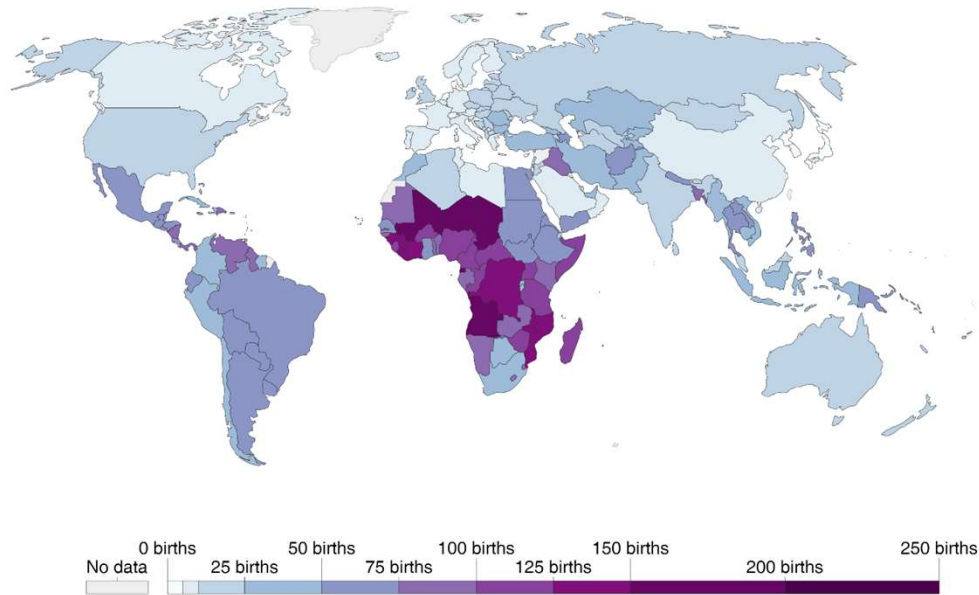- Marked decrease from about 90 of 1000 in 1960 to less than 50 in 2016 worldwide

Adolescent birth rate per 1,000 women aged 15-19
Adolescent fertility rate is the number of births per 1,000 women aged 15-19.

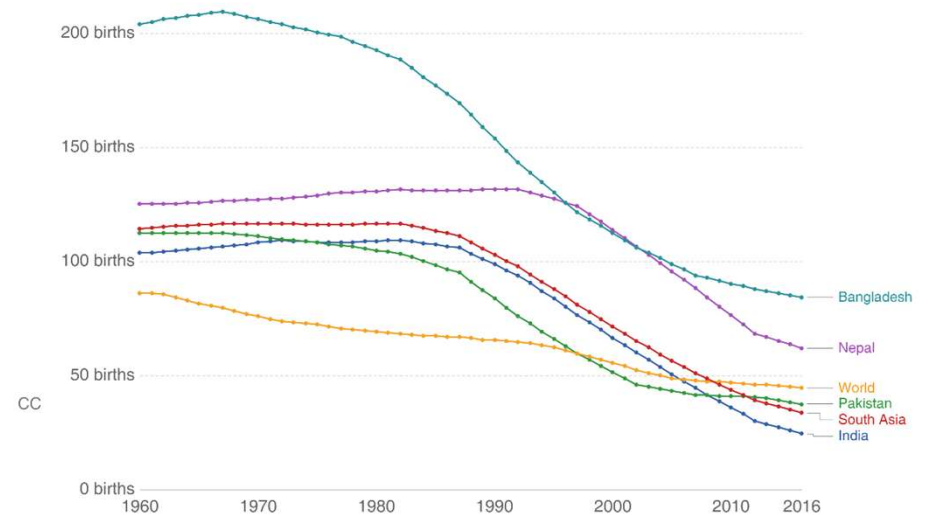# Global Outlook on Teenage Pregnancy

Leading cause of death for 15-19 year-old girls globally is complications from pregnancy and childbirth

Adolescent mothers (ages 10–19 years) face higher risks of eclampsia, puerperal endometritis, and systemic infections than women aged 20 to 24 years, and babies of adolescent mothers face higher risks of low birth weight, preterm delivery and severe neonatal conditions

