

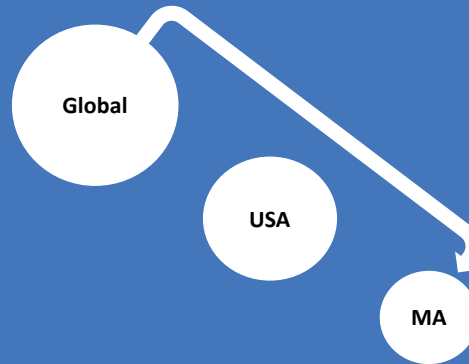


Massachusetts Department of Public Health

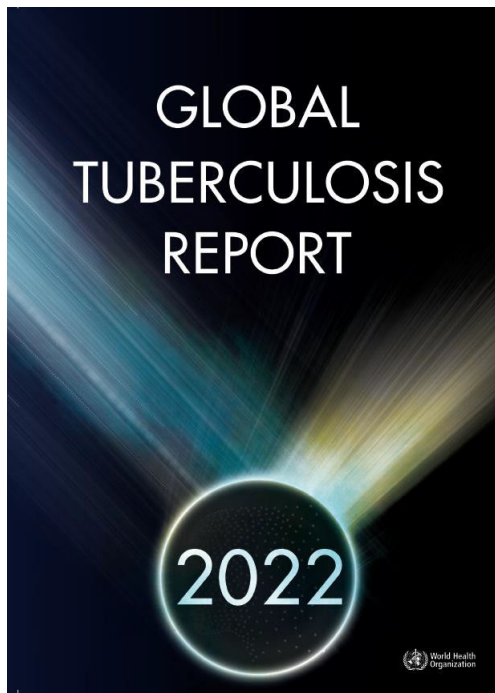
STATE OF TB, 2023

Tom Garvey Public Health Lecture
March 29, 2023

Edward A. Nardell, MD
Professor of Medicine
Global Health and Social Medicine
Harvard Medical School



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WHO
Global TB Report
2022

**Launched
27 October 2022**

**Main findings and
messages**



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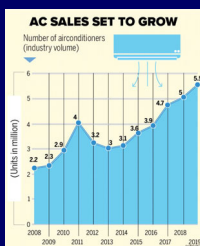
Overarching findings and messages

1. The COVID-19 pandemic continues to have a **damaging impact on access to TB diagnosis and treatment** and the burden of TB disease
2. Progress made in the years up to 2019 has slowed, stalled or reversed, and **global TB targets are off track**
3. Intensified efforts backed by **increased funding** are urgently required to mitigate and reverse the negative impacts of the pandemic on TB
4. The need for action has become even more pressing in the context of **war in Ukraine**, ongoing conflicts in other parts of the world, a **global energy crisis** and associated impacts on **food security**, which are likely to further worsen some of the broader determinants of TB

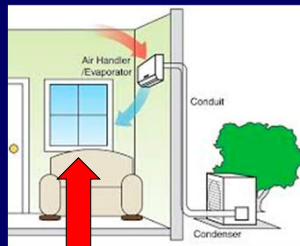


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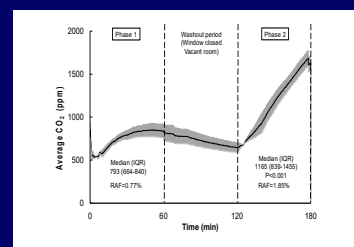
Climate Change - Global Warming: Skyrocketing AC Sales in Hot Climates Increasing risk of airborne infections



AC sales in India, 2008 – 2019



Windows closed when AC on



CO₂ – re-breathed air fraction - increases immediately

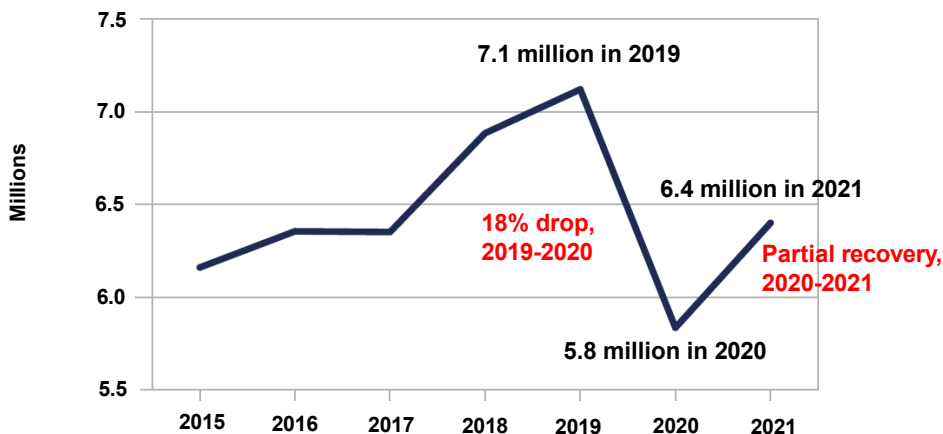
Commentary:

Cool but dangerous: How climate change is increasing the risk of airborne infections
Nardell E. Indoor Air. 2020;30:195–197.

4

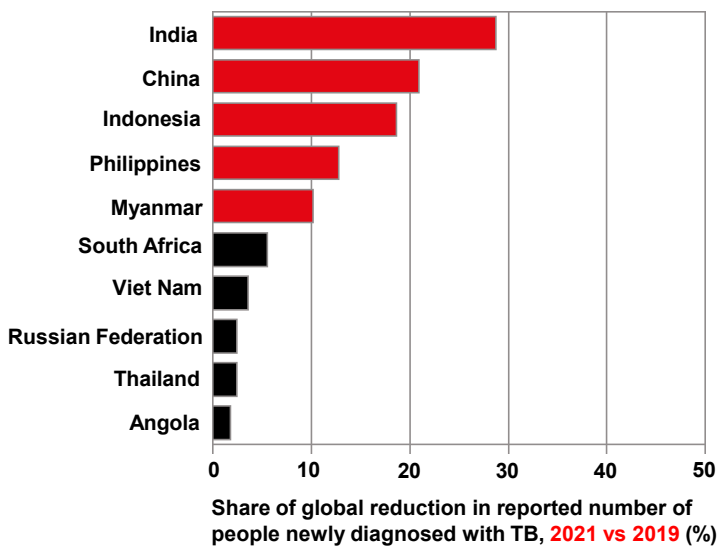
Most obvious impact at global level

Big reductions (vs 2019) in reported number of people newly diagnosed with TB



5

2021: 5 countries = 90% of global reduction



India, Indonesia, Philippines: 60% of total

Covid-associated Causes:

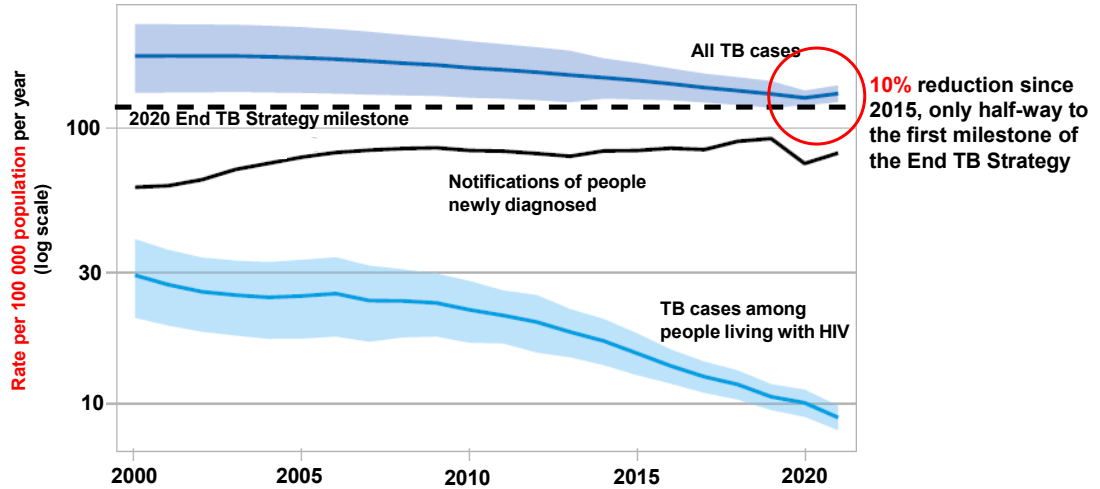
- Access to TB Dx and Rx
- Underreporting
- Separation, mask wearing, less travel



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Global decline in TB incidence reversed in 2021

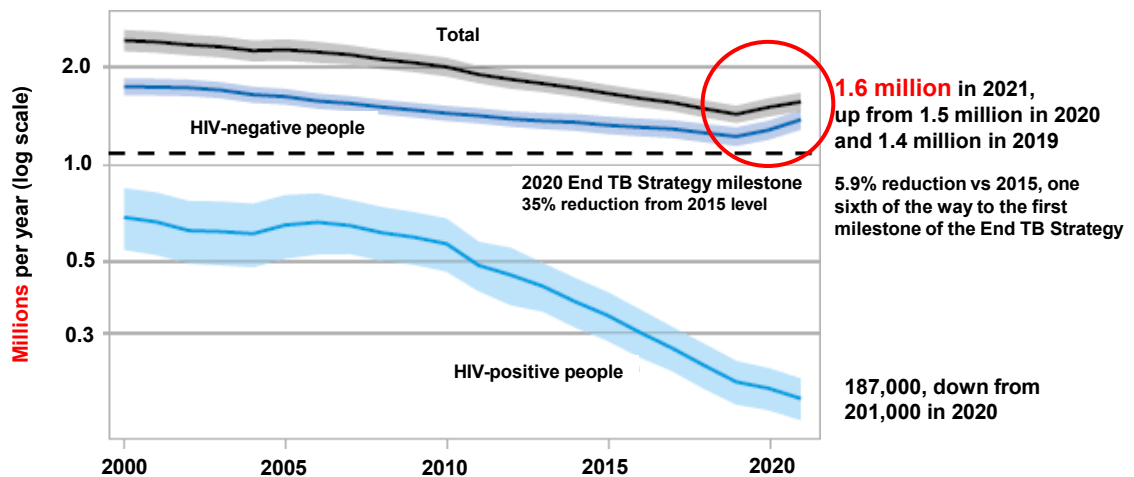
+3.6% 2020-2021, following years of decline of about 2% per year



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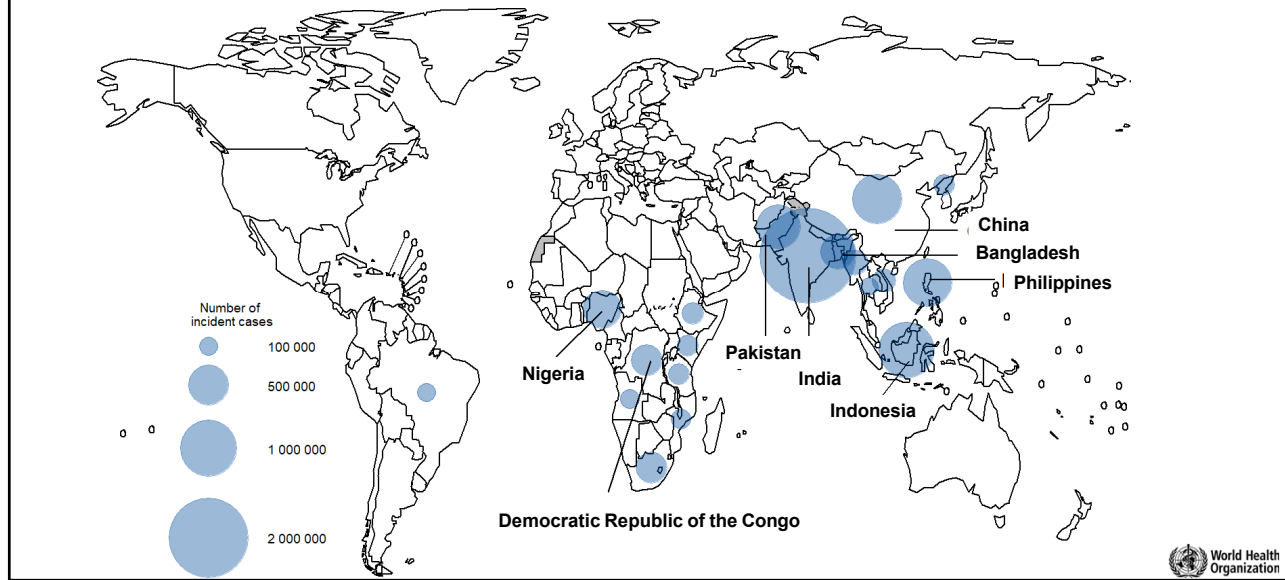
Global number of TB deaths increased in 2020 and again in 2021, back to 2017 level

