WHO Global Task Force on TB Impact Measurement

Methods to be used by WHO to produce TB incidence & mortality estimates required for WHO End TB Strategy/UN SDGs 2025 milestone and 2030 targets assessment (2015-2025, 2015-2030)

Geneva, 25-27 September 2024

Introduction/overview

Katherine Floyd, WHO

Three topics

1. Background context & history

2. Current methods used by WHO to produce TB incidence and mortality estimates

3. This meeting

World Health Organization

Background
context & history

WHO core functions*

1. **Providing leadership on matters critical to health and engaging in partnerships where joint action is needed**
2. **Shaping the research agenda and stimulating the generation, translation and dissemination of valuable knowledge**
3. **Setting norms and standards and promoting and monitoring their implementation**
4. **Articulating ethical and evidence-based policy options**
5. **Providing technical support, catalysing change and building institutional capacity**
6. **Monitoring the health situation and assessing health trends**

*e.g. see WHO's 13th General Programme of Work (GPW), page 4
https://apps.who.int/iris/bitstream/handle/10665/324775/WHO-PRP-18.1-eng.pdf

World Health Organization

WHO General Programme of Work
2019–2025

Building health information systems

Strengthening civil registration and other vital statistics

Strengthening data collection systems

Population surveys

Strengthening capacity to collect, analyse, disseminate and use national and subnational data

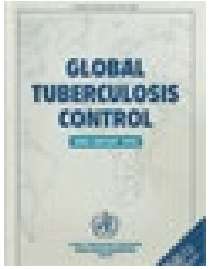
World Health Organization

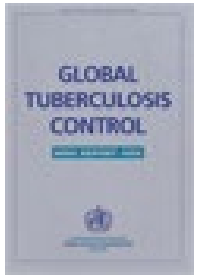
Global TB monitoring by WHO

main product: Global TB Report

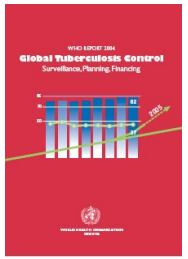
Data reported annually by ~200 countries and areas, >99% global population and TB cases

Incidence estimates from 1997 onwards



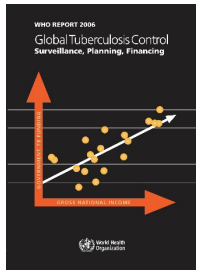


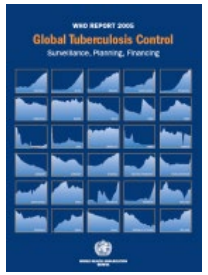


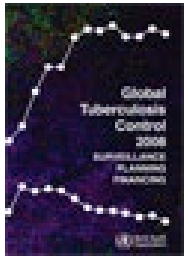


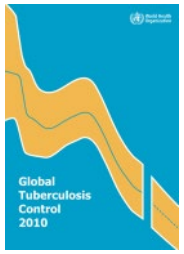
2004
Start of routine publication of mortality and prevalence estimates

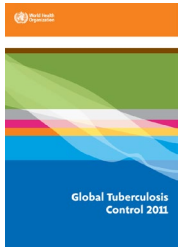
2005-2007
Growing, intensified interest in and scrutiny of TB disease burden estimates

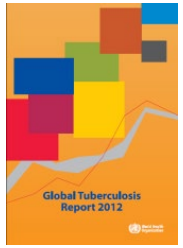


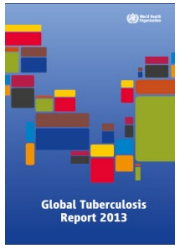


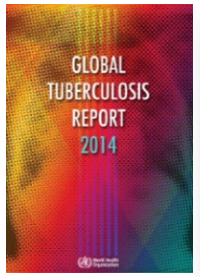



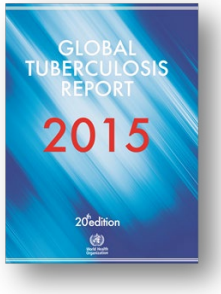



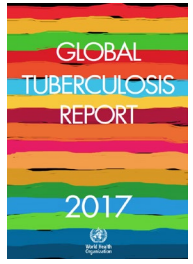


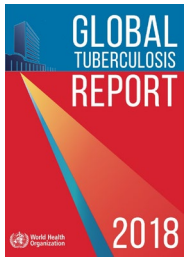


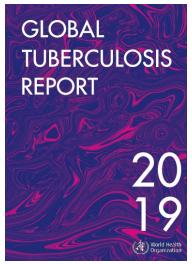


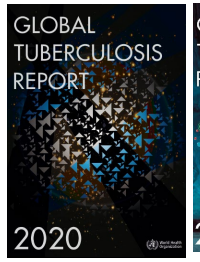


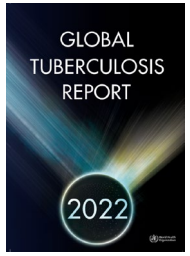


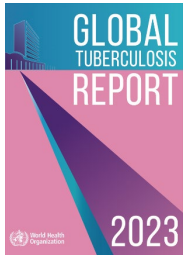












Task Force

establishment and contributors

NTPs of many countries

Established by WHO in 2006

Convened by TB monitoring, evaluation & strategic information unit in Global Tuberculosis Programme

Imperial College London

CDC Centers for Disease Control and Prevention

The Global Fund To Fight AIDS, Tuberculosis and Malaria

Harvard University

Bill & Melinda Gates foundation

Johns Hopkins University

Individual consultants

KIT | Health

KNCV TB PLUS

London School of Hygiene & Tropical Medicine

UCL

University of Oslo

The University Of Sheffield.

