



Epidemiology of Measles
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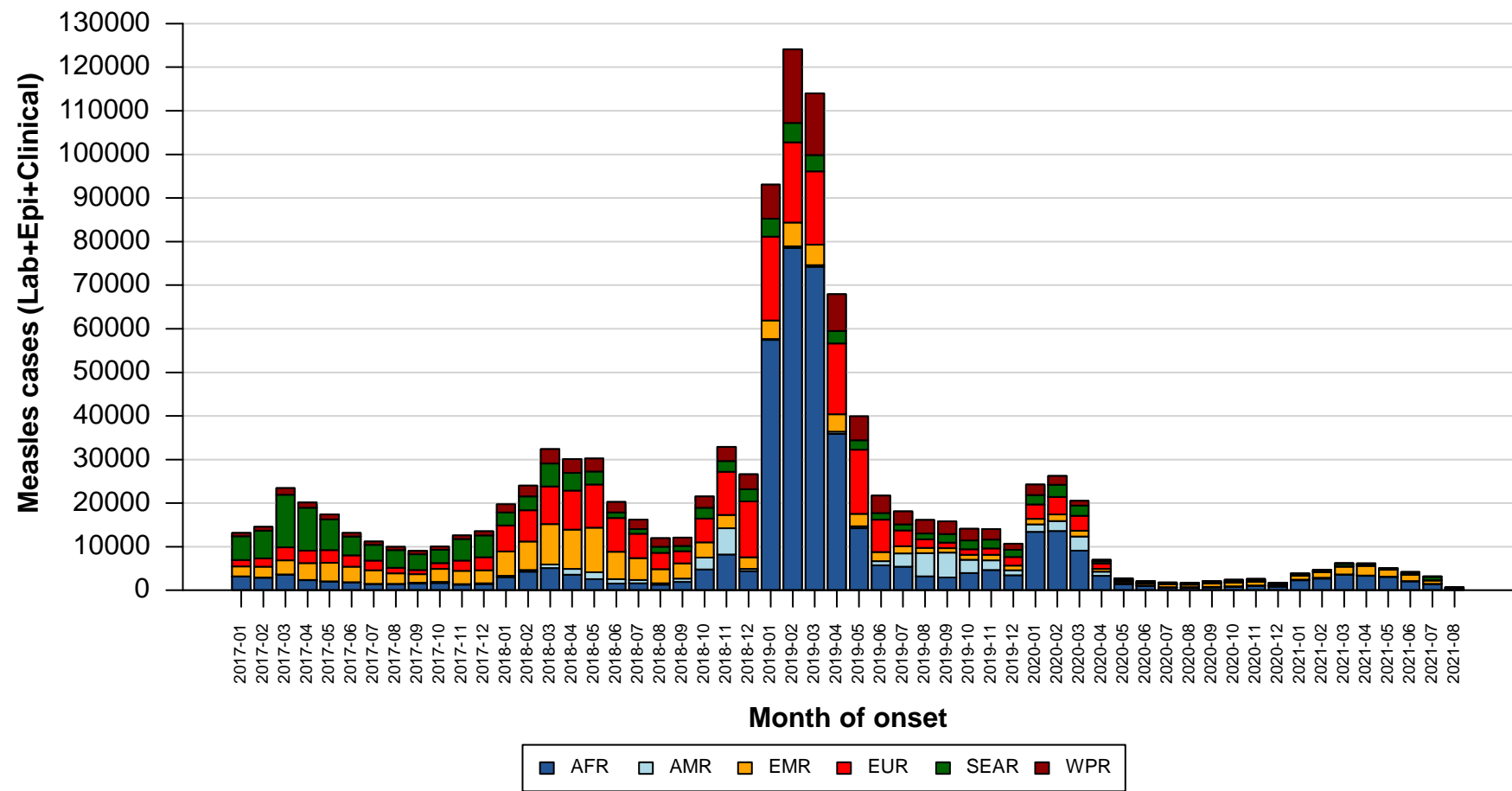


Measles Epidemiology

- **Reservoir** Human
- **Transmission** Respiratory Airborne
- **Temporal pattern** Peak in late winter–spring
- **Communicability** 4 days before to 4 days after rash onset



Measles case distribution by month and WHO Region (2017-2021)



Notes: Based on data received 2021-09 - Data Source: IVB Database - This is surveillance data, hence for the last month(s), the data may be incomplete.

Measles - Summary



1. Measles is a highly contagious, potentially fatal, but vaccine-preventable disease caused by measles (Rubeolla) virus.

2. Symptoms include fever, maculopapular rash, and at least one of cough, coryza, or conjunctivitis, although vaccinated individuals can have milder or even no symptoms.

Measles - Summary

3. Laboratory diagnosis relies largely on the detection of specific IgM antibodies in serum, dried blood spots, or oral fluid, or the detection of viral RNA in throat or nasopharyngeal swabs, urine, or oral fluid.



Measles - Summary



4. Measles is a viral disease that attacks children the most. The most serious complications include blindness, swelling of the brain, diarrhea and severe respiratory infections.

Neurological complications are uncommon but serious and can occur during or soon after the acute disease or months or even years later .

Measles - Summary

5. Patient management mainly involves supportive therapy, such as vitamin A supplementation, monitoring for and treatment of secondary bacterial infections with antibiotics , and rehydration in the case of severe diarrhoea.



Measles - Summary



6. There is no specific antiviral therapy for the treatment of measles, and disease control largely depends on prevention.

7. However, despite the availability of a safe and effective vaccine, measles is still endemic in many countries and causes considerable morbidity and mortality, especially among children in resource-poor settings.

Risk Factors

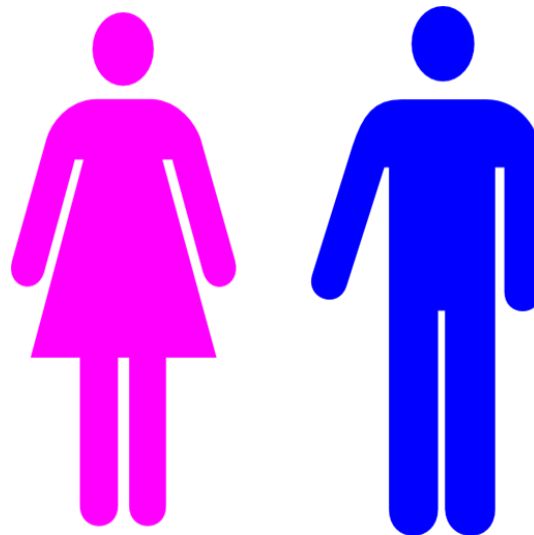


- **Before the implementation of the immunization program, measles was common in children and up to 90% of people were infected before the age of 20,**
- **Age is the most important associated factor with occurrence of measles and its mortality.**
- **Disease-related Mortality is more common in children less than 2 years old and older adults.**

Risk Factors



The incidence of the disease in both sexes is the same and it is thought that the complications of the disease in males are more than female. Of course, the results of studies are contradictory.



Risk Factors

- ▶ **The death rate in children with chronic diseases such as Kwashiorkor, TB or AIDS is greatly increased.**
- ▶ **Severe malnutrition causes severe measles, which in 40% of cases leads to death.**



Measles Vaccine (MMR)



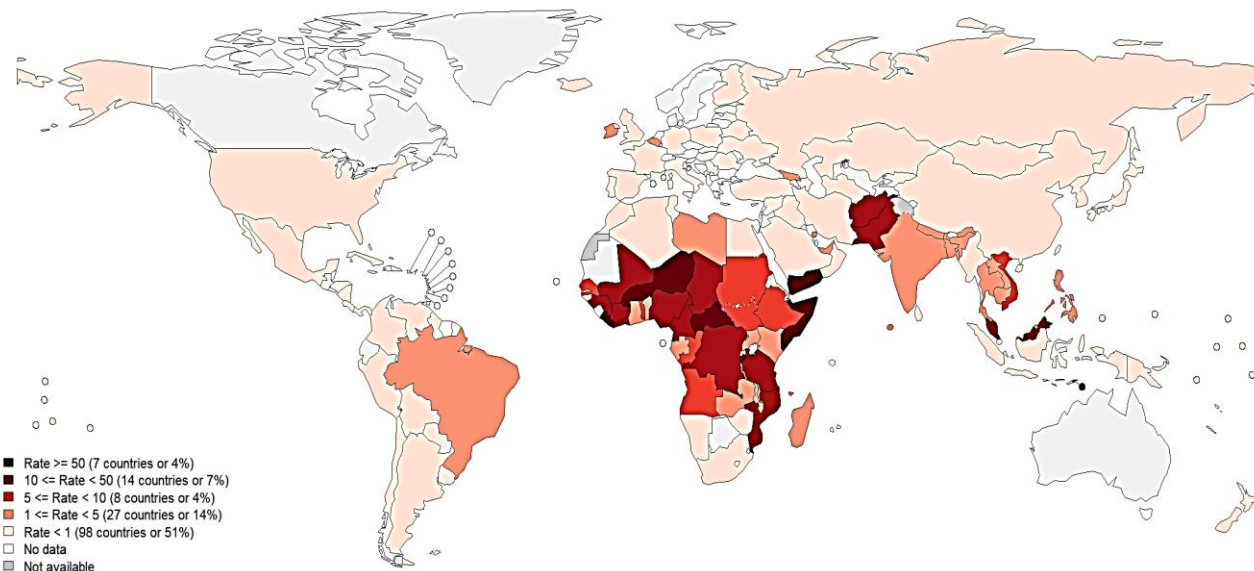
- **Composition** → **Live virus**
- **Efficacy** → **95% (range, 90%-98%)**
- **Duration of Immunity** → **Lifelong**
- **Schedule** → **2 doses**