TB second only to COVID-19 as cause of death from single infectious agent



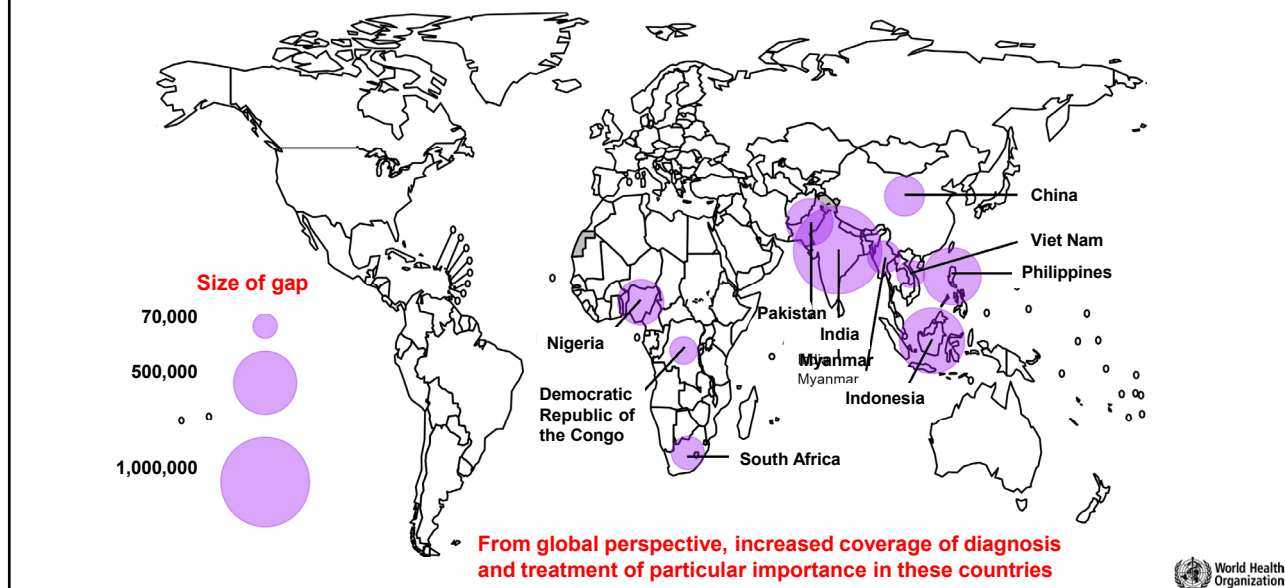
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8 countries, 68% of global cases in 2021 87% in 30 high TB burden countries



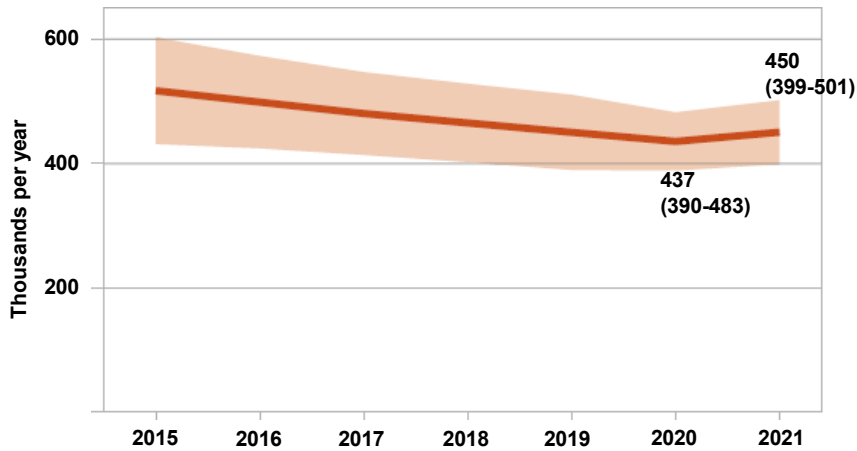
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10 countries account for 75% global gap between TB incidence and reported cases



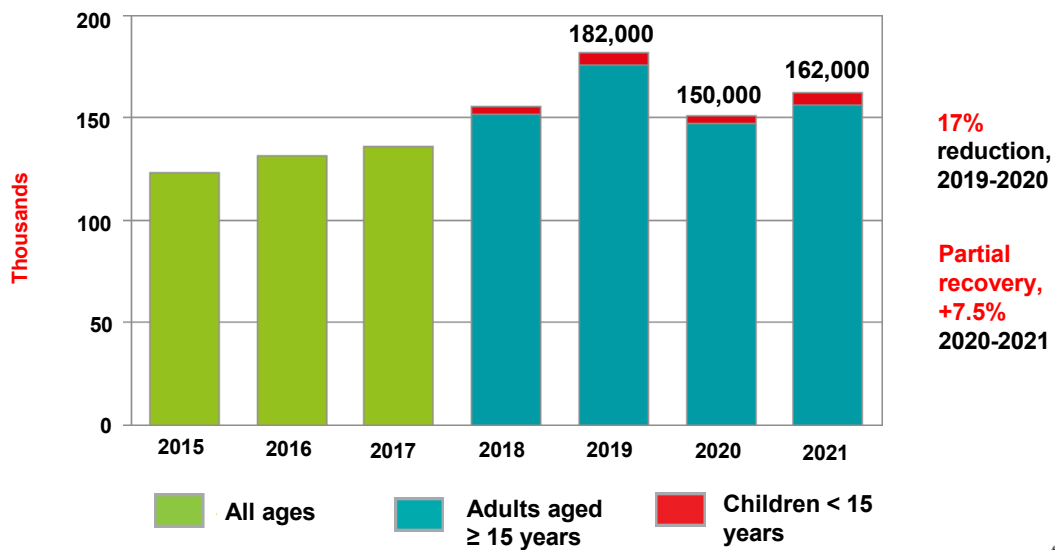
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Estimated number of people developing MDR/RR-TB has also increased