Least Developed	Developing	Developed
• At least 39% of girls marry before they are 18 years of age and 12% before the age of 15 • Motherhood is valued and marriage or union and childbearing may be the best of the limited options available	• At least 10 million unintended pregnancies occur each year among adolescent girls aged 15-19 years in developing regions • Low and middle income countries account for 99% of global maternal deaths of women aged 15–49 years	• More likely to occur in marginalized communities, commonly driven by poverty and lack of education and employment opportunities

Target	Indicators
• Achieve **universal health coverage**, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all	• **Coverage of essential health services** (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population) • Proportion of population with **large household expenditures on health** as a share of total household expenditure or income

https://sustainabledevelopment.un.org/sdg3

Healthcare Access and Quality Index, 1990
The Healthcare Access and Quality (HAQ) Index is measured on a scale from 0 (worst) to 100 (best) based on death rates from 32 causes of death that could be avoided by timely and effective medical care (also known as 'amenable mortality').

Healthcare Access and Quality Index, 2015
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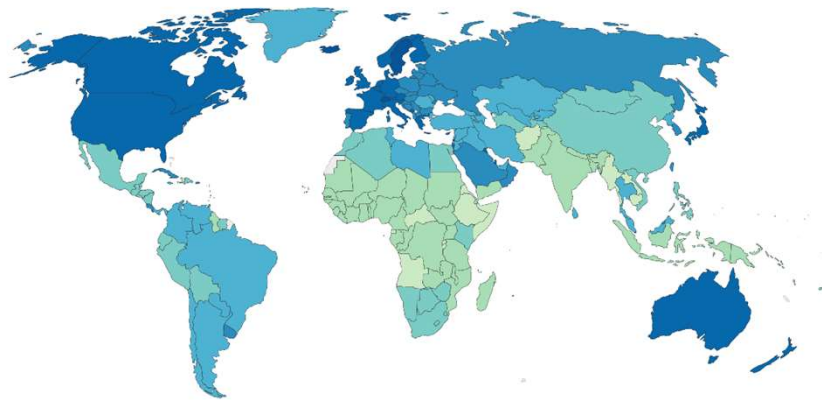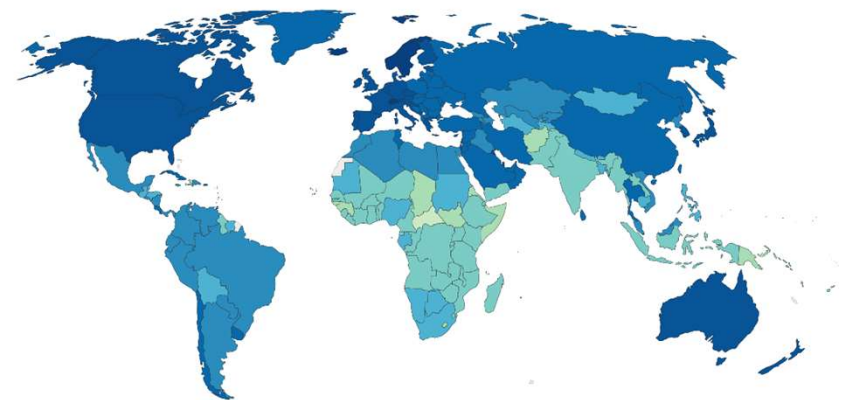
Source: Institute for Health Metrics and Evaluation (2017)

- Point scale from 0 to 100 based on death rates that could have been prevented
- In 1990 it was 40.70 and in 2015 it was 53.70, improvements worldwide

Target

- By 2030, substantially reduce the number of deaths and illnesses from **hazardous chemicals and air, water and soil pollution and contamination**

Indicators

- Mortality rate attributed to **household and ambient air pollution**
- Mortality rate attributed to **unsafe water, unsafe sanitation and lack of hygiene** (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)
- Mortality rate attributed to **unintentional poisoning**

https://sustainabledevelopment.un.org/sdg3

Death rates from air pollution, World
Age-standardized death rates from outdoor ozone, particulates, and indoor fuel pollution per 100,000 individuals.