Measles Incidence Rate per Million(12M period)



Top 10**

Country	Cases	Rate
Pakistan	8735	39.54
Nigeria	7538	36.57
India****	3848	2.79
DR Congo	2248	25.1
United Republic of Tanzania	2106	35.26
Niger	1692	69.9
Afghanistan	1676	43.05
Burkina Faso	1539	73.62
Yemen	1513	50.73
Somalia	1398	87.96



Other countries with high incidence rate S***

Country	Cases	Rate
Burundi	925	77.79
Liberia	280	55.36
Central African Republic	249	51.56
Côte d'Ivoire	1283	48.64
Mali	880	43.46



Map production: World Health Organization, WHO, 2021. All rights reserved
Data source: IVB Database

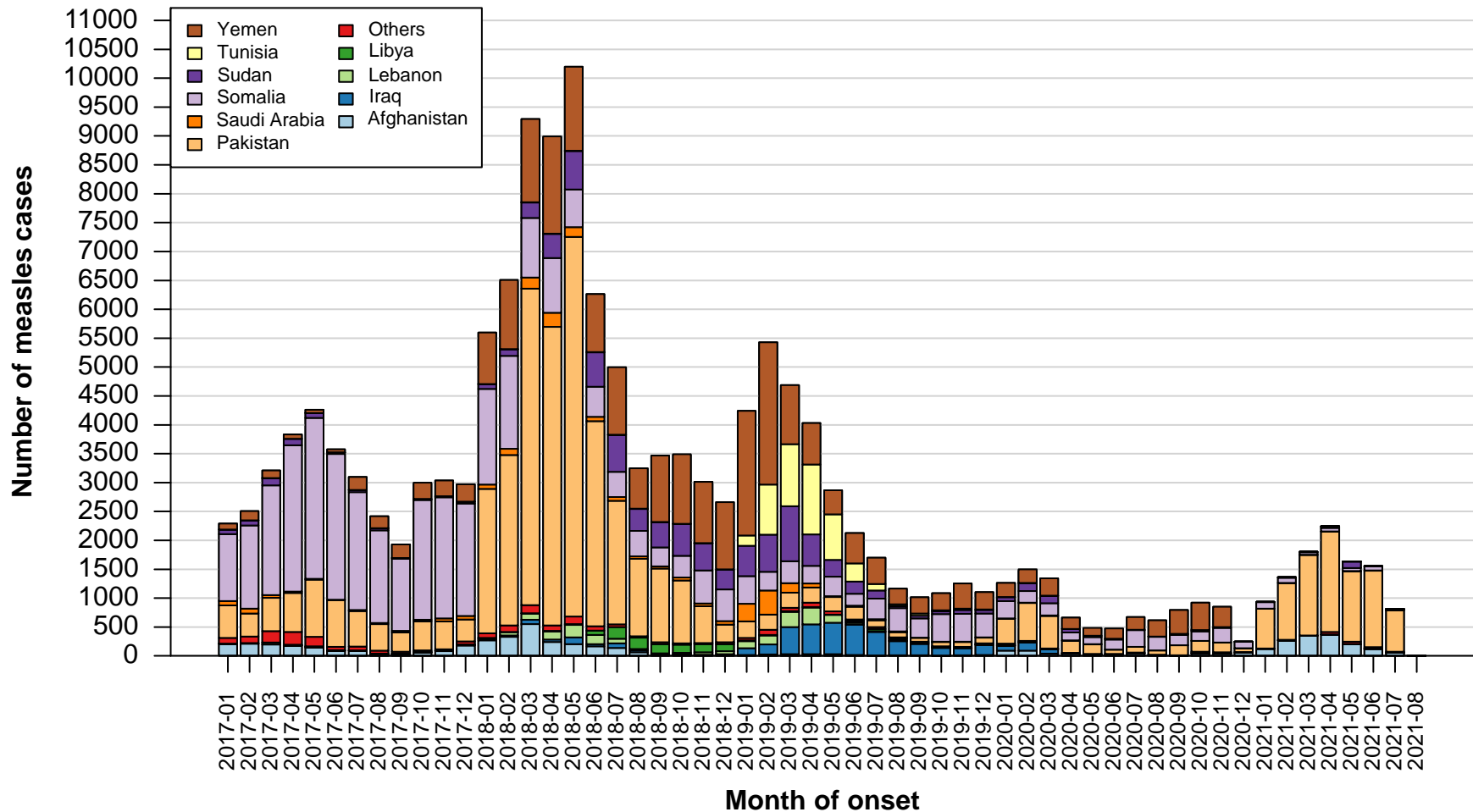
Disclaimer:
The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Measles cases from countries with known discrepancies between case-based and aggregate surveillance, as reported by country

Country	Year	Cases in Case-based	Cases in Aggregate	Data Source for aggregate #s
DR Congo	2020	17,183	75,863	AFR Partner's Weekly Update, 11 Aug 2021
	2021	1,997	33,631	
Somalia	2020	2,382	2,596	Somali EPI/POL Weekly Update Week 34
	2021	274	4,135	

Notes: Based on data received 2021-09 and covering the period between 2020-08 and 2021-07 - Incidence: Number of cases / population * 1,000,000 - * World population prospects, 2019 revision - ** Countries with the highest number of cases for the period - *** Countries with the highest incidence rates (excluding those already listed in the table above) - ****WHO classifies all suspected measles cases reported from India as measles clinically compatible if a specimen was not collected as per the algorithm for classification of suspected measles in the WHO VPD Surveillance Standards. Thus numbers might be different between what WHO reports and what India reports.