The Union

USAID From the American People

Yale

World Health Organization

Task Force
purpose, when established in 2006

Ensuring a rigorous, robust and consensus-based assessment of whether 2015 targets* for reductions in TB disease burden set in the MDGs and WHO Stop TB Strategy were achieved at global, regional and country levels

- **TB incidence falling by 2015**
- **50% reduction in TB prevalence and mortality by 2015 vs 1990 baseline**

MDGs: Millennium Development Goals (2000-2015)

World Health Organization

3 strategic areas of work, 2007–2015

Direct Measurement

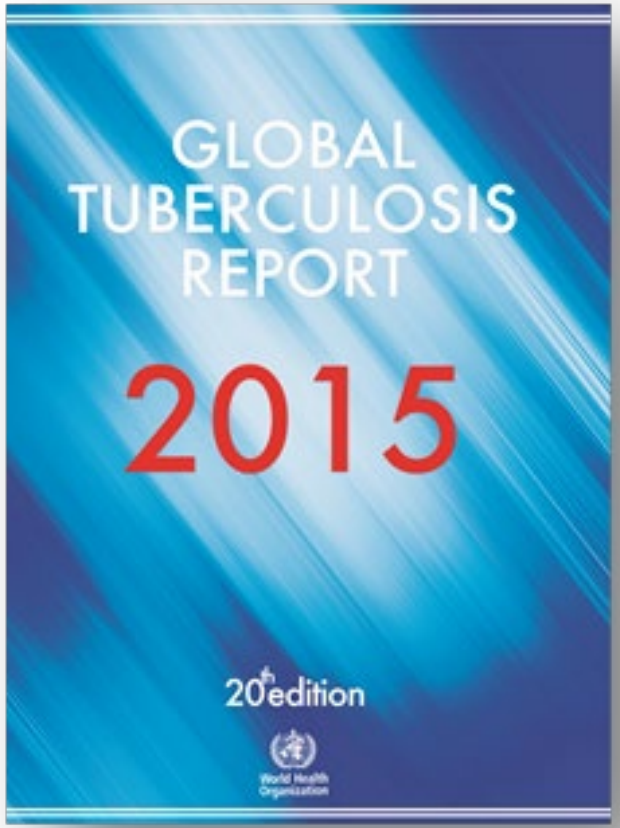
- **Strengthening surveillance**
  - National disease notification systems, for direct measurement of TB incidence
  - National vital registration systems, for direct measurement of the number of deaths caused by TB
- **National TB prevalence surveys in 22 global focus countries**
- **Periodic review of methods used by WHO to estimate the burden of TB disease**

Major review/overhaul of methods in 2008-2009, major re-review in 2015, lighter reviews/updates in between

World Health Organization

Assessment of whether 2015 targets achieved

published in WHO Global TB Report 2015



Methods based on outcomes of Task Force meeting in March 2015

Transition from MDGs to SDGs, Stop TB Strategy to End TB Strategy

https://www.who.int/groups/global-task-force-on-tb-impact-measurement/meetings/2015-03/docs/default-source/hq-tuberculosis/global-task-force-on-tb-impact-measurement/meetings/2015-03/2_meeting_report

World Health Organization

UN Sustainable Development Goals

Target 3.3: **By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases**

Indicator for assessment of progress: TB incidence rate

World Health Organization

WHO End TB Strategy

indicators, milestones and targets

INDICATORS	MILESTONES		TARGETS	
	2020	2025	2030	2035
1. Reduction in number of TB deaths compared with 2015 (%)	35%	75%	90%	95%
2. Reduction in TB incidence rate compared with 2015 (%)	20%	50%	80%	90%
3. Percentage of TB-affected households facing catastrophic costs due to TB	Zero	Zero	Zero	Zero

Task Force
purpose, 2016–2030

1. **To ensure robust, rigorous and consensus-based assessment of progress* towards the milestones and targets for reductions in TB disease burden set in the WHO End TB Strategy and UN SDGs and, ultimately, assessment of whether or not these are achieved**

***at global, regional and national levels**

2. **Guiding, promoting and supporting analysis and use of TB surveillance and survey data for policy, planning and programmatic action**

SDGs: Sustainable Development Goals (2016-2030)