Our World in Data

- Decreases in household air pollution deaths from increased understanding
- Outdoor has remained constant as pollution continues to increase
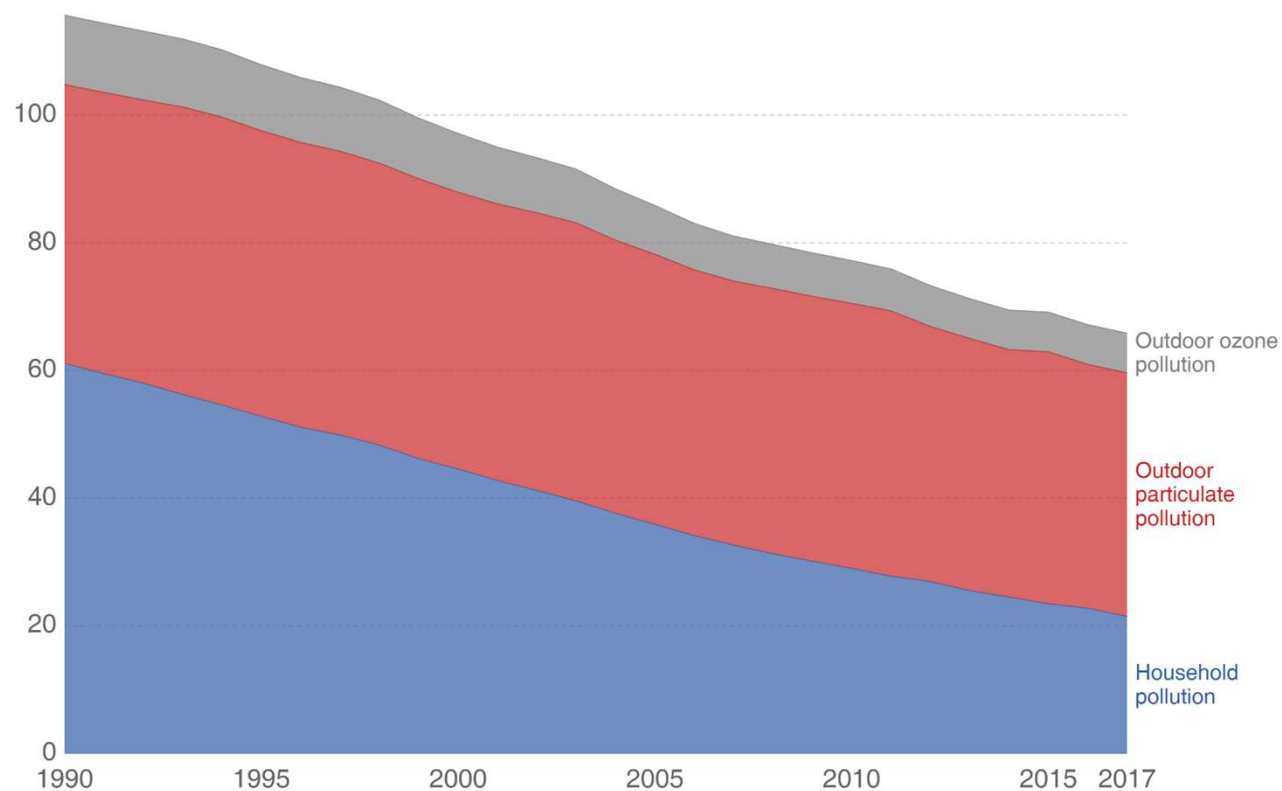
Source: IHME, Global Burden of Disease