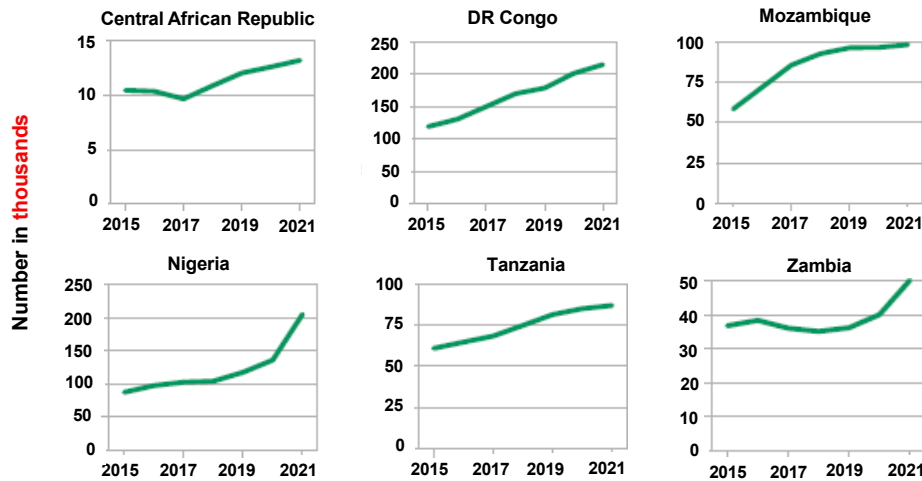
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Number of people treated for MDR/RR-TB fall in 2020, partial recovery in 2021



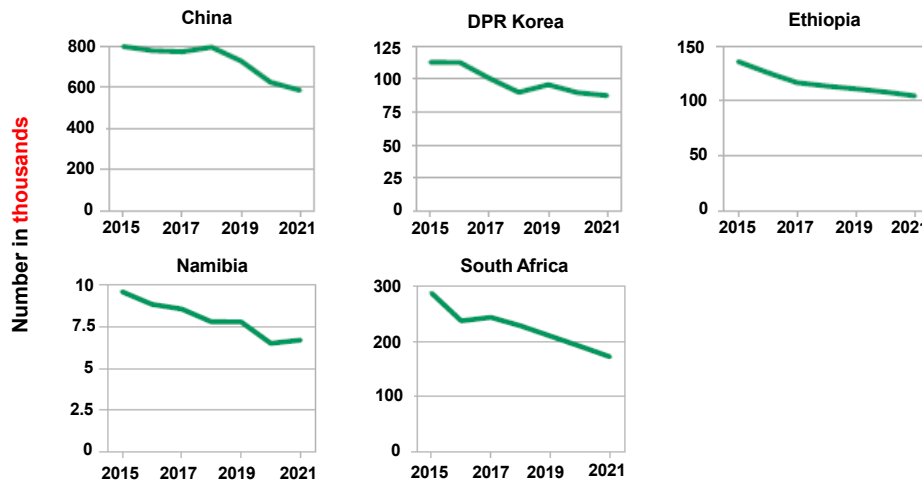
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Limited or no negative impact on reported numbers of people newly diagnosed with TB increases in 6 high TB burden countries (HBCs)



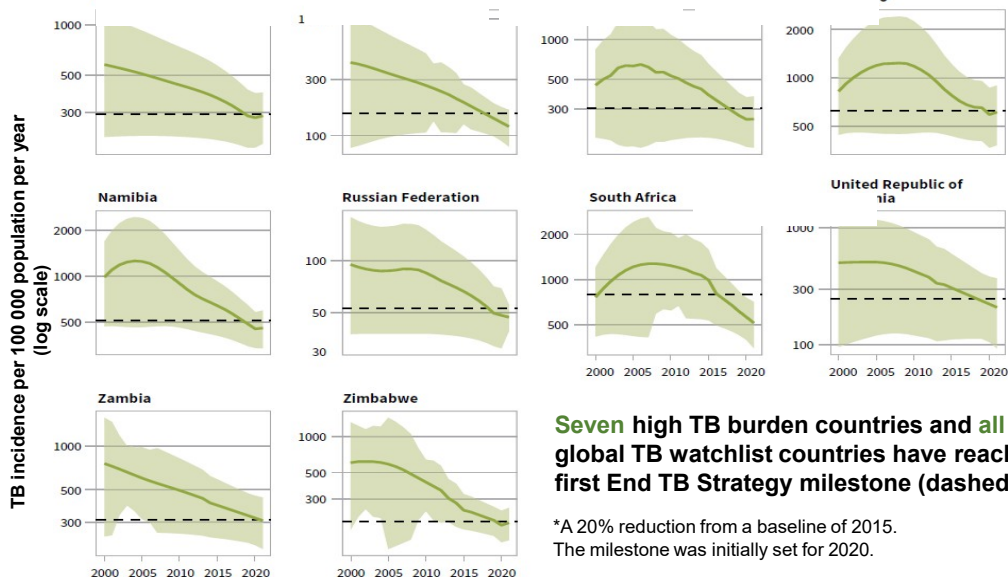
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Limited or no negative impact on reported numbers of people newly diagnosed with TB no or limited departure from pre-2020 downward trend in five HBCs



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Country success stories: TB incidence



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Centers for Disease Control and Prevention
National Center for HIV, Viral Hepatitis, STD, and TB Prevention



