

TB Free Screening Campaigns in our USAPI

PIHOA Presentation

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Disclosures

Dr. Brostrom has nothing to disclose

Disclaimer

The conclusions, findings, and opinions expressed do not necessarily reflect the official position of the U.S. Department of Health and Human Services, the Public Health Service, or the Centers for Disease Control and Prevention.

TB-Free in our USAPI

- TB in the Pacific, TB from the Pacific (3 min)
- TB Free Chuuk Overview (18 min)
- TB Free Chuuk Epi Update (12 min)
- Impact of TB Free effort in RMI (17 min)
- Q and A (10 min)

Scaling Up TB Preventive Treatment – Preventing TB to End TB

Global Burden of TB (2021)

Number of individuals with:

TB Infection: 2 billion
TB disease: 10.6 million
HIV-associated TB: 703,000
Drug-resistant TB: 450,000
Childhood TB (<15 years): 1.15 million
Total TB Mortality: 1.6 million
HIV-associated TB Mortality: 187,000
TB Mortality among Children: 217,000

TB is one of the world's deadliest infectious disease, **claiming 4,383 lives each day.**

TB preventive treatment (TPT) **prevents TB disease** among those with latent TB infection and is especially important for people living with HIV (PLHIV) and children exposed to TB.

TPT reduces TB deaths among PHLIV by 40%; paired with antiretroviral therapy (ART), TPT **reduces TB deaths by 80%.**

TPT is essential to achieving the 2025 Milestones for the Sustainable Development Goals to reduce TB incidence by 50% and reduce TB deaths by 75%. Only by implementing TPT alongside treatment of TB disease can we end TB by 2035.

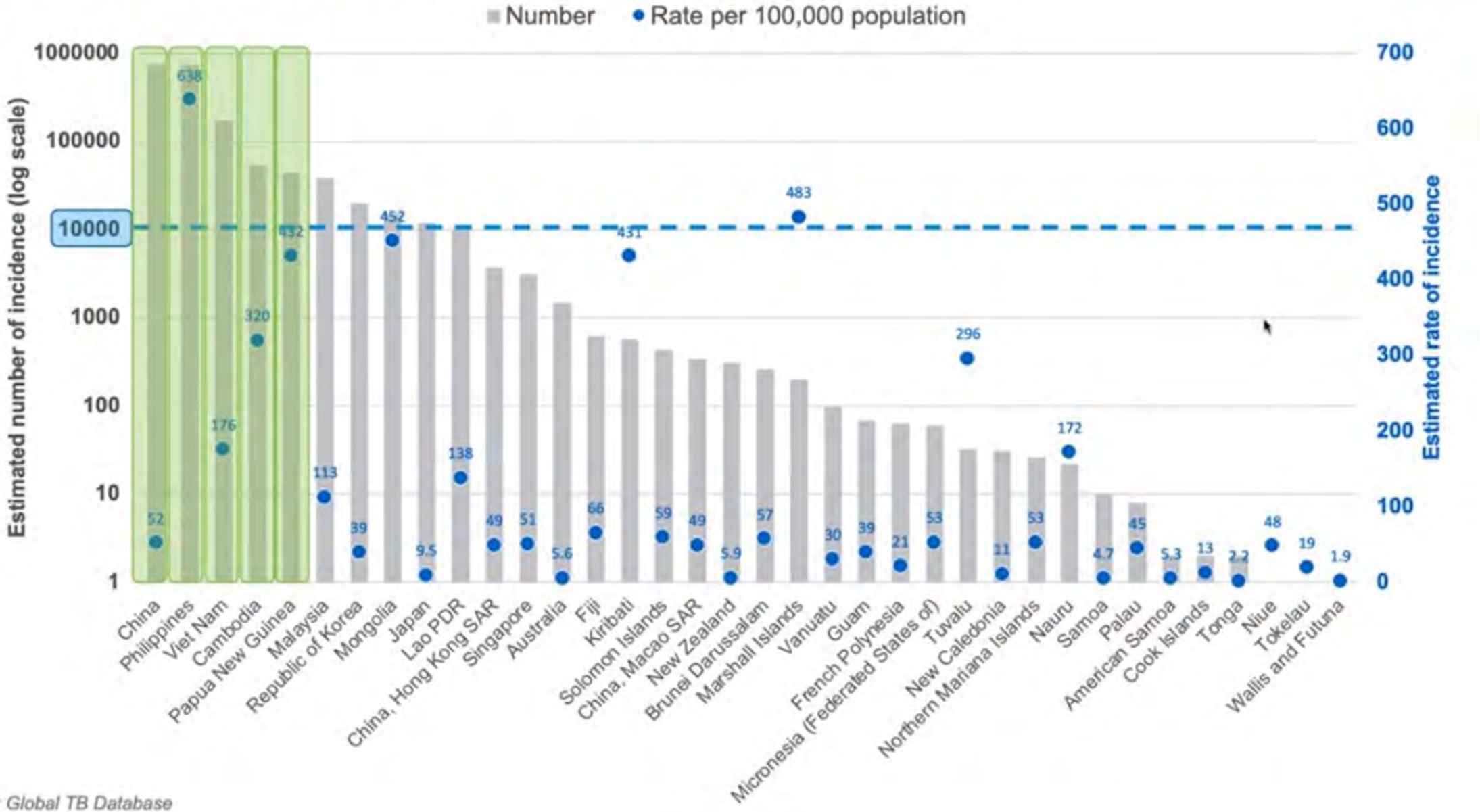
Current Progress Toward Global TPT Targets