OurWorldInData.org/air-pollution/ • CC BY

Mortality rate attributable to unsafe water, sanitation, and hygiene (WASH), 1990
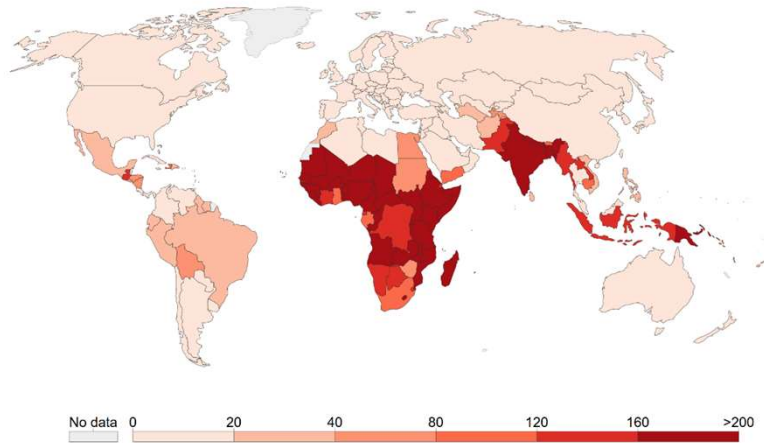
Age-standardized death rate attributed to unsafe water, sanitation or lack of hygiene (WASH), measured as the number of deaths per 100,000 people of a given population.

No data 0   20   40   80   120   160   >200

Source: IHME, Global Burden of Disease   CC BY

Mortality rate attributable to unsafe water, sanitation, and hygiene (WASH), 2016

Age-standardized death rate attributed to unsafe water, sanitation or lack of hygiene (WASH), measured as the number of deaths per 100,000 people of a given population.
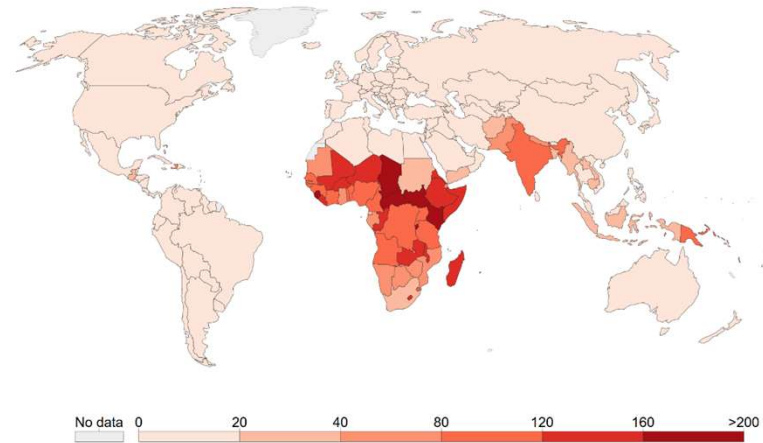
No data 0   20   40   80   120   160   >200

Source: IHME, Global Burden of Disease   CC BY

Improvements overall- looking at death rate attributed to unsafe water, sanitation, or lack of hygiene

Target

- Strengthen the implementation of the World Health Organization Framework Convention on **Tobacco Control** in all countries, as appropriate

Indicators

- Age-standardized **prevalence of current tobacco use** among persons aged 15 years and older

https://sustainabledevelopment.un.org/sdg3

Prevalence of tobacco use among adults, 2015
Share of the population aged 15 years or older who smoke tobacco daily.

Similar to drinking

Alcohol consumption per person, 2016
Consumption of alcohol is measured in litres of pure alcohol per person aged 15 or older.

No data 0%   8%   16%   24%   32%   >40%
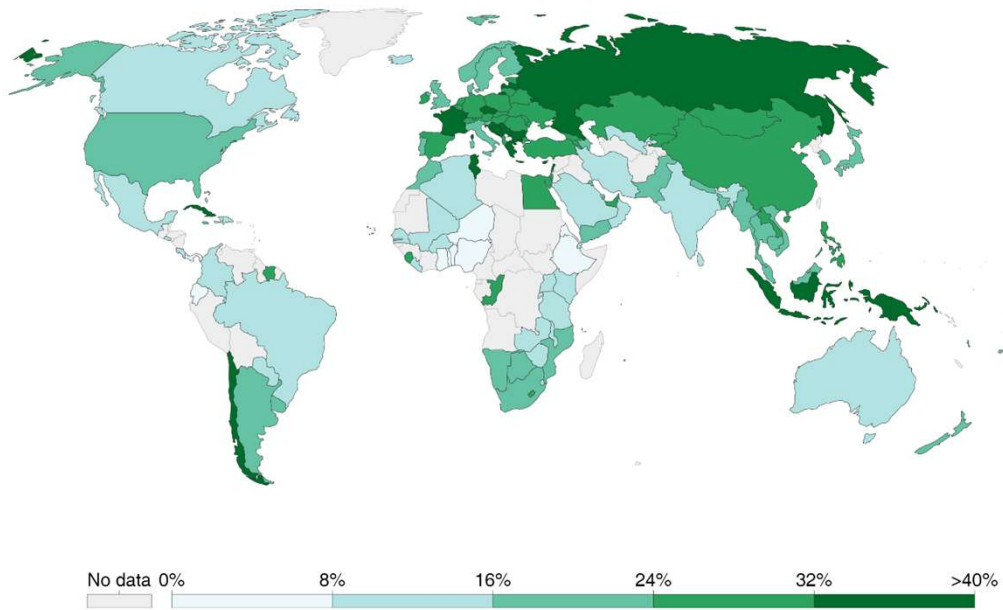
Source: United Nations Statistics Division   CC BY