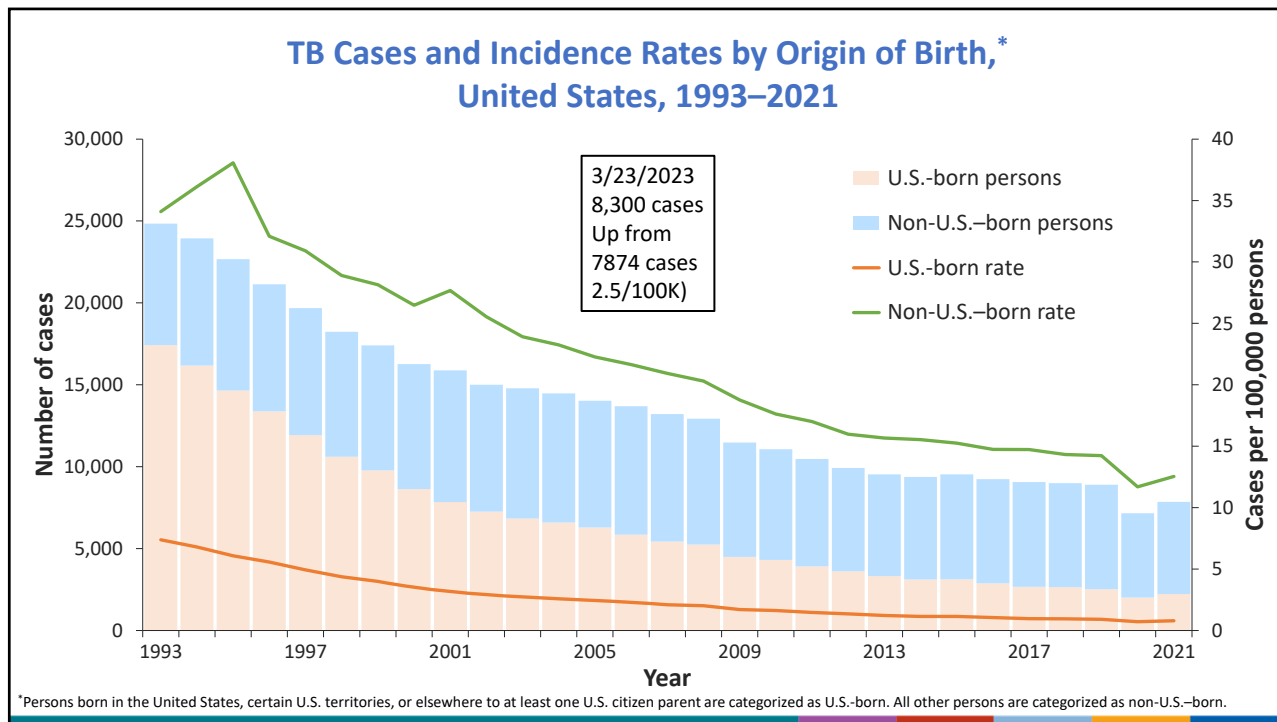
Tuberculosis (TB) in the United States 1993–2021*

(March 23, 2023 update)

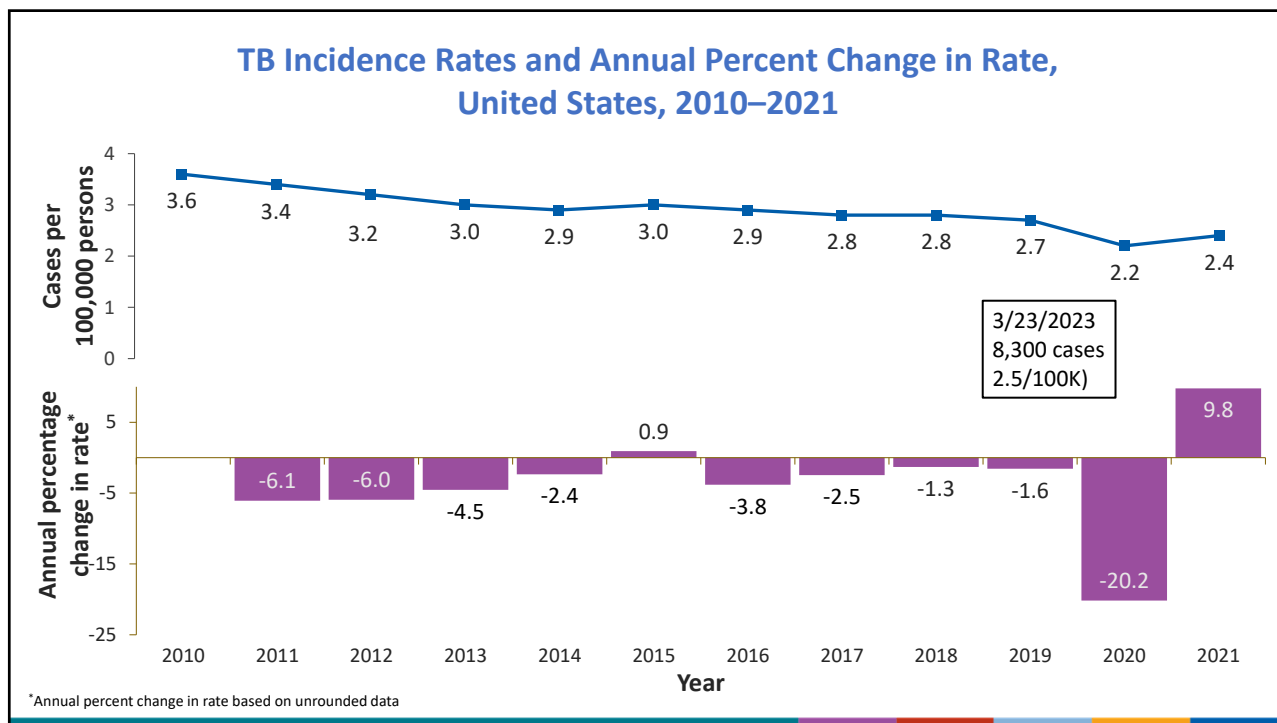
Division of Tuberculosis Elimination
National Tuberculosis Surveillance System