Measles case distribution (EMR), 2017-2021

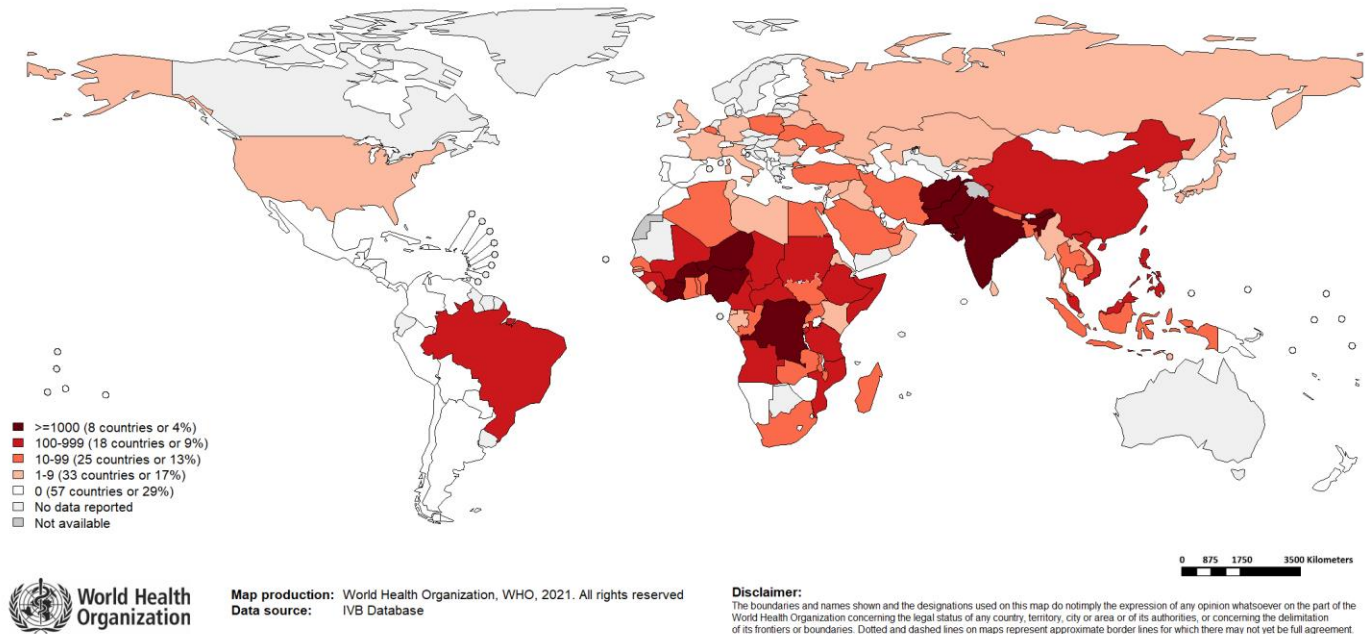


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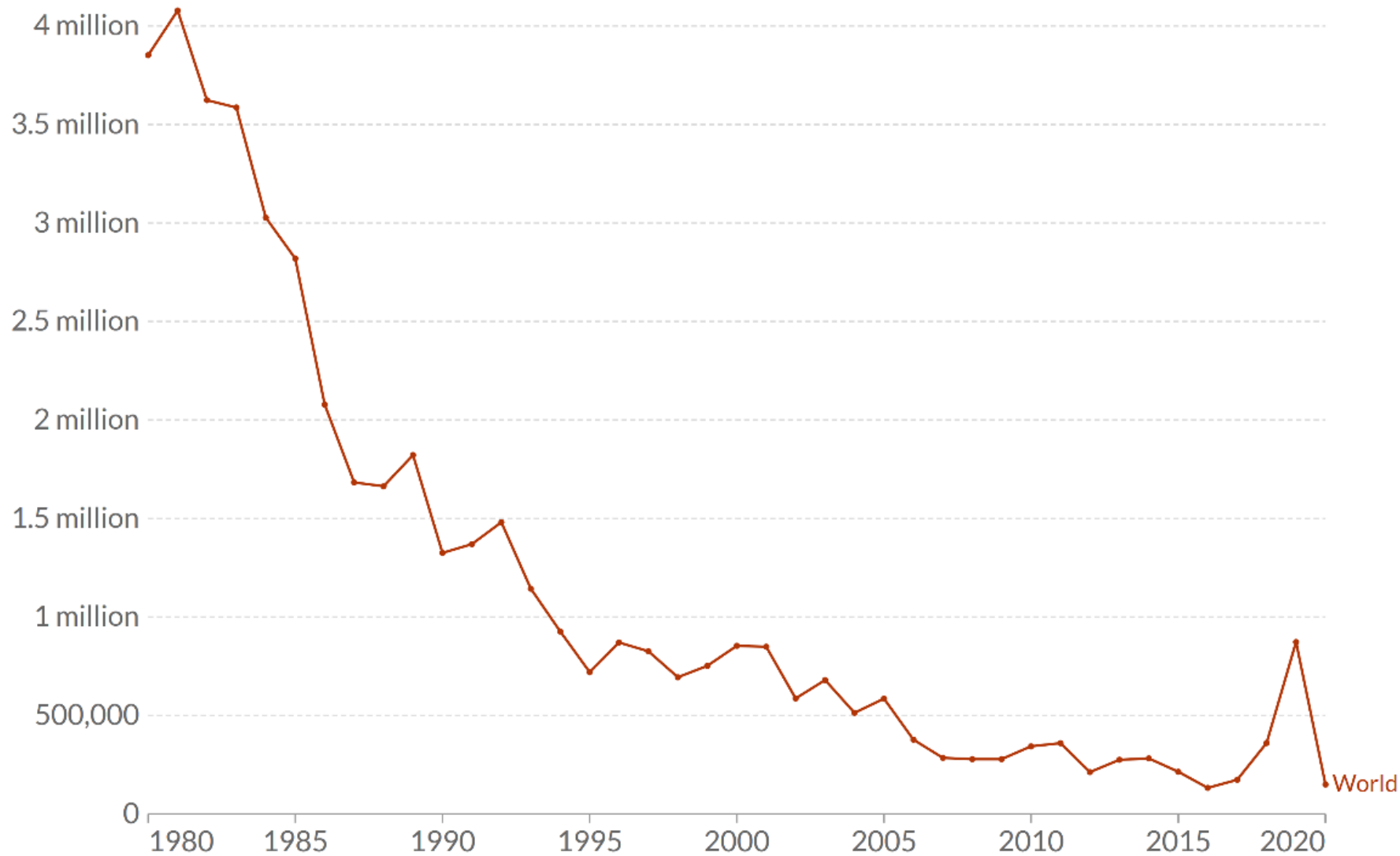
Number of Reported Measles Cases(6M period)

Top 10*	
Country	Cases
Pakistan	7382
Nigeria	6283
India**	2377
DR Congo	1546
Niger	1387
Afghanistan	1372
Burkina Faso	1353
Côte d'Ivoire	1112
United Republic of Tanzania	910
Mali	696

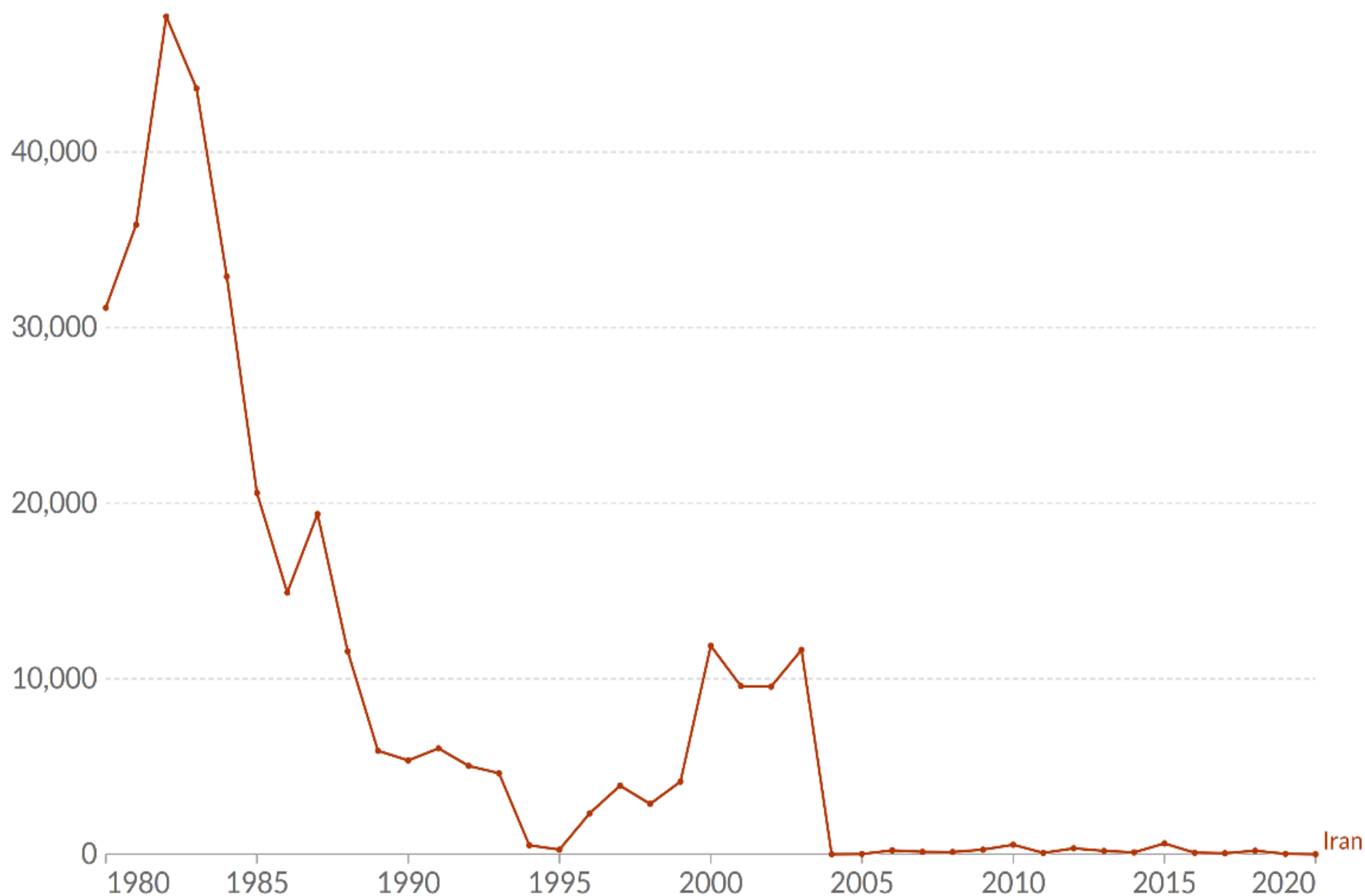


Notes: Based on data received 2021-09 - Surveillance data from 2021-02 to 2021-07 - * Countries with highest number of cases for the period - **WHO classifies all suspected measles cases reported from India as measles clinically compatible if a specimen was not collected as per the algorithm for classification of suspected measles in the WHO VPD Surveillance Standards. Thus numbers might be different between what WHO reports and what India reports.