No data 0 litres 2 litres   6 litres   10 litres   14 litres   18 litres
         1 litres   4 litres   8 litres   12 litres   16 litres
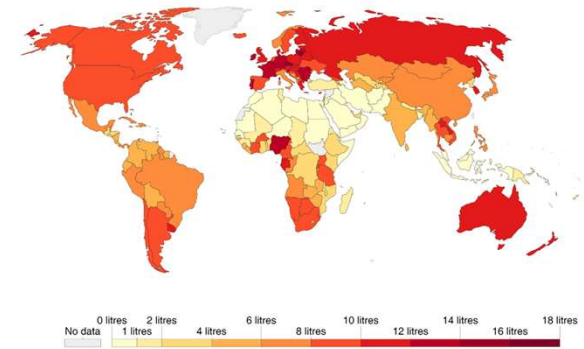
Source: World Bank   CC BY

Vaping- The New Smoking

E-cigs most likely expose users to less chemicals than traditional cigarettes (cigarettes contain 7,000 chemicals with many toxic, but it is unknown exactly what chemicals are in vapes)

As of January 21, 2020, there have been 60 deaths in patients with e-cigarette, or vaping, product use associated lung injury (EVALI)
◦ Predominantly affect people who modify their vaping devices or use black market modified e-liquids
◦ Products containing tetrahydrocannabinol (THC)
◦ Vitamin E acetate is a thickening agent often used in THC vaping products, and it was found in all lung fluid samples of EVALI patients examined by the CDC

Nicotine is in tobacco cigarettes and e-cigarretes, which increases likelihood of having a heart attack and is addictive. People have tended to switch between the two once they have started one

E-cigarette use among high school students had increased by 900%, likely that most would not have picked up any smoking habit

The lack of smoke and no smell reduce the stigma and make it more attractive

ecigarettereviewed.com

Target

- Support the research and development of **vaccines and medicines** for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all

Indicators

- Proportion of the population with **access to affordable medicines and vaccines** on a sustainable basis
- Total net official **development assistance** to medical research and basic health sectors

https://sustainabledevelopment.un.org/sdg3

Share of children who receive key vaccines in target populations, 1990
Share of children of the relevant age category who receive the seven key vaccines, conditional on inclusion in national vaccine schedules. The eight vaccines include DPT3, measles, polio, Hep3B, Haemophilus influenzae type b, pneumococcal conjugate vaccine, and rotavirus vaccine.

Our World in Data

No data 0%   20%   40%   50%   60%   70%   80%   90%   100%
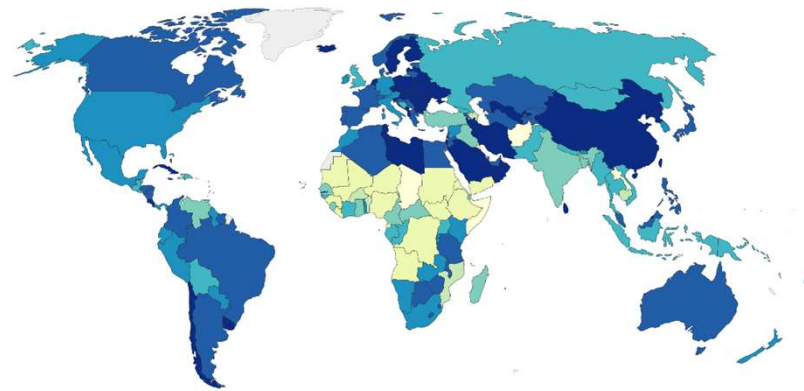
Source: Institute of Health Metrics & Evaluation (IHME)   CC BY