World Health Organization

Current strategic areas of work

Direct Measurement

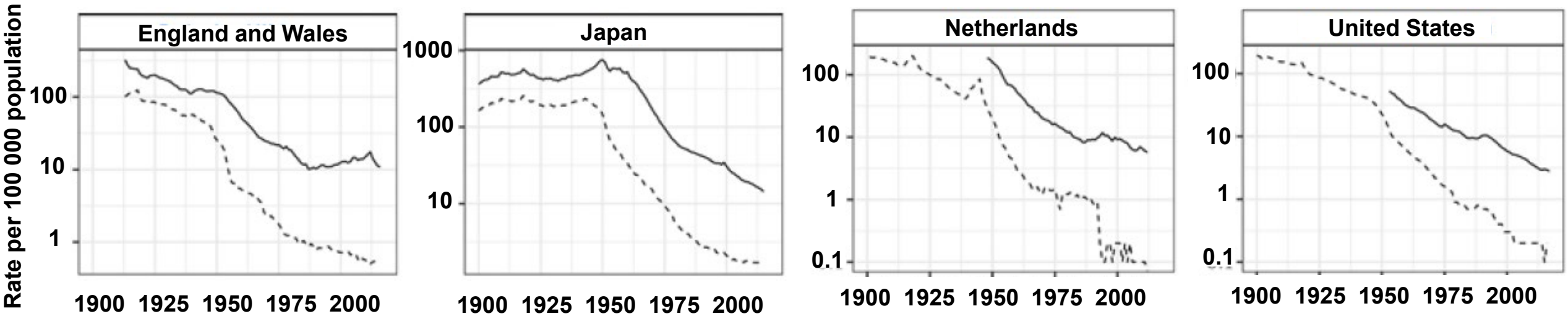
- **Strengthening surveillance**
  - National disease notification systems, for direct measurement of TB incidence
  - National vital registration systems, for direct measurement of the number of deaths caused by TB
- **Priority studies to periodically measure TB disease burden**
  - National TB prevalence surveys
  - Inventory studies
  - TB household cost surveys
  - Mortality surveys

  Selected countries
  Selected years
- **Periodic review of methods used by WHO to estimate the burden of TB disease**
- **Analysis and use of TB surveillance and survey data**

Ultimate aim (since 2007)