	PLHIV	Eligible Children (<5 years)	Total Eligible for TPT Worldwide
UN High Level Meeting (HLM) Targets for TPT, 2018–2022	6 million	4 million	30 million
Current Annual TPT Progress (2021)	10.3 million	1.6 million	12.5 million

CDC Contribution Through PEPFAR for Global TPT Scale-Up	7,598,871 since 2017	Refining and scaling-up tools and strategies for household contact tracing to identify adults and children eligible for TPT.

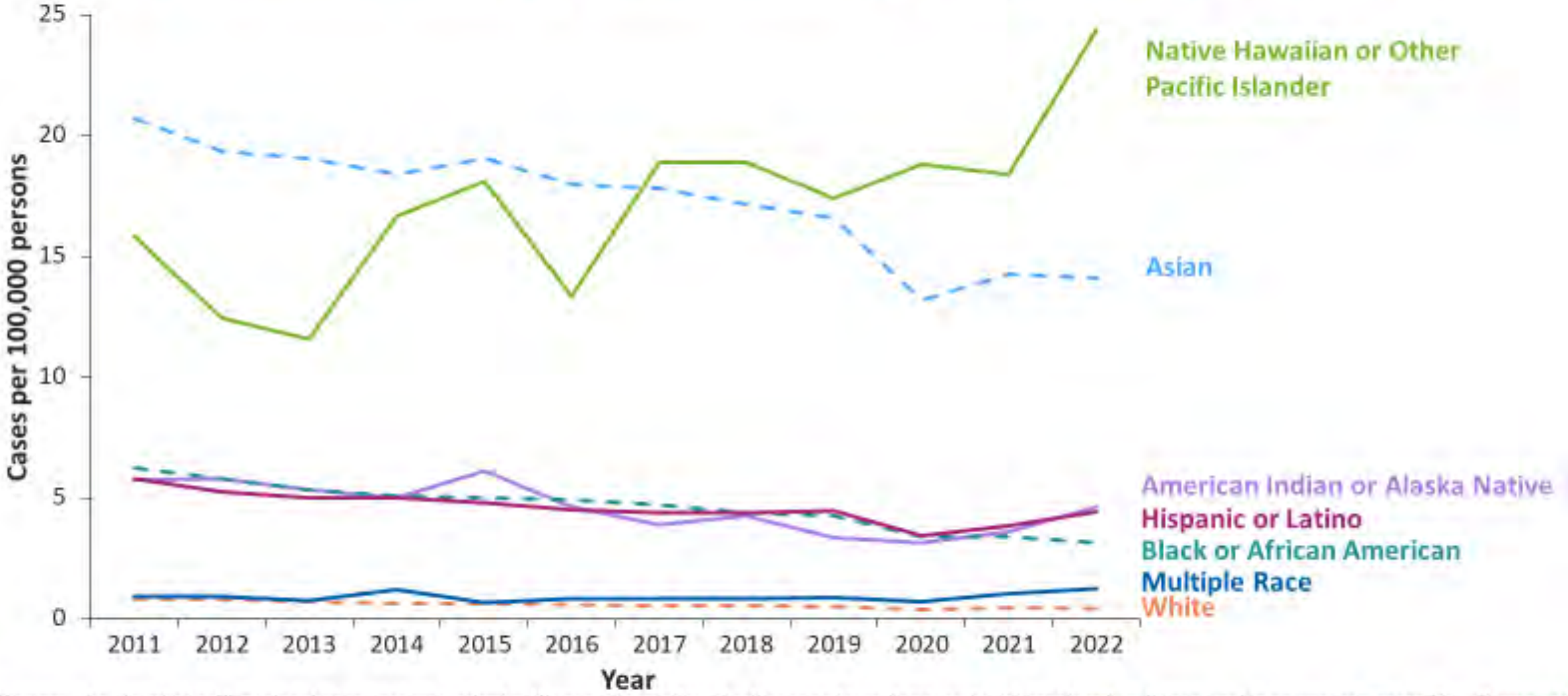
Diverse in the level of TB burden
(number and rate, small and big countries)