Share of children who receive key vaccines in target populations, 2016
Share of children of the relevant age category who receive the seven key vaccines, conditional on inclusion in national vaccine schedules. The eight vaccines include DPT3, measles, polio, Hep3B, Haemophilus influenzae type b, pneumococcal conjugate vaccine, and rotavirus vaccine.
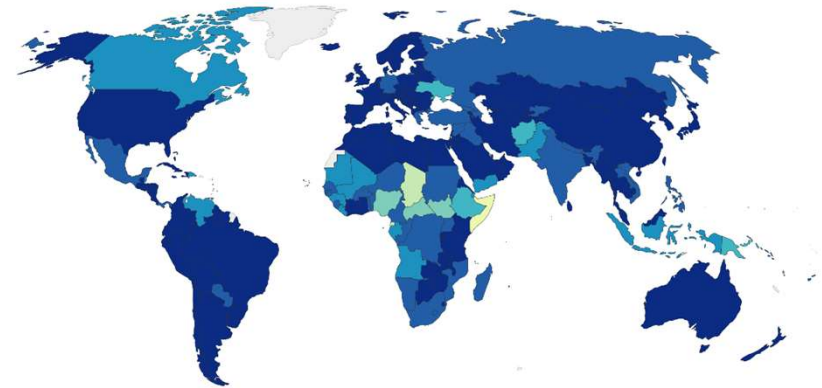
Our World in Data

No data 0%   20%   40%   50%   60%   70%   80%   90%   100%

Source: Institute of Health Metrics & Evaluation (IHME)   CC BY

- Increase in the entire world
- Vaccines included are DPT3, measles, polio, Hep3B, Haemophilus influenza type b, pneumococcal conjugate vaccine, rotavirus vaccine

Chinese Coronavirus (2019-nCov)

Originated in Wuhan, Hubei Province of China with link to a large seafood and animal market, suggesting animal-to-person spread
◦ Other similar spreads were MERS and SARS

Respiratory illness, spread mainly via respiratory droplets produced when an infected person coughs or sneezes

Have been reports of spread from an infected patient with no symptoms to a close contact
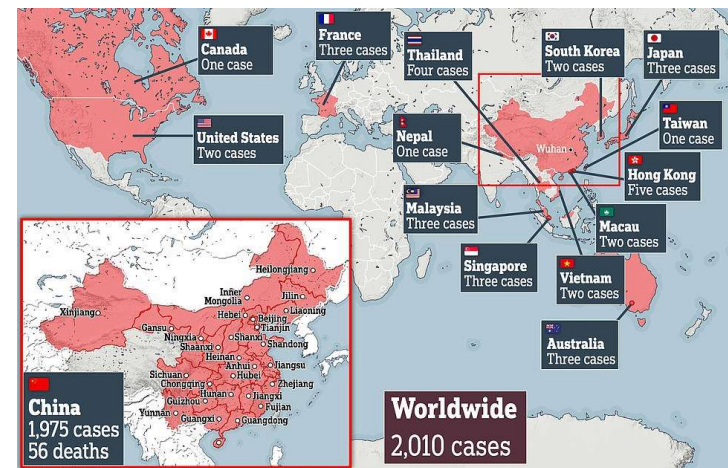
No vaccine or cure, only attempt to prevent infection

Nearly 500 people in China have died from the virus, thousands contracting each day

In the US, 12 people have been positively diagnosed (as of February 5th)

CDC has developed a real time Reverse Transcription-Polymerase Chain Reaction (rRT-PCR) test that can diagnose 2019-nCoV in respiratory and serum samples from clinical specimens
◦ As of February 5th, can send out test kits

https://www.dailymail.co.uk/news/article-7929657/Nurse-treating-coronavirus-sufferers-China-claims-90-000-people-infected.html

Outdated, as of January 25th

https://www.nytimes.com/2020/02/05/world/asia/coronavirus-china.html
https://www.cdc.gov/coronavirus/2019-ncov/about/index.html