TB incidence estimates: able to rely on TB notification data

TB mortality estimates: able to rely on national VR data

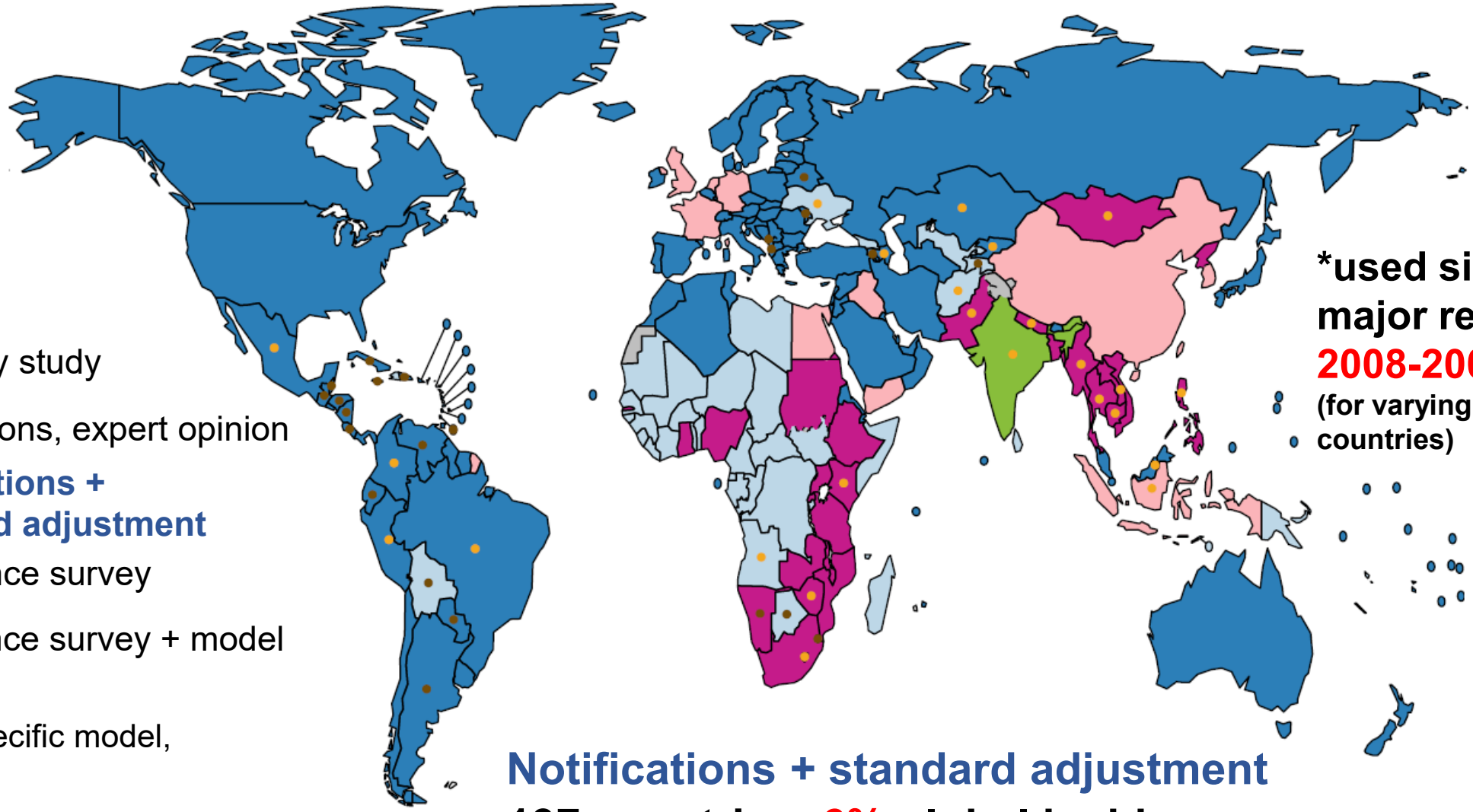


Cases = solid line *Deaths = dashed line*

World Health Organization

Current status of progress, Methods used

TB incidence estimates: current methods*



Inventory study

Notifications, expert opinion

Notifications + standard adjustment

Prevalence survey

Prevalence survey + model

Country-specific model, 2020-2023

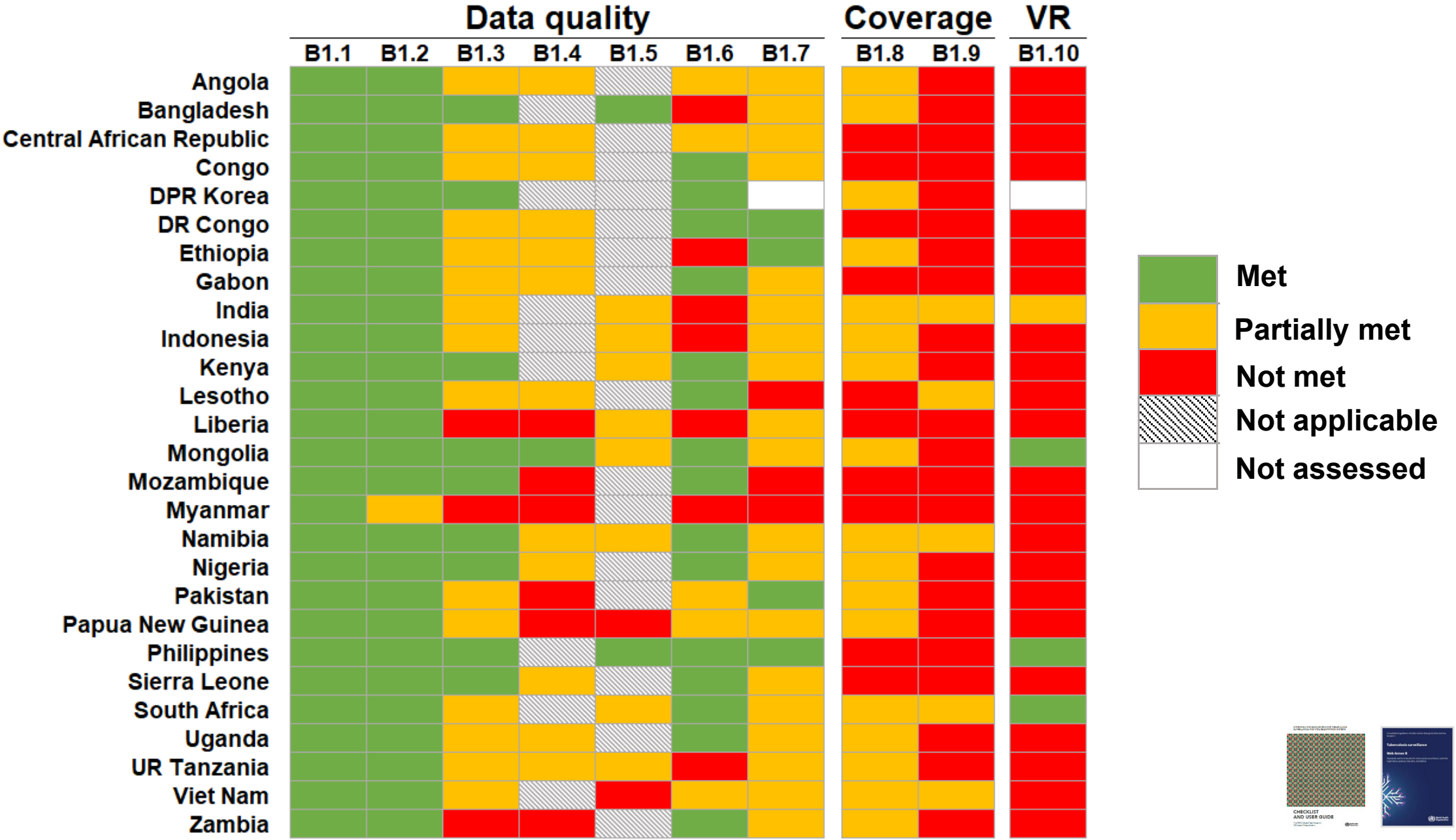
Region-specific model, 2020-2023

***used since major review in 2008-2009**
(for varying number of countries)

Notifications + standard adjustment
137 countries, 6% global incidence

World Health Organization

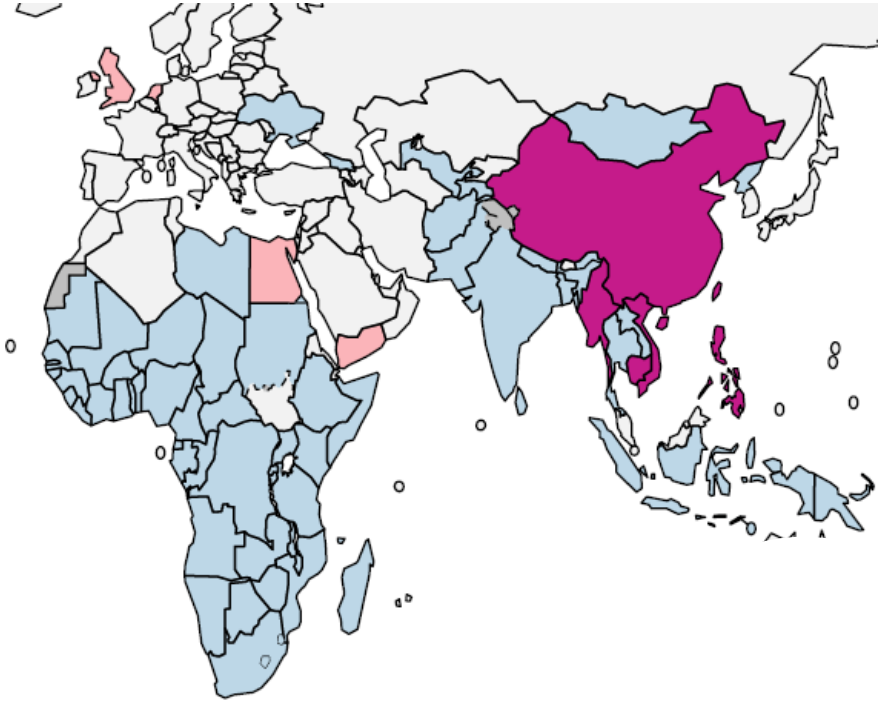
TB surveillance checklist results, 27/30 HBCs