Reported cases of measles, 1980 to 2020

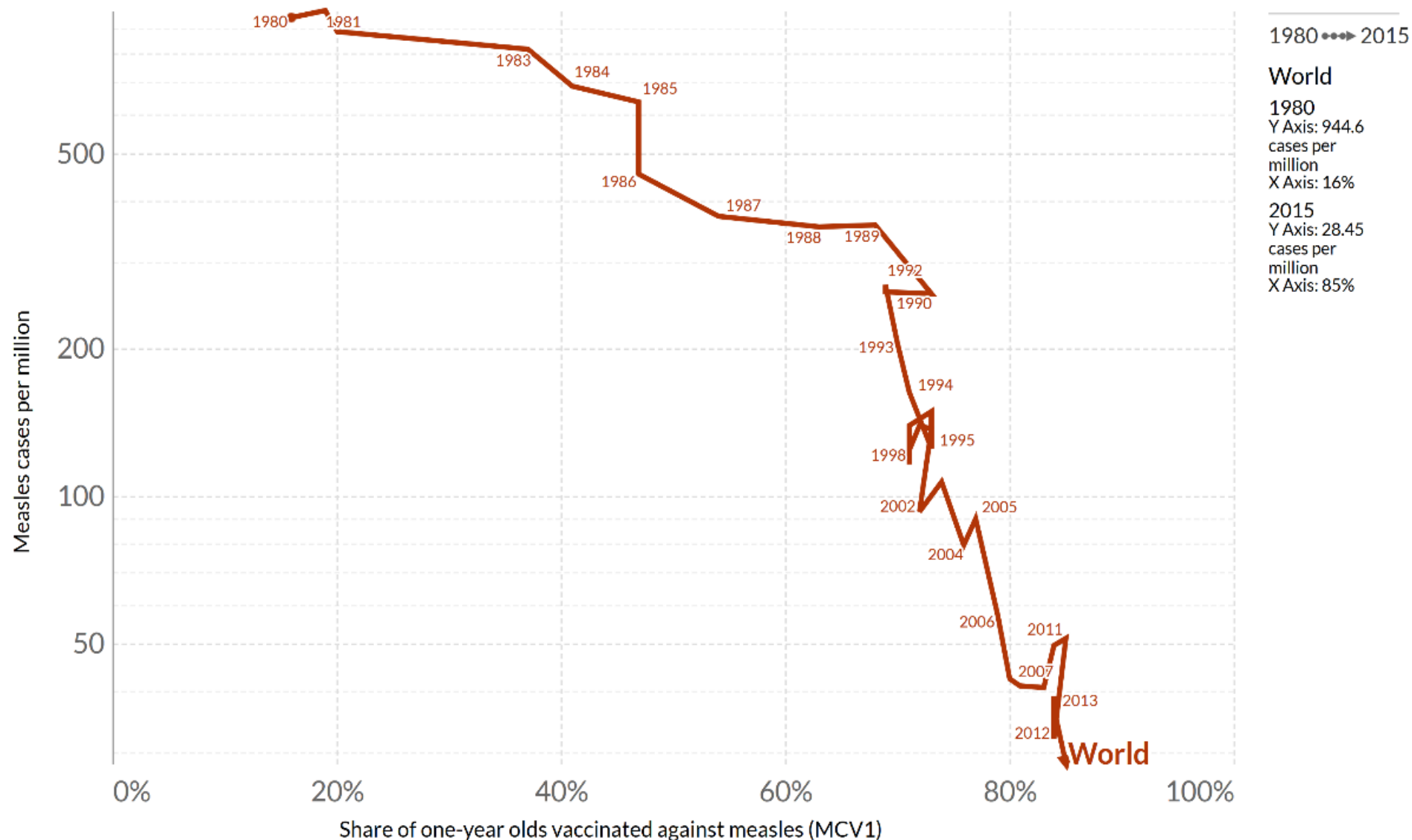


Reported cases of measles, 1980 to 2020

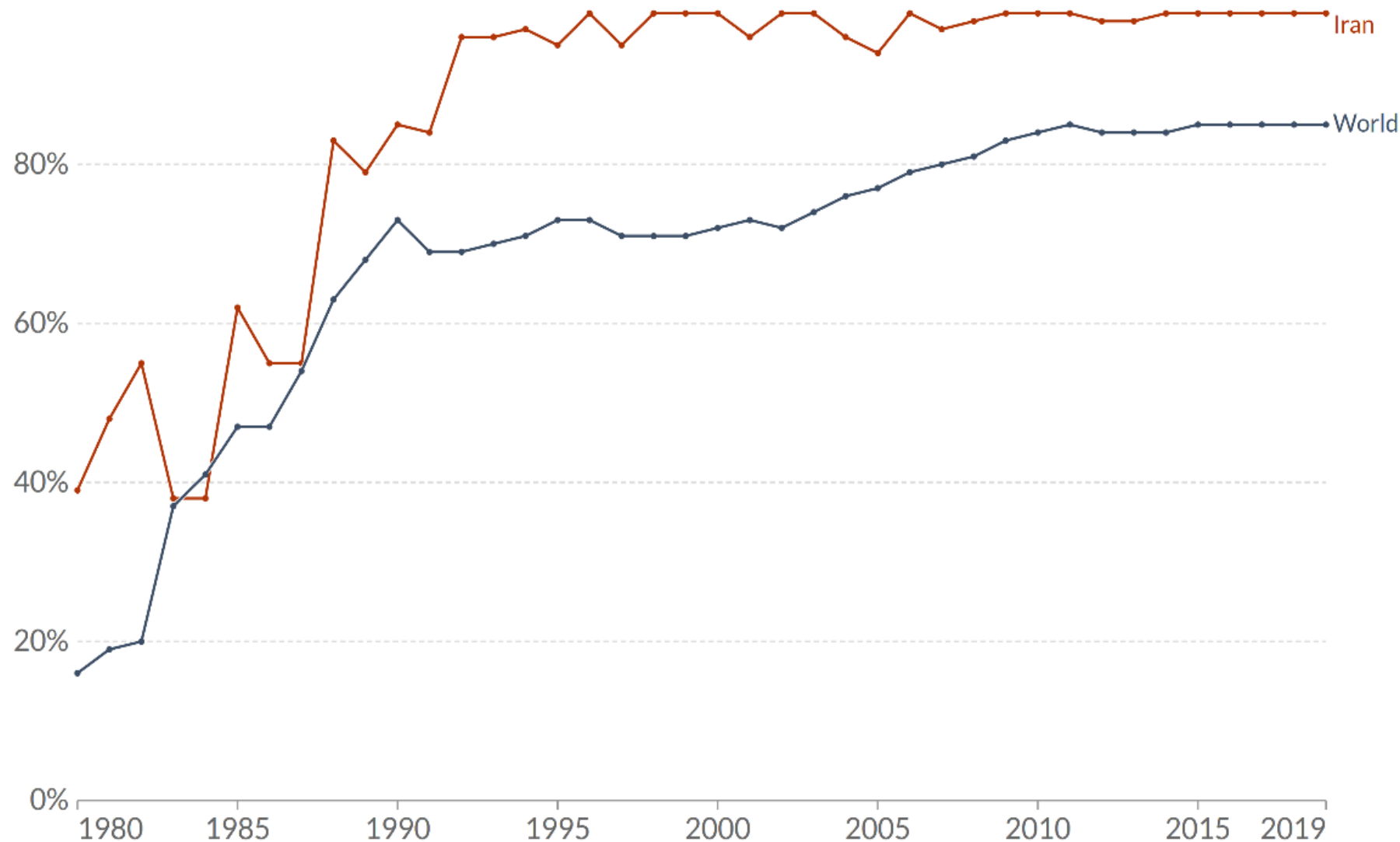


Measles vaccine coverage worldwide vs Measles cases worldwide

Shown on the x-axis is the share of 1-year-olds who have been vaccinated against measles (MCV1) in a given year.