Circumcision Prevents HIV

Reduces female-to-male sexual transmission of HIV by 60%

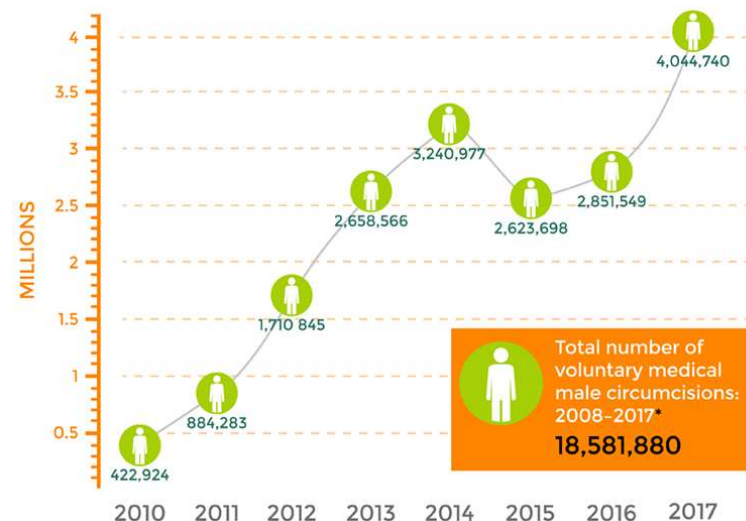More voluntary acceptance in Africa because of history with tribes

Cost-effective

Comparison:
◦ After the US spent $1.4 billion in 15 years promoting abstinence before marriage as a way of preventing HIV in 14 countries in sub-Saharan Africa, study found efforts made no difference
  ◦ https://www.scientificamerican.com/article/u-s-anti-aids-abstinence-efforts-in-africa-fail-to-prevent-hiv/
◦ Condom distribution played a key role in declining HIV incidence in 2000-2008, but consistence use has been problematic. "Majority of women are generally unable to negotiate consistent male or female condom use which is largely dependent on male partner co-operation"
  ◦ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4893541/

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5422680/

Voluntary medical male circumcision (VMMC) for HIV prevention in the 14 UNAIDS and WHO priority countries**

MILLIONS

422,924 (2010)
884,283 (2011)
1,710 845 (2012)
2,658,566 (2013)
3,240,977 (2014)
2,623,698 (2015)
2,851,549 (2016)
4,044,740 (2017)

Total number of voluntary medical male circumcisions: 2008–2017* 18,581,880

*Calendar years 2008 and 2009 are included in total numbers.
**UNAIDS and WHO 14 priority countries: Botswana, Eswatini, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Tanzania, Uganda, Zambia, Zimbabwe

Source: Global AIDS Monitoring, national programmes, UNAIDS/UNICEF/WHO.

Avert) www.avert.org

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Independent, impartial, neutral

Emergency response

Owned, shared, and run by its members

Nearly 60 countries

People threatened by violence, neglect, or catastrophe, primarily due to armed conflict, epidemics, malnutrition, exclusion from health care, or natural disasters.

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https://www.doctorswithoutborders.org/who-we-are/how-we-work

UNU and UTD Wastewater Management

UNU: brought together international experts and local stakeholders to co–design sustainable wastewater treatment and management systems for communities in Guatemala and Mexico

- Rural regions have alleviated agricultural water shortages by using wastewater for irrigation
- Has had a number of negative environmental, sanitary, and social impacts such as cholera outbreaks and accumulation of heavy metals in the soil

UTD: Dr. Jillian Duquaine-Watson led study abroad programs helping build small-scale, natural water treatment processes in Costa Rica

- biodigester: a structure of tanks, bags and tubes that converts human and animal waste into methane that can be used for energy, and purifies the water for fields, plumbing, or with boiling, drinking water

https://ourworld.unu.edu/en/from-waste-to-resource-sustainable-wastewater-management-in-latin-america

Ted Talk

Economic Perspective and Insights for AIDS in Africa:
https://www.ted.com/talks/emily_oster_flips_our_thinking_on_aids_in_africa?language=en#t-232795