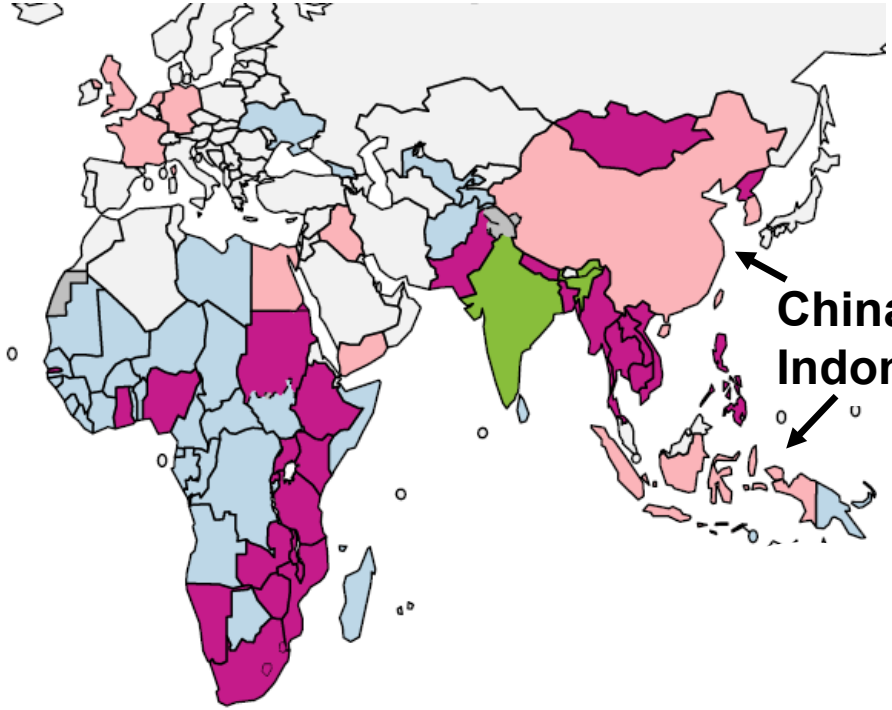
Incidence estimates

Countries for which periodic studies, or case notifications + expert opinion, are used

2010



2024



Case notifications, expert opinion
2024: 39 countries, 11% global cases

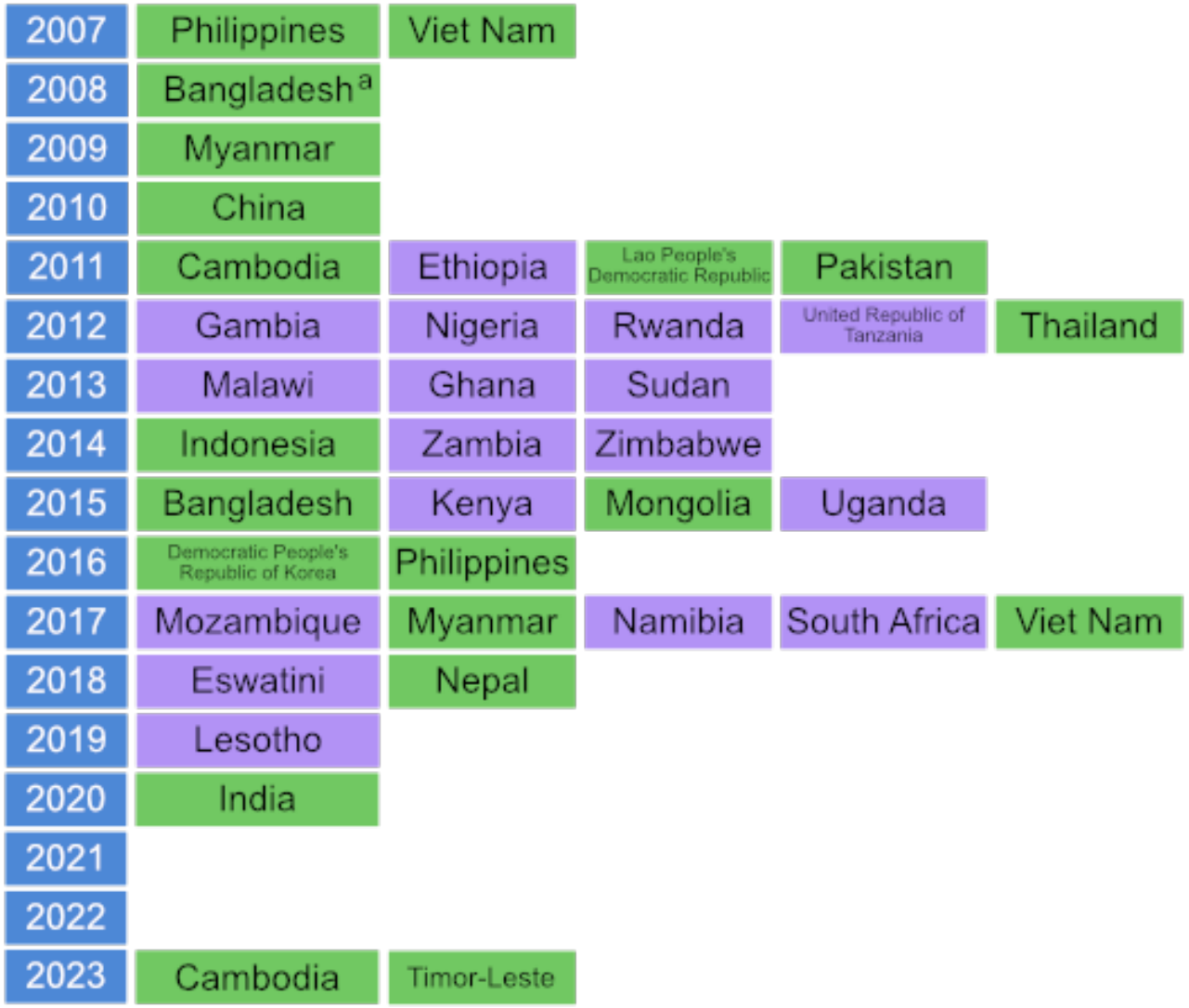
Inventory study
2024: 10 countries, 17% global cases