Share of one-year-olds vaccinated against measles (MCV1)

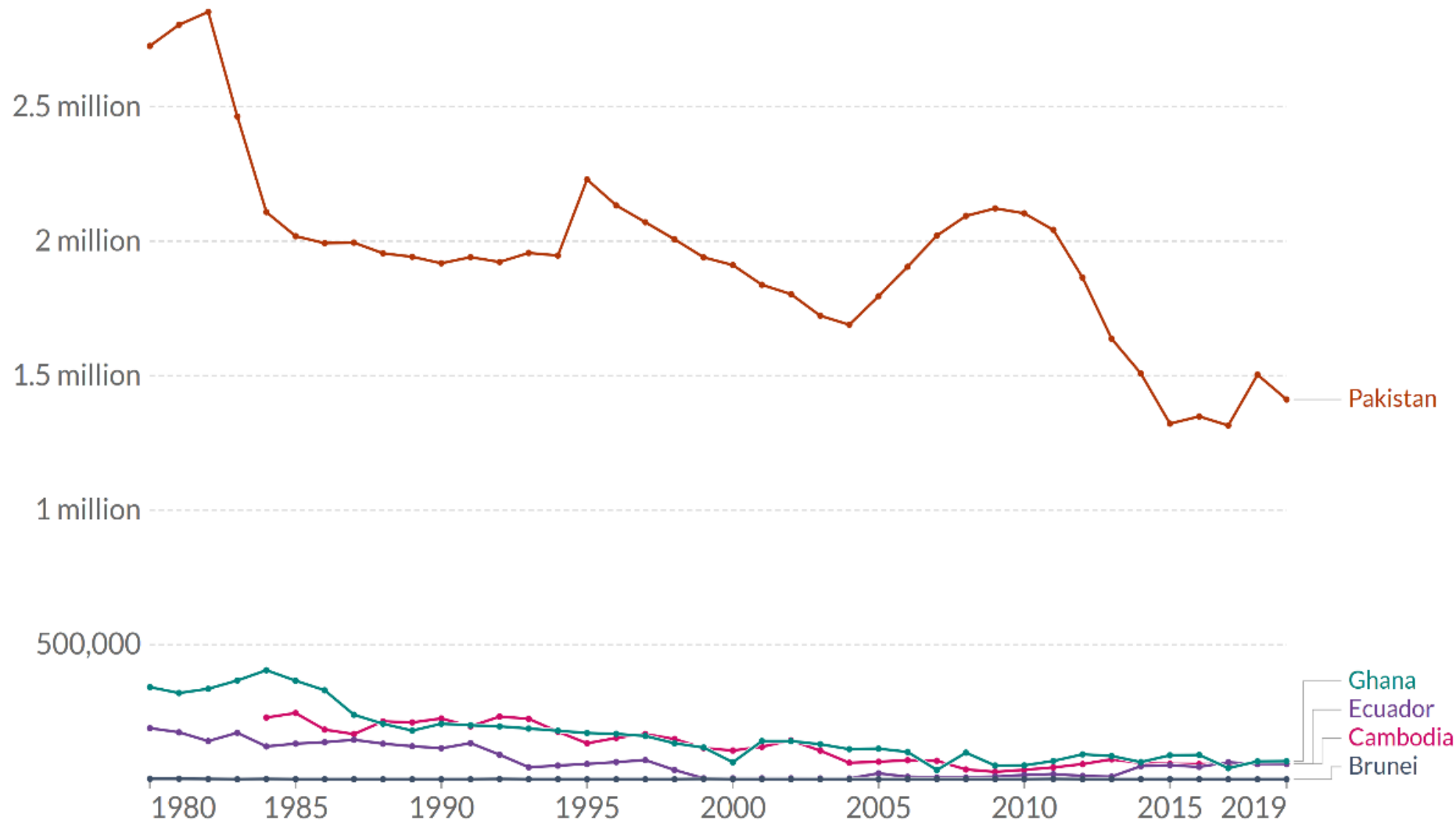


Source: World Health Organization (WHO); UNICEF

OurWorldInData.org/vaccination/ • CC BY

Note: Measles is a highly contagious viral disease, most common in young children. Its effects include blindness, inflammation of the brain, severe diarrhoea, and severe respiratory infections such as pneumonia.

Number of one-year-olds who did not receive the vaccine against measles (MCV1)