*Data updated as of July 8, 2022

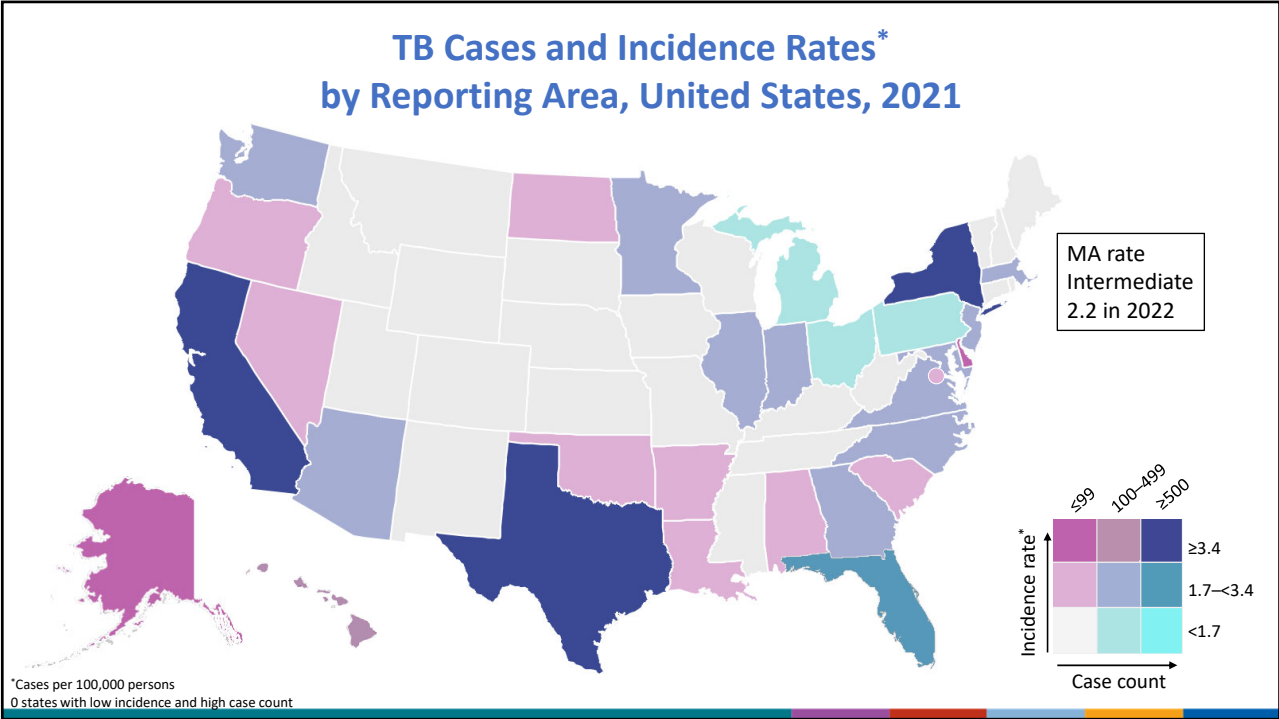
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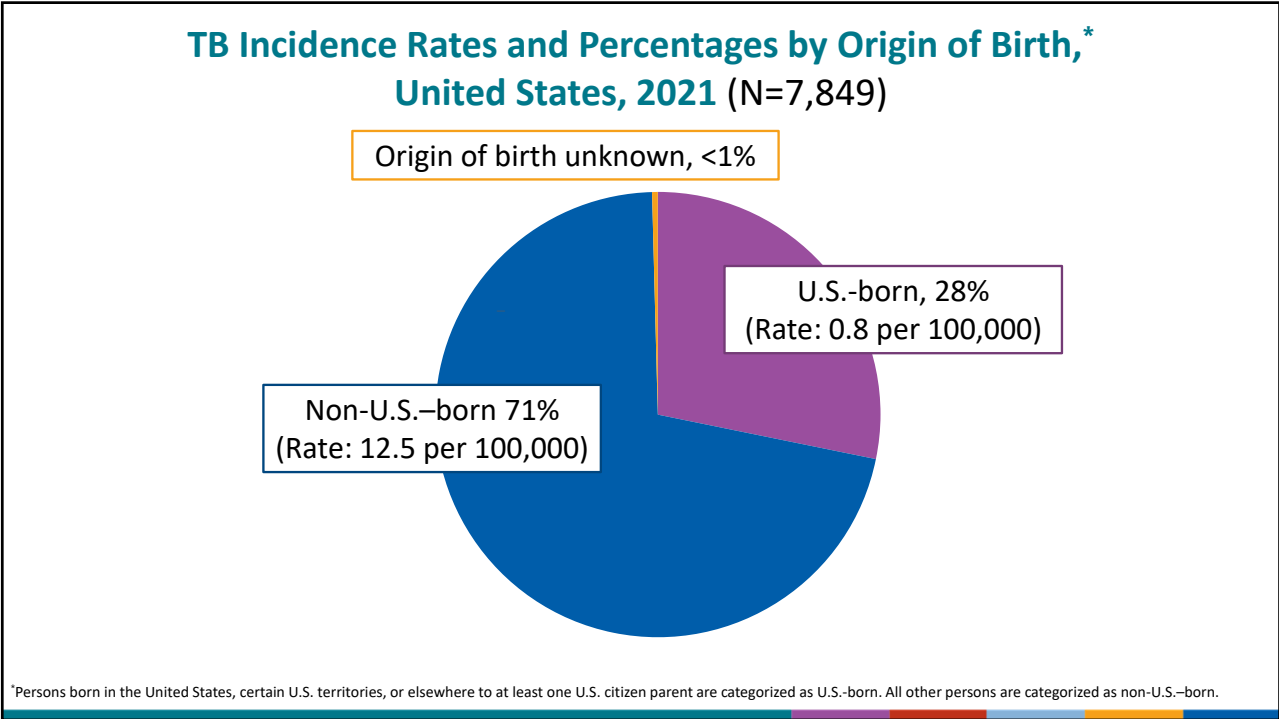
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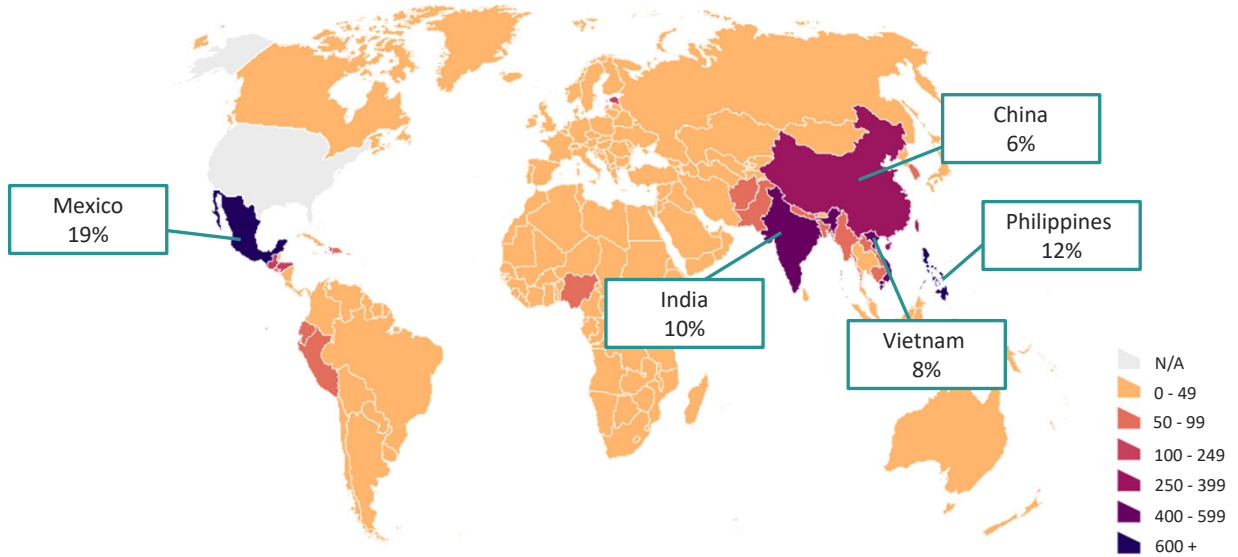