Prevalence survey

Prevalence survey + model

29 countries in 2024, 66% global TB cases (5 and ~20% in 2010)

National TB prevalence surveys, 2007–2024

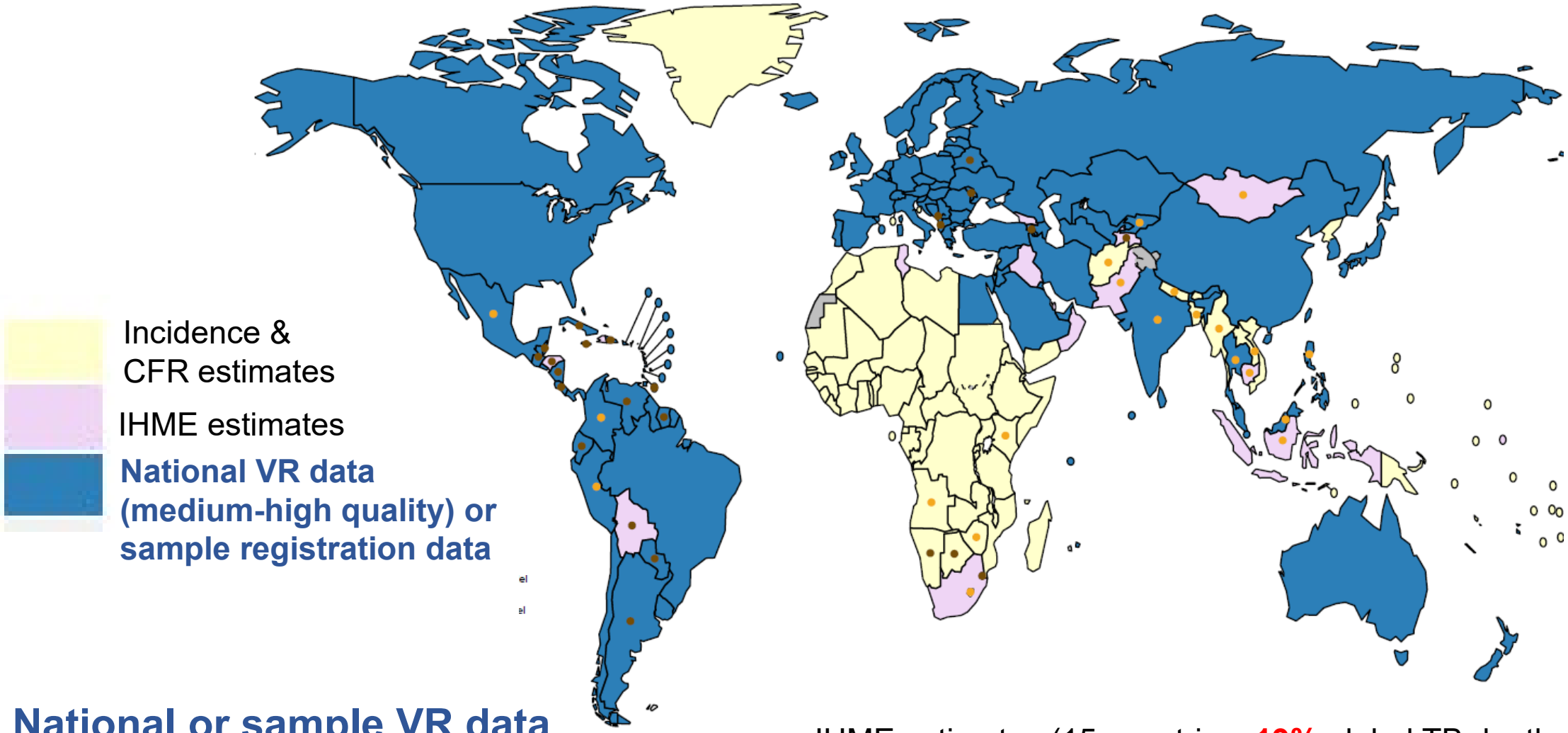


36 surveys implemented in 32 countries* using methods recommended in WHO guidance
("lime book" or upcoming 2024 edition)

Main surge 2011-2017: 26 surveys

*Inventory study primary source for incidence estimates in Indonesia & China but prevalence survey results complementary; awaiting finalization of results for Timor-Leste. Survey in 2008 in Bangladesh used different methods.