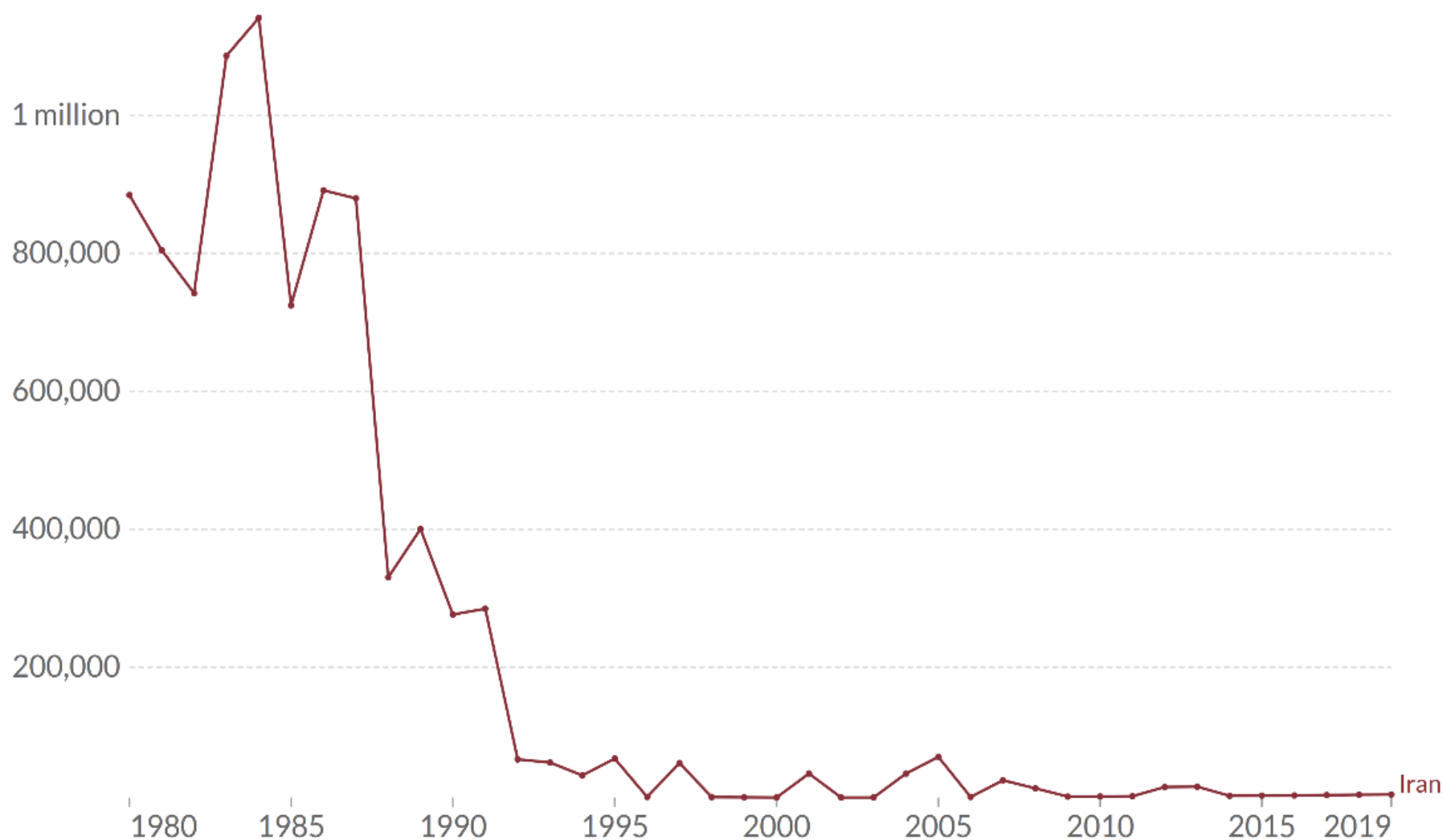


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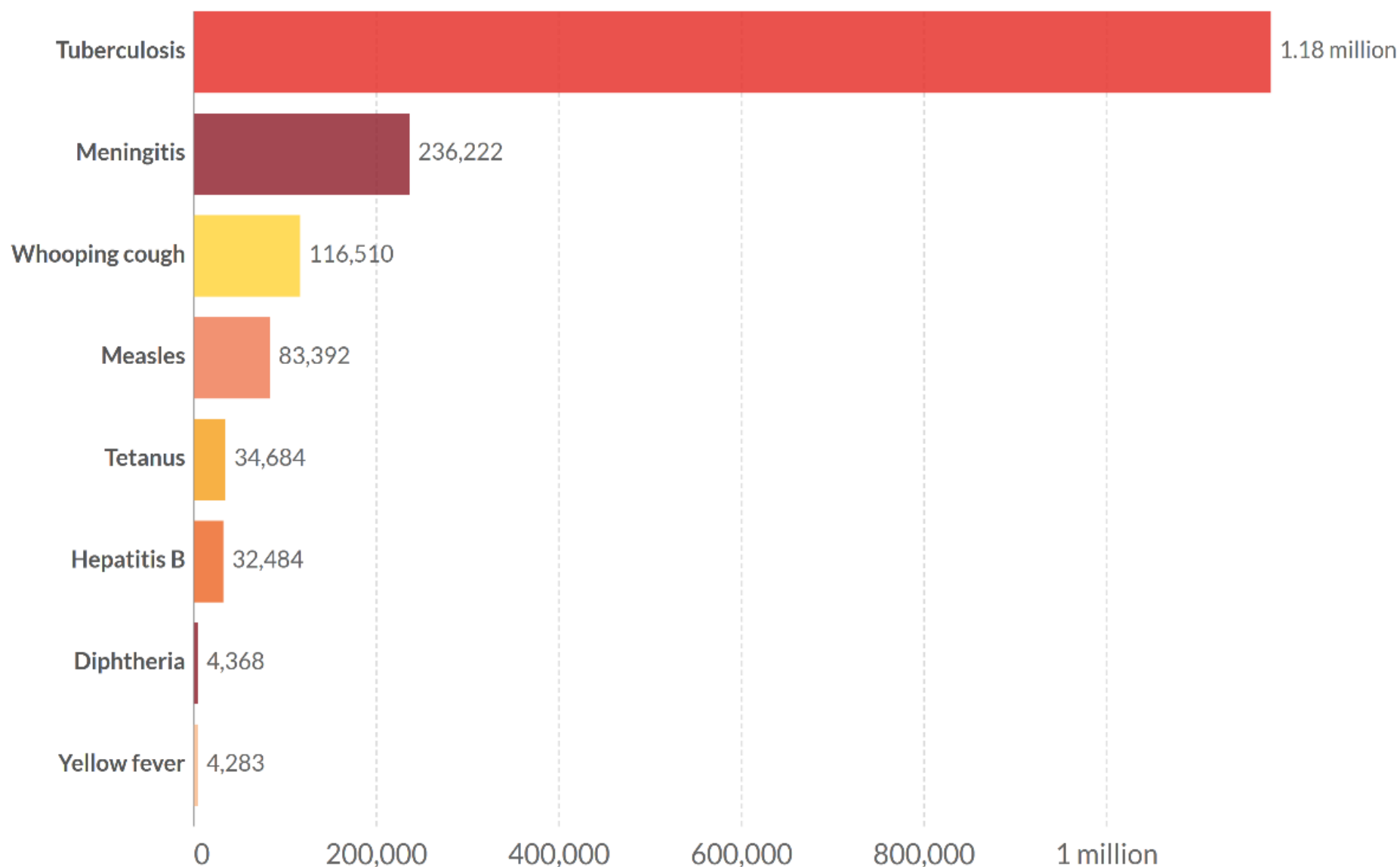


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