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TB Cases by Countries of Birth Among Non-U.S.–Born* Persons with TB, United States, 2021 (N=5,626)



*Persons born in the United States, certain U.S. territories, or elsewhere to at least one U.S. citizen parent are categorized as U.S.-born. All other persons are categorized as non-U.S.–born.

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Massachusetts Department of Public Health

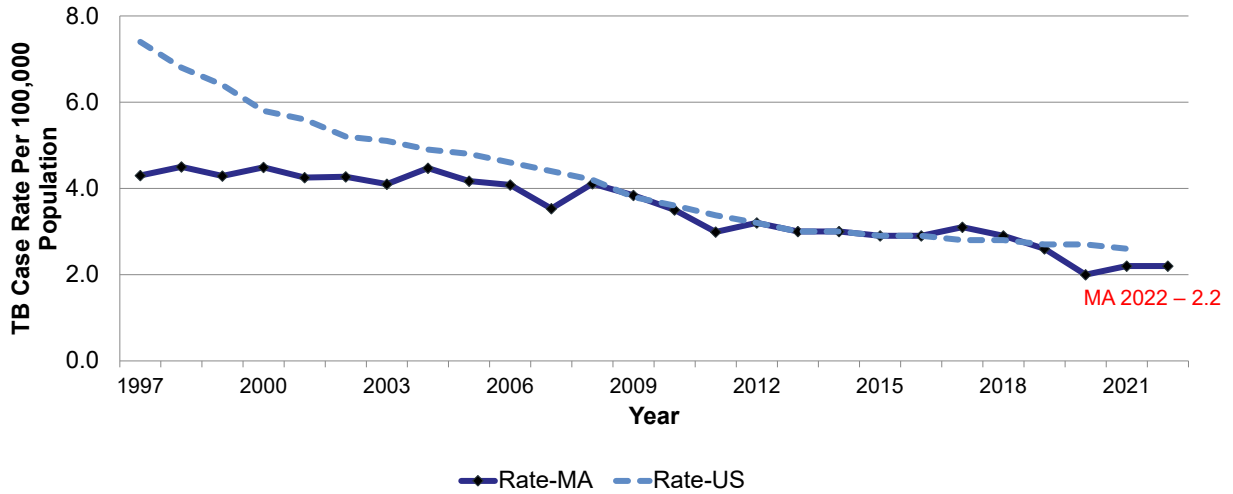
TUBERCULOSIS EPI UPDATE 2022

Bureau of Infectious Disease and Laboratory Sciences
Massachusetts Department of Public Health

Special thanks to Andy Tibbs, MDPH

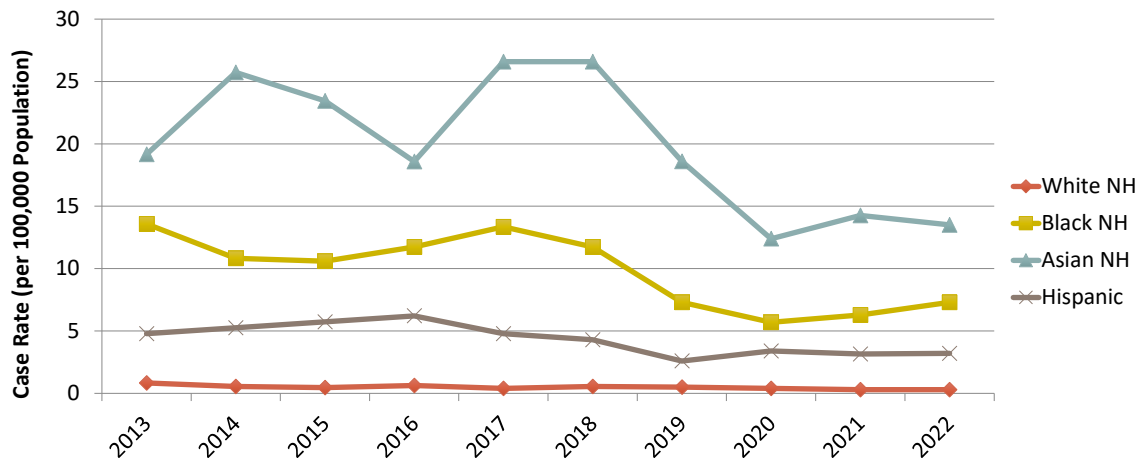
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Rate of Tuberculosis Cases, United States and Massachusetts, 1997-2022