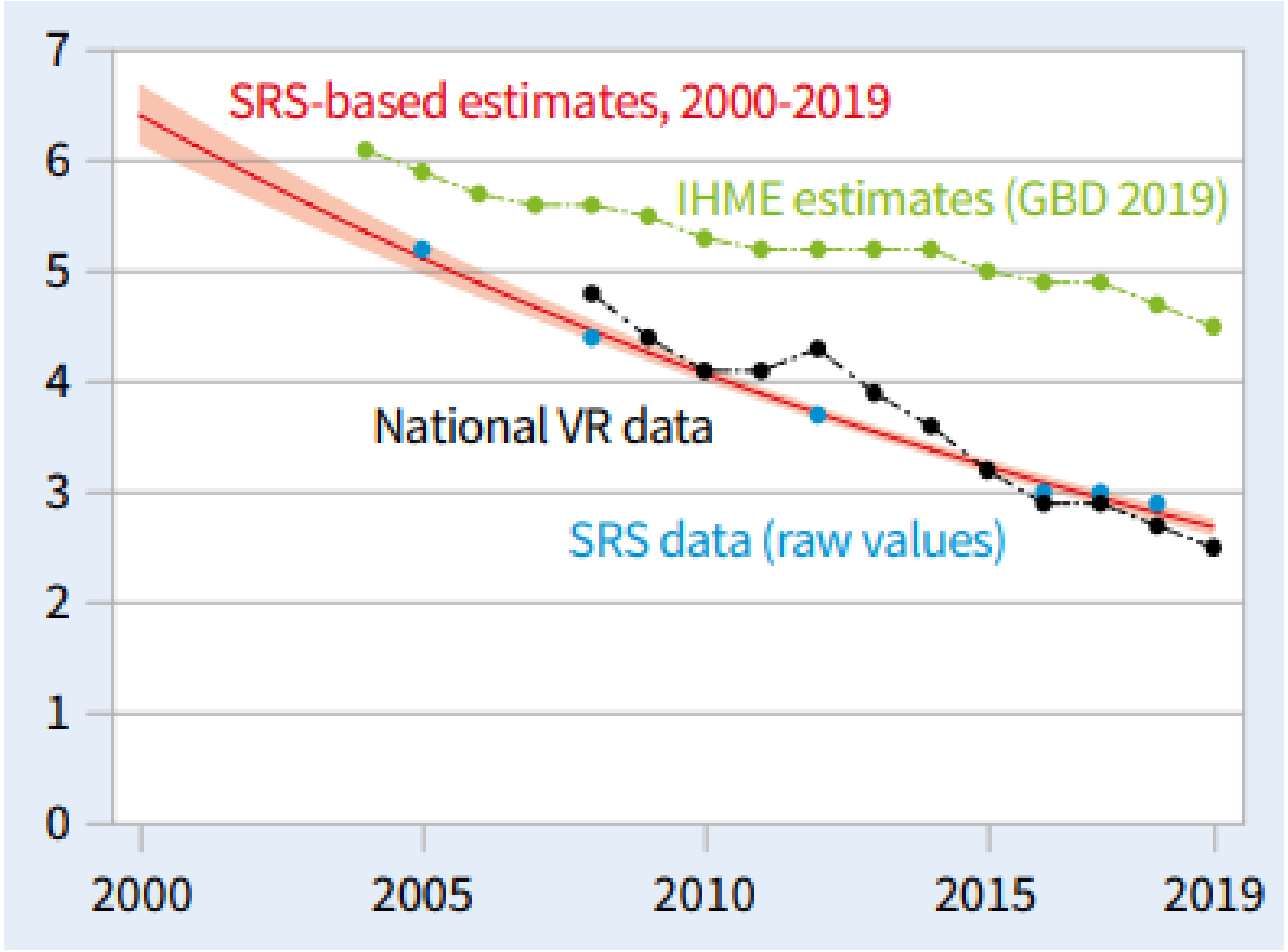
TB mortality estimates: current methods



National or sample VR data
108 countries, 39% global TB deaths

IHME estimates (15 countries, **19%** global TB deaths): informed by VR or mortality survey data not reported to WHO

Mortality estimates: important new data for India



Cause-of-death data for 2004–2019 from sample registration system (SRS) published between September 2021 & May 2023

- **2004-2013: Sep 2021**
- **2014-2016: May 2022**
- **2015-2019: Feb-April 2023**

Used to update estimates published by WHO in 2023 global TB report*

*See Box 4 (p13) of the core report document

This meeting

Why is this meeting needed?