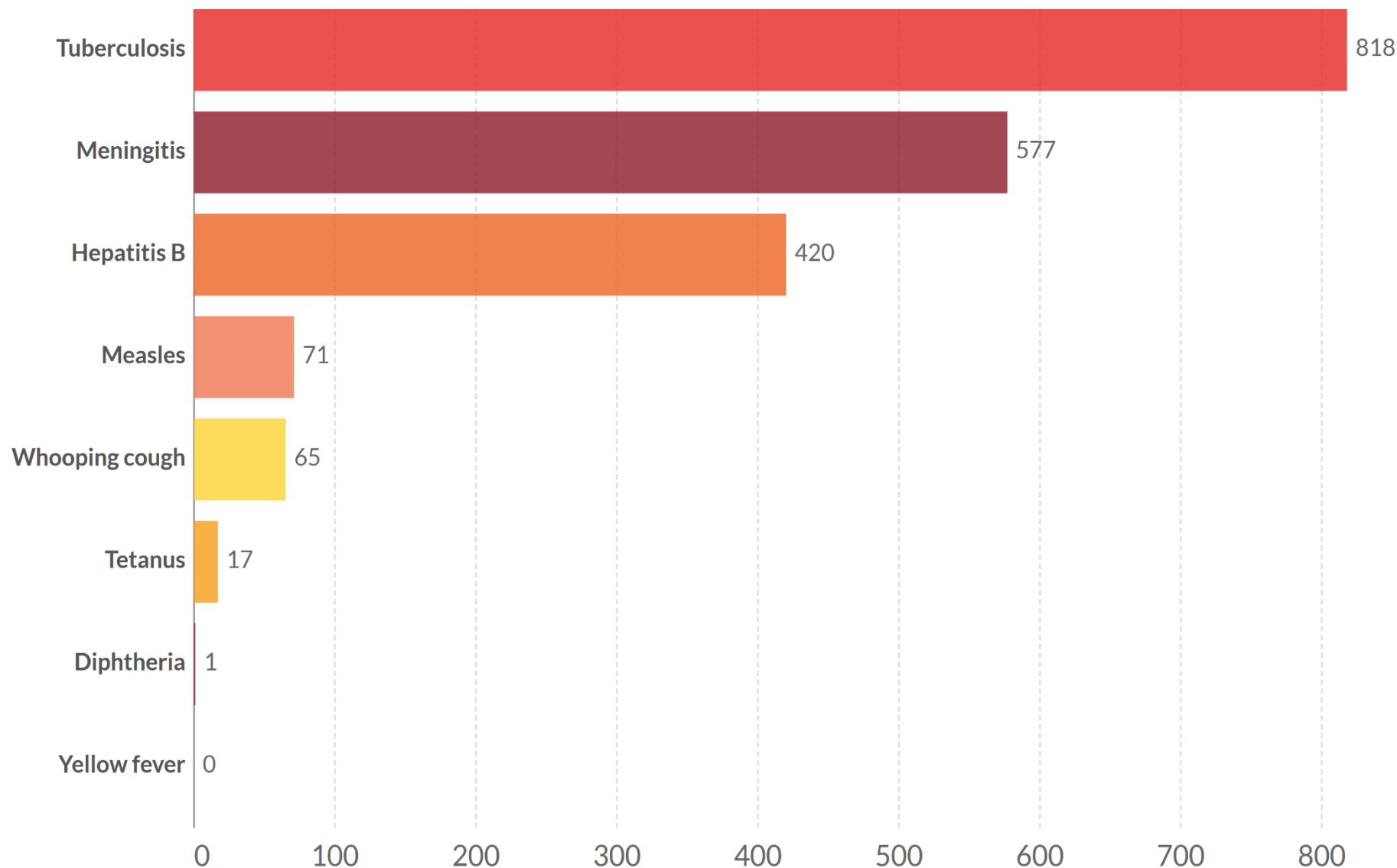
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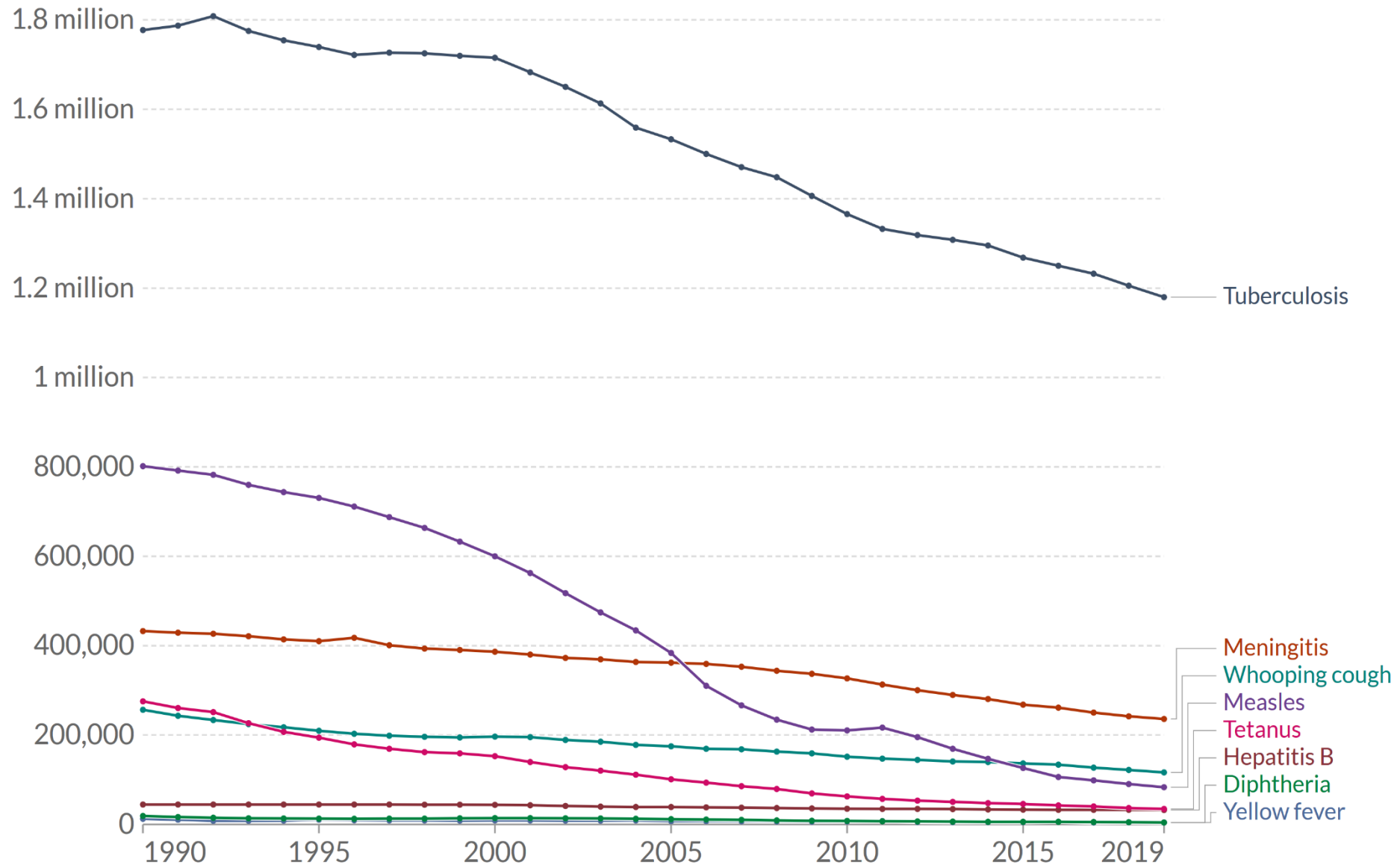
Deaths caused by vaccine-preventable diseases, World, 2019