Data current as of 2 March 2023
 Data gathered from Massachusetts Virtual Epidemiologic Network

Rate of Tuberculosis Cases by Race/Ethnicity Massachusetts 2013-2022



Data current as of 2 March 2023
 Data gathered from Massachusetts Virtual Epidemiologic Network

*NH - Non-Hispanic

Slide 23

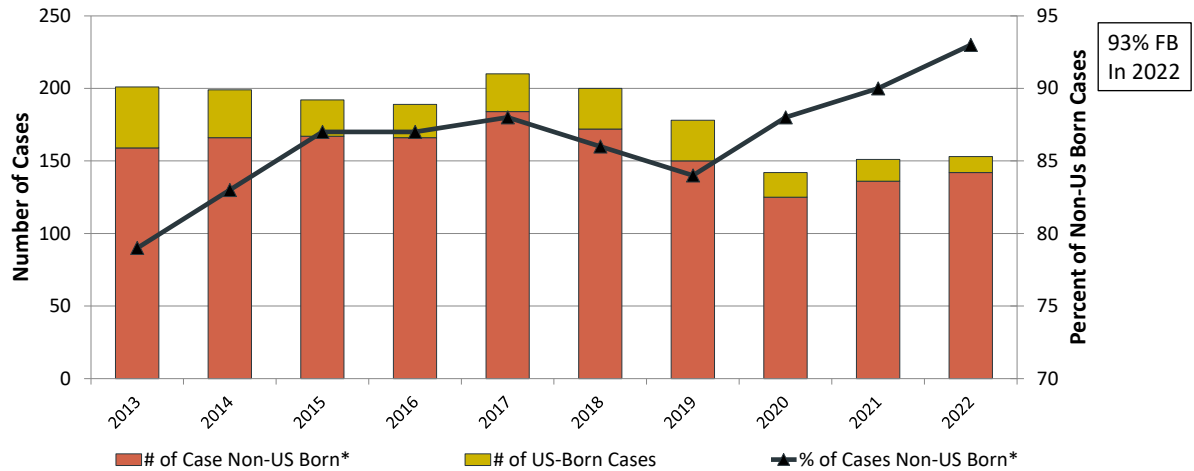
SN(0 Need US rate

Strakova, Nikola (DPH), 2023-03-09T21:54:01.477

TA(0 0 Available 3-16-2023

Tibbs, Andrew (DPH), 2023-03-14T19:49:58.621

Trends in Tuberculosis Cases among Non-US Born* Persons, Massachusetts, 2013-2022

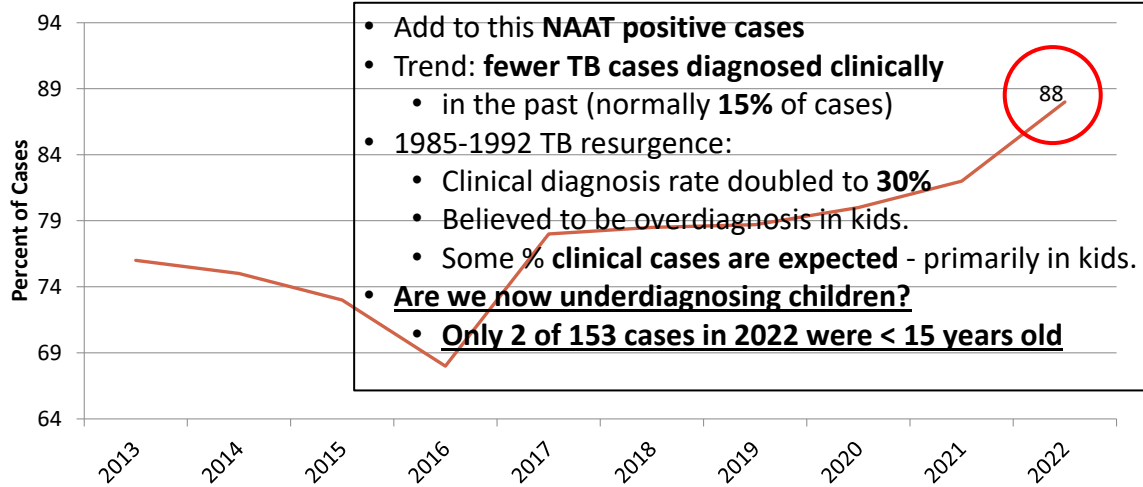


Data current as of 2 March 2023
Data gathered from Massachusetts Virtual Epidemiologic Network

*US Born cases include Puerto Rico

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Trends in the Percentage of Tuberculosis Cases that were Culture Confirmed*, Massachusetts, 2013-2022



- Add to this **NAAT positive cases**
- Trend: **fewer TB cases diagnosed clinically**
 - in the past (normally **15%** of cases)
- 1985-1992 TB resurgence:
 - Clinical diagnosis rate doubled to **30%**
 - Believed to be **overdiagnosis** in kids.
 - Some % **clinical cases are expected** - primarily in kids.
- **Are we now underdiagnosing children?**
 - **Only 2 of 153 cases in 2022 were < 15 years old**

Data current as of 2 March 2023
Data gathered from Massachusetts Virtual Epidemiologic Network

*TB cases with either a positive culture for sputum or tissue/other body fluids

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Number and Rate of Tuberculosis Cases by Susceptibility Test Result, Massachusetts, 2022

Bacteriologically* confirmed cases	134 (88 % of 153)
Drug susceptibility tests performed	130 (97%)
Resistance to any anti-TB drug	21 (16%)
Resistant to isoniazid (alone or in combination with other)	14 (11%)
Resistant to at least isoniazid and rifampin (MDR-TB)	5 (3%)
Resistant to at least isoniazid and rifampin, plus any fluoroquinolone and at least one of the three injectable second-line drugs (XDR-TB)	none

Data current as of 2 March 2023
Data gathered from Massachusetts Virtual Epidemiologic Network

*TB cases with either a positive sputum culture or a positive culture of tissue/other body fluids

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PUBLIC
HEALTH

Thank You!