- **SDG/End TB Strategy target year of 2030 is only 6 years away and assessment of progress with respect to 2025 milestones required in 2026**

- **Need for thorough, up-to-date review of methods to be used by WHO to produce estimates of TB incidence and mortality for the periods 2015–2025 and 2015–2030**
  - **Since 2015, reviews in 2016, 2018, 2022**
  - **But: in 2022, focus was on estimates during COVID pandemic**
  - **Important questions that need careful consideration**

Important questions
TB incidence estimates

1. **How can the absolute level of TB incidence in 2025 and 2030 and changes compared with 2015 be robustly assessed, in the 29 countries for which estimates for 2015-2023 are currently grounded in data from national TB prevalence surveys?**

   - **Survey data becoming increasingly outdated**
     - **last surveys in 29 countries mostly before 2017 (but most were close to End TB Strategy baseline year of 2015, in the period 2011-2017)**
     - **uncertainty about trends since last survey**
     - **current level of TB incidence esp. uncertain in countries where there were major disruptions to TB services during COVID pandemic**
   - **Are repeat surveys the best option or are there suitable (and cheaper/easier/quicker) alternatives?**
   - **Do methods for estimating incidence from prevalence need to be updated?**

Important questions
TB incidence estimates

2. **Is there a better alternative to using case notifications and expert opinion about case detection gaps, for the 39 countries (11% of incident cases globally) where this is still relied upon?**

3. **Can the method of making a standard adjustment to case notification data, currently used for 137 countries, be improved upon?**

Important questions
TB mortality estimates

1. Should efforts to compile more recent VR data be expanded?

2. Should less restrictive criteria for use of VR data, or other options for countries without VR data of medium-high quality, be considered?

3. Is an up-to-date literature review of case fatality rates according to TB treatment status and HIV status a priority?

4. Should recently-published estimates of mortality hazards be incorporated in country-specific dynamic models used for 2020-2023?

Objectives

1. **To discuss existing as well as new options for methods* that could be used by WHO to produce estimates of TB incidence required for the End TB Strategy 2025 milestone and SDG/End TB Strategy 2030 target assessment****

Day 1, part of Day 2

2. **To discuss existing as well as new/updated options for methods* that could be used by WHO to produce estimates of TB mortality required for the End TB Strategy 2025 milestone and 2030 target assessment****

Day 2, part of Day 3

*data sources, analytical methods, process

** i.e. 2015–2025 and 2015–2030

Important considerations to keep in mind

- **Scientific credibility**
  - Methods need to stand up to external review and scrutiny
  - Standardization and consistency across countries is important
- **Country priorities, capacities and acceptability**
  - Methods need to fit with country priorities, capacities and needs
  - The easier it is to explain, justify, understand and reproduce methods used to produce estimates, the better
- **Is a new method better than the alternative it could replace?**
  - All methods are imperfect
  - The test is whether it is an improvement on what is currently used

Important considerations to keep in mind

- Comparisons for 2030 & 2025 vs 2015 will be more robust if the same method is used for each year

- Methods can be complementary

Discussions are not expected to end at this meeting…

Discussions on a few topics may extend for several months

Aim to start implementing updated approaches that are agreed upon for 2025 global TB report, and others for 2026 report

Expected outcomes

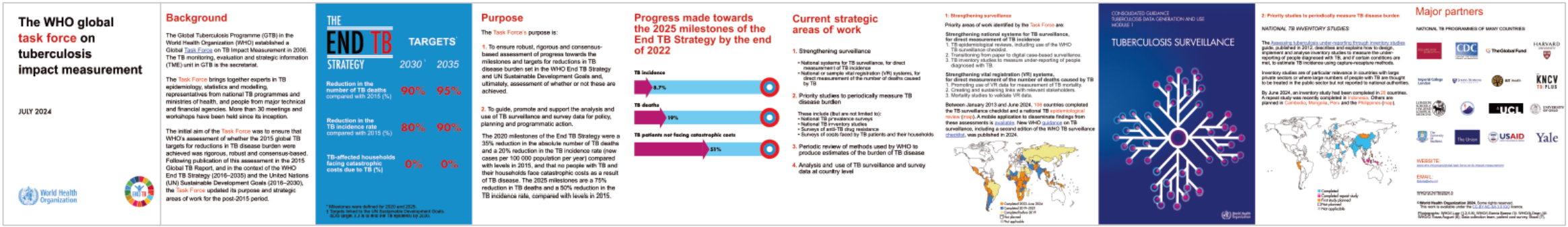
1. **TB incidence estimates: Broad agreement on**
   - Which existing methods remain relevant
   - Which new methods are suitable for use as currently described
   - Which new methods could be suitable for use pending further work, and what that work should entail

2. **TB mortality estimates: Broad agreement on**
   - Whether WHO/GTB should expand efforts to compile more recent VR data
   - Whether less restrictive criteria for use of VR data, or other options for countries without VR data of medium-high quality, are worth exploring
   - Whether it is a priority to update parameter values for case fatality rates (CFRs), used for countries without VR data of medium-high quality, through new literature reviews
   - Whether mortality hazards used in dynamic models (for 2020-2023) should be updated based on recent literature

3. **TB incidence and mortality estimates: Broad agreement on**
   - Process/next steps to finalize and implement methods to be used

For more information

Task Force brochure, 2024 edition (July)



Reports, background documents, PPTs from all meetings

https://www.who.int/groups/global-task-force-on-tb-impact-measurement

World Health Organization