Deaths caused by vaccine-preventable diseases, Iran, 2019

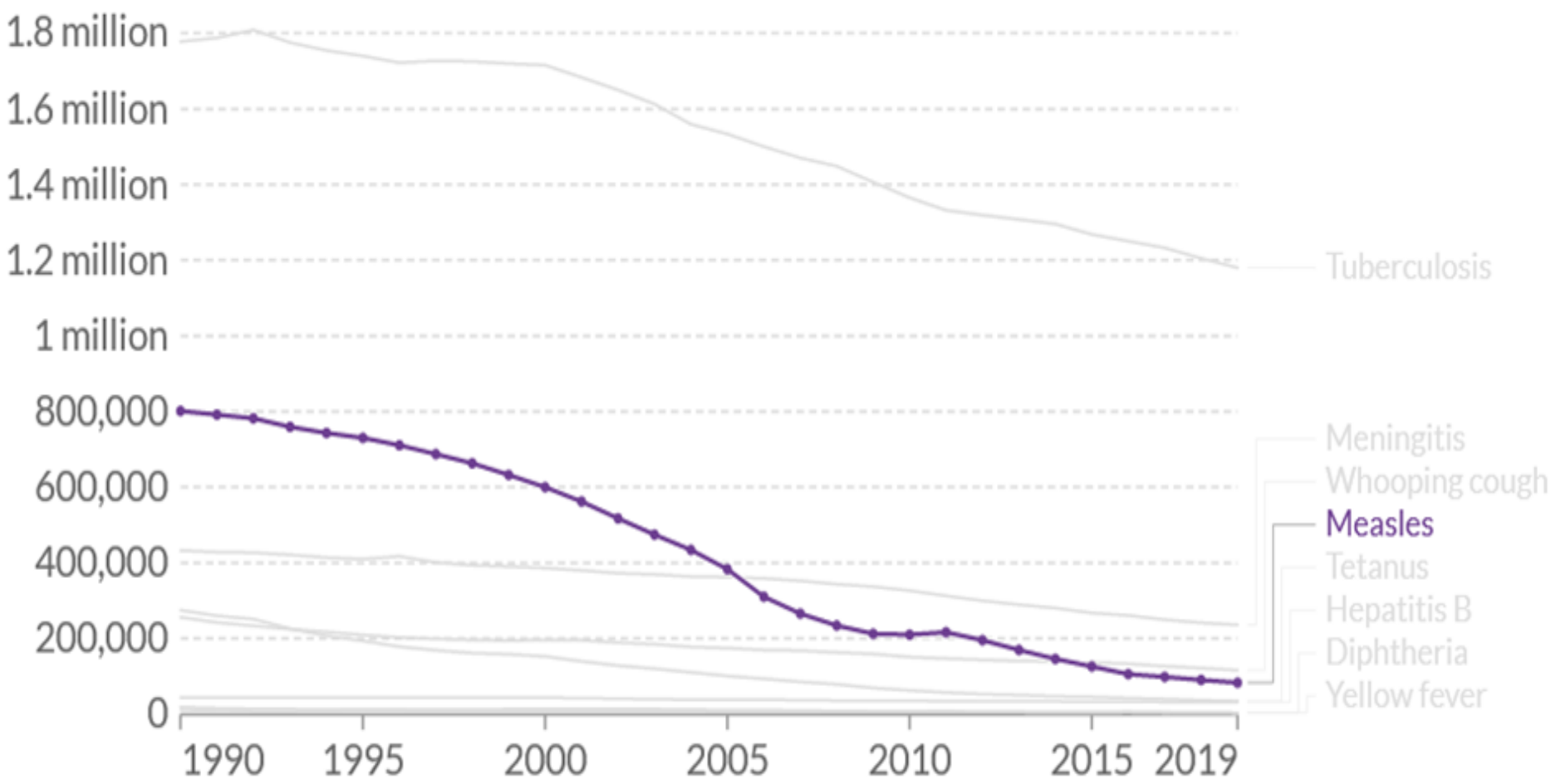


Deaths caused by vaccine-preventable diseases, World, 1990 to 2019

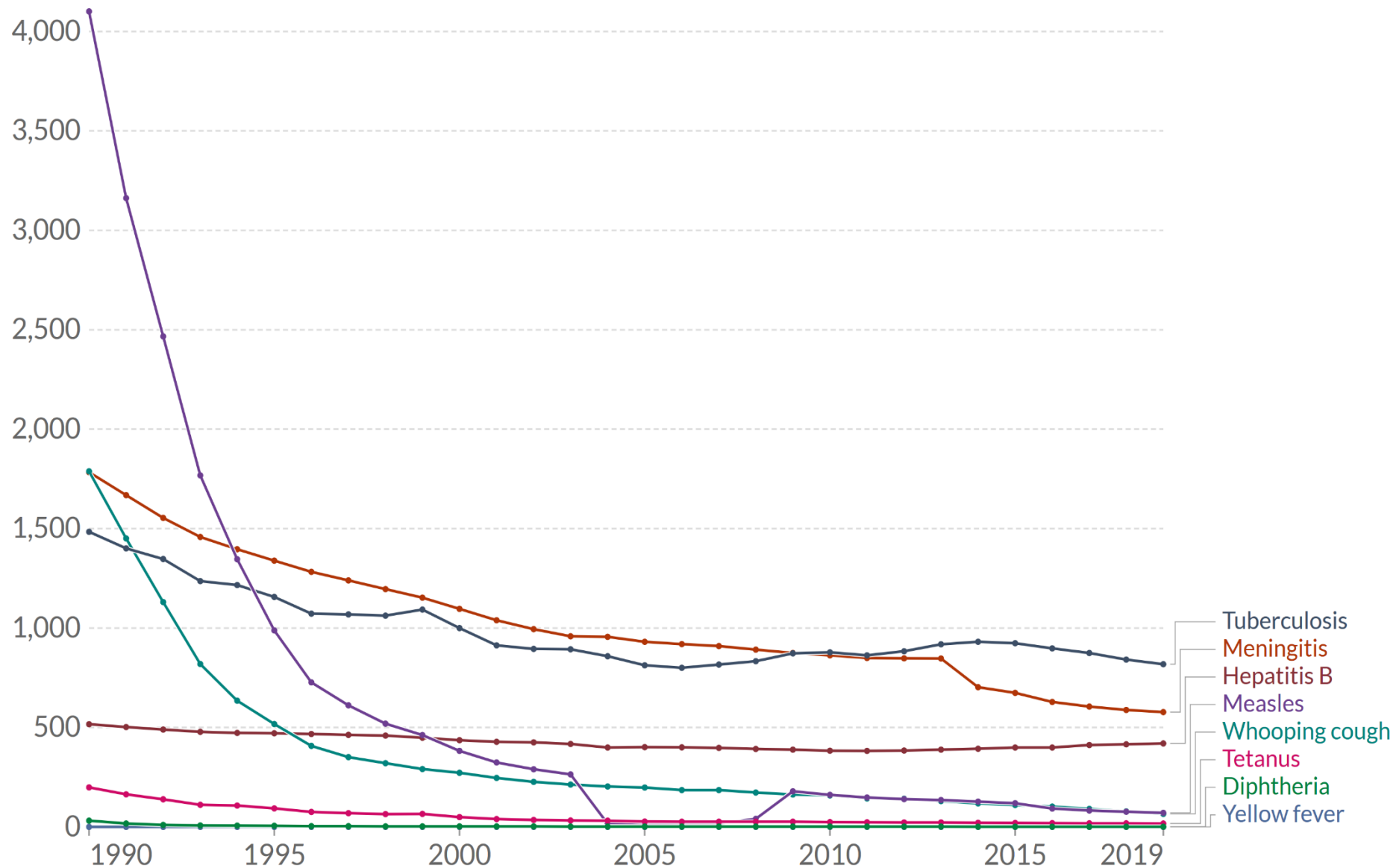


Deaths caused by vaccine-preventable diseases, World, 1990 to 2019

↔ Change country

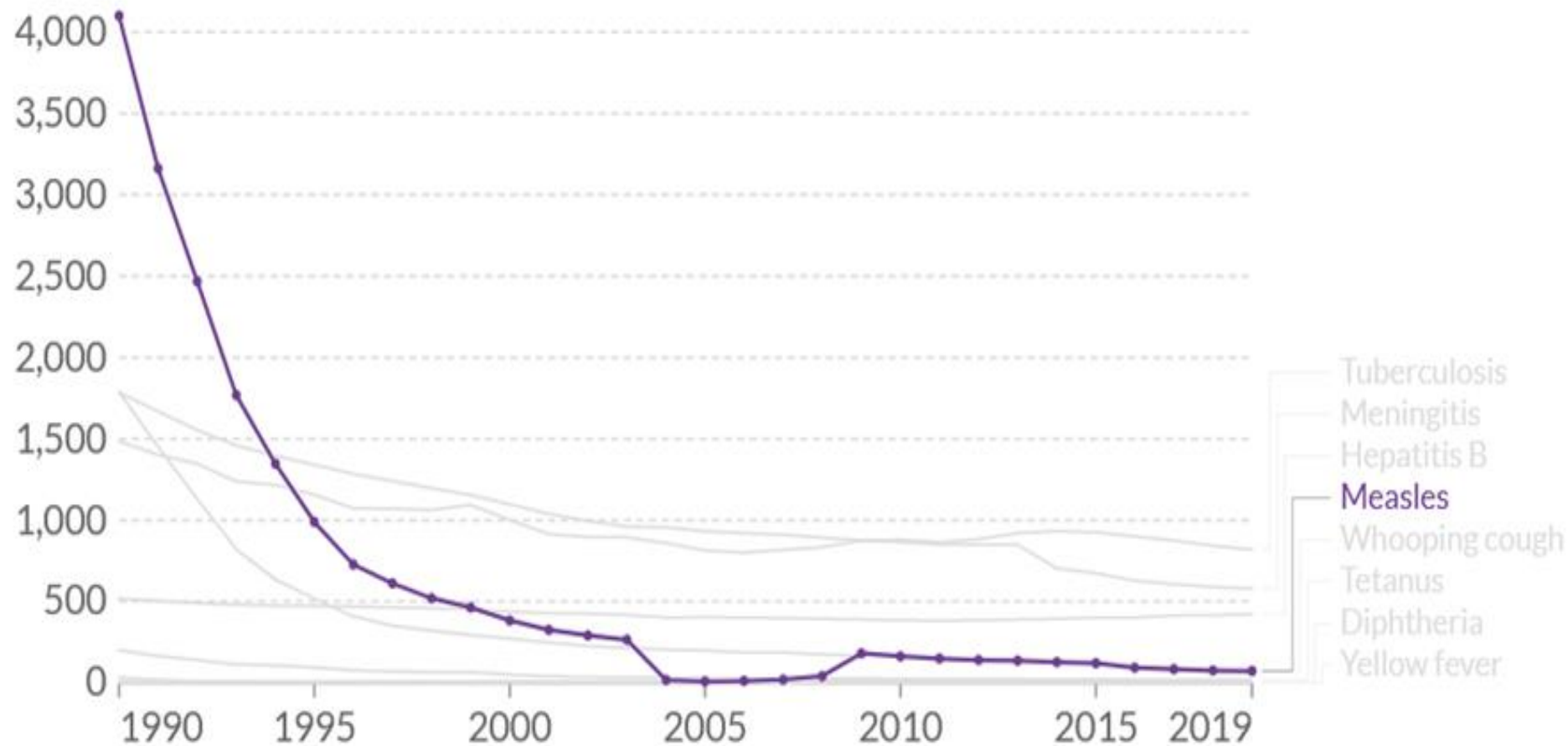


Deaths caused by vaccine-preventable diseases, Iran, 1990 to 2019



Deaths caused by vaccine-preventable diseases, Iran, 1990 to 2019

↔ Change country



Global Measles Outbreaks

- The United Nations on Wednesday, April 27, announced an 80 percent increase in measles cases worldwide in 2022.
- The international organization went on to warn that an increase in measles indicates the possibility of other outbreaks.
- The data also show that in the past 12 months, there have been 21 large and destructive measles outbreaks, most of them in Africa and the eastern Mediterranean.

Global Measles Outbreaks

- UNICEF and the world health organization said in a statement that the coronavirus pandemic has halted vaccination campaigns for non-covid-19 diseases around the world, an issue that could endanger the lives of millions of children.
- More than 17,300 people with measles were identified worldwide in January and February, according to new data from UN agencies. The number of measles patients in the same period last year was about 9,600.

Global Measles Outbreaks

- "Because measles is the most contagious vaccine-preventable disease, it mostly serves as a warning sign,"

Christopher Gregory, senior health adviser at UNICEF's immunization division

- "Measles is what we call a tracker or canary in a coal mine because it shows us where the weaknesses are in the immunization process," he said.

Global Measles Outbreaks

- The health official cited yellow fever as one of the diseases that could spread after an increase in measles cases in West Africa.
- "Our concern is especially for countries that are more vulnerable, areas where healthcare systems are already really having problems, countries that are still struggling to cope with the spread of these diseases in addition to the coronavirus," Gregory said.

Global Measles Outbreaks

- UN data show that Somalia recorded the highest number of cases in the past 12 months, with more than 9,000 cases of measles, followed by Yemen, Afghanistan, Nigeria and Ethiopia, countries that are somehow engaged in war.
- There is also concern that the Ukraine war will lead to an increase in measles cases in the country. According to Gregory, since the start of the war in Ukraine, it has become very difficult to trace any disease in the country.

Global Measles Outbreaks

- Also, more than 23 million children reportedly lost routine vaccinations in 2020 with the coronavirus pandemic, the highest number in more than a decade.
- UN agencies also said that 57 routine vaccination campaigns in 43 countries that had been postponed at the start of the coronavirus pandemic have yet to reach a final conclusion, something that has affected 203 million people, most of them children.

Global Measles Outbreaks

- However, the coronavirus continues to put pressure on health care facilities as well as medical staff, which has reduced attention to routine vaccinations.
- WHO president Tedros Adhanom said in a statement that the impact of these disorders on immunization services will be tangible for decades to come.
- "Now is the time to return essential vaccinations and launch aid campaigns so that everyone can access life-saving vaccines," he said.

Global Measles Outbreaks

- Gregory also said it was time to bring childhood immunization back to pre-covid-19 levels.
- Vaccination is the best way to prevent measles outbreaks
- Vaccinating at least 95 percent of the population is the best way to prevent measles outbreaks, but many countries are far from that goal.

Global Measles Outbreaks

- Only 46 percent of Somalis have received a measles vaccine, according to UN data.
- 98 people with measles identified in iran in the past four months
- Since the beginning of this year (early January 1400), 98 people have been identified with measles in the country, of which 28 were Iranian, 66 were Afghan and four were Pakistani.

Recommendations:



- **Effective, timely catch-up vaccination campaigns,**
 - **strong commitment and leadership,**
 - **and sufficient resources**
- will be required to mitigate this threat.**



Thanks for your attention