World Health Organization
Western Pacific Region



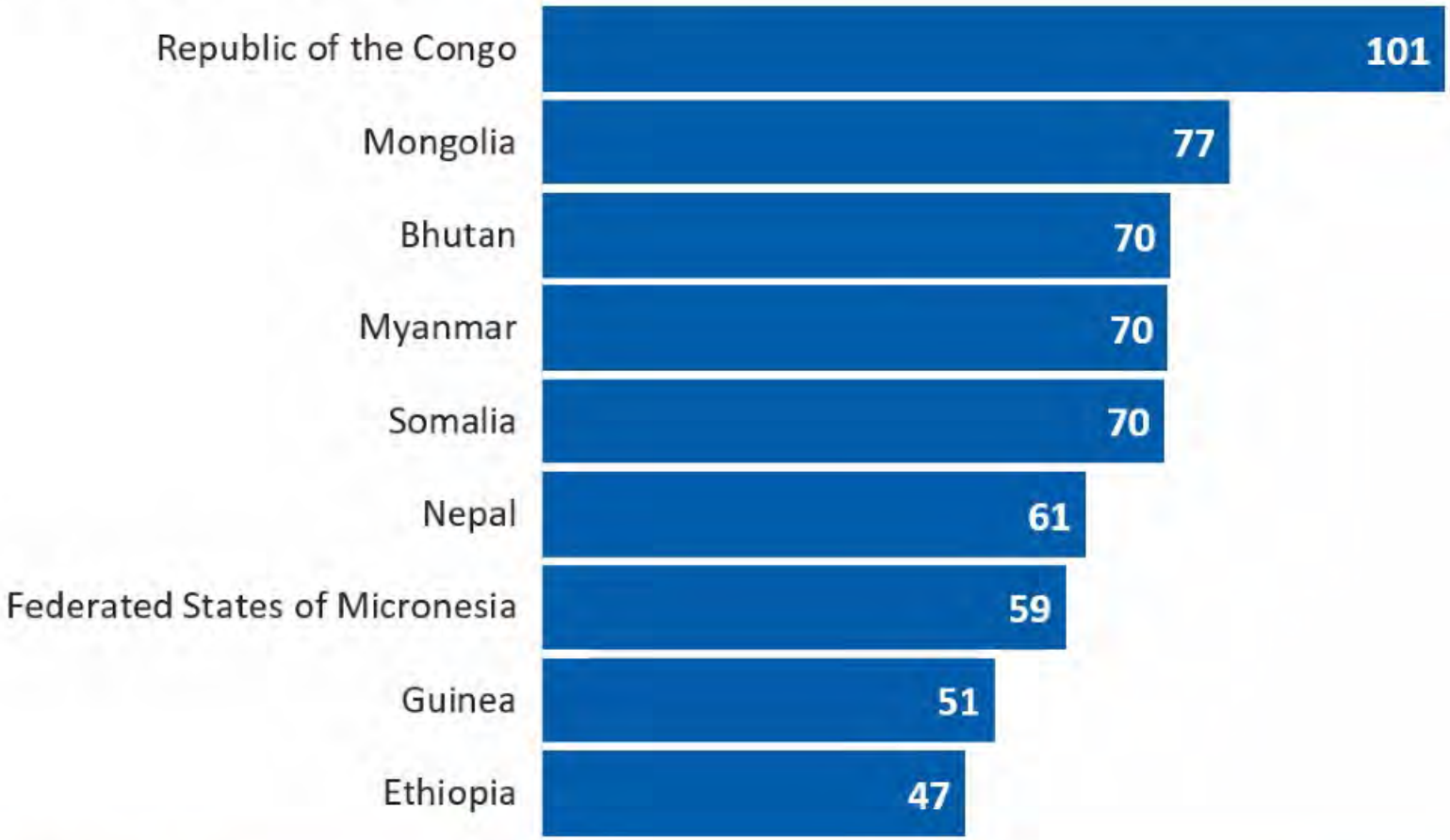
Data sources: Global TB Database

TB Incidence Rates by Race/Ethnicity,* United States, 2011–2022



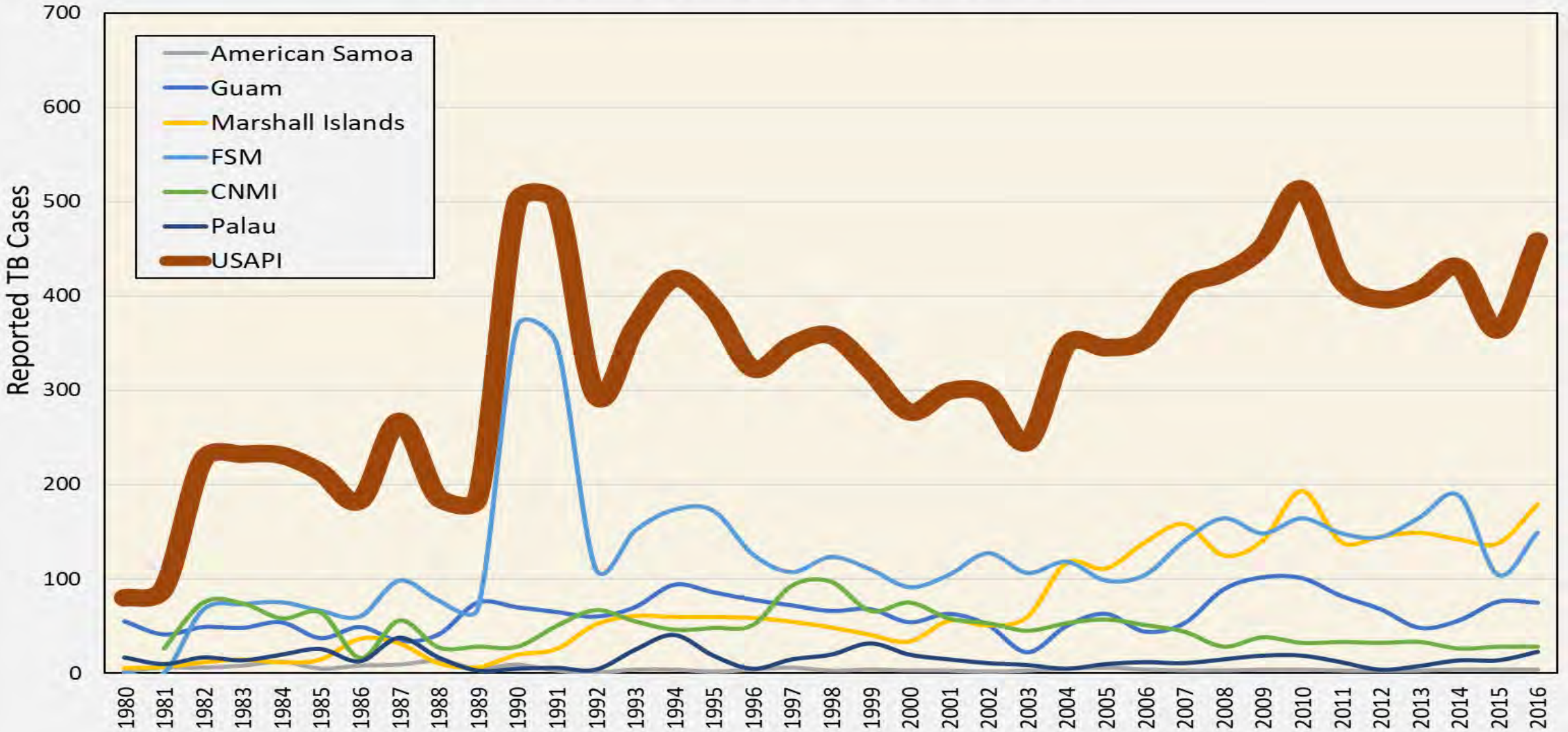
*Persons who identified as Hispanic or Latino were categorized as "Hispanic," regardless of self-reported race. Persons who did not identify as Hispanic or Latino were categorized by self-reported race; if more than one race was reported, the person was categorized as "Multiple race."

Top 10 TB Incidence Rates* by Country of Birth, United States, 2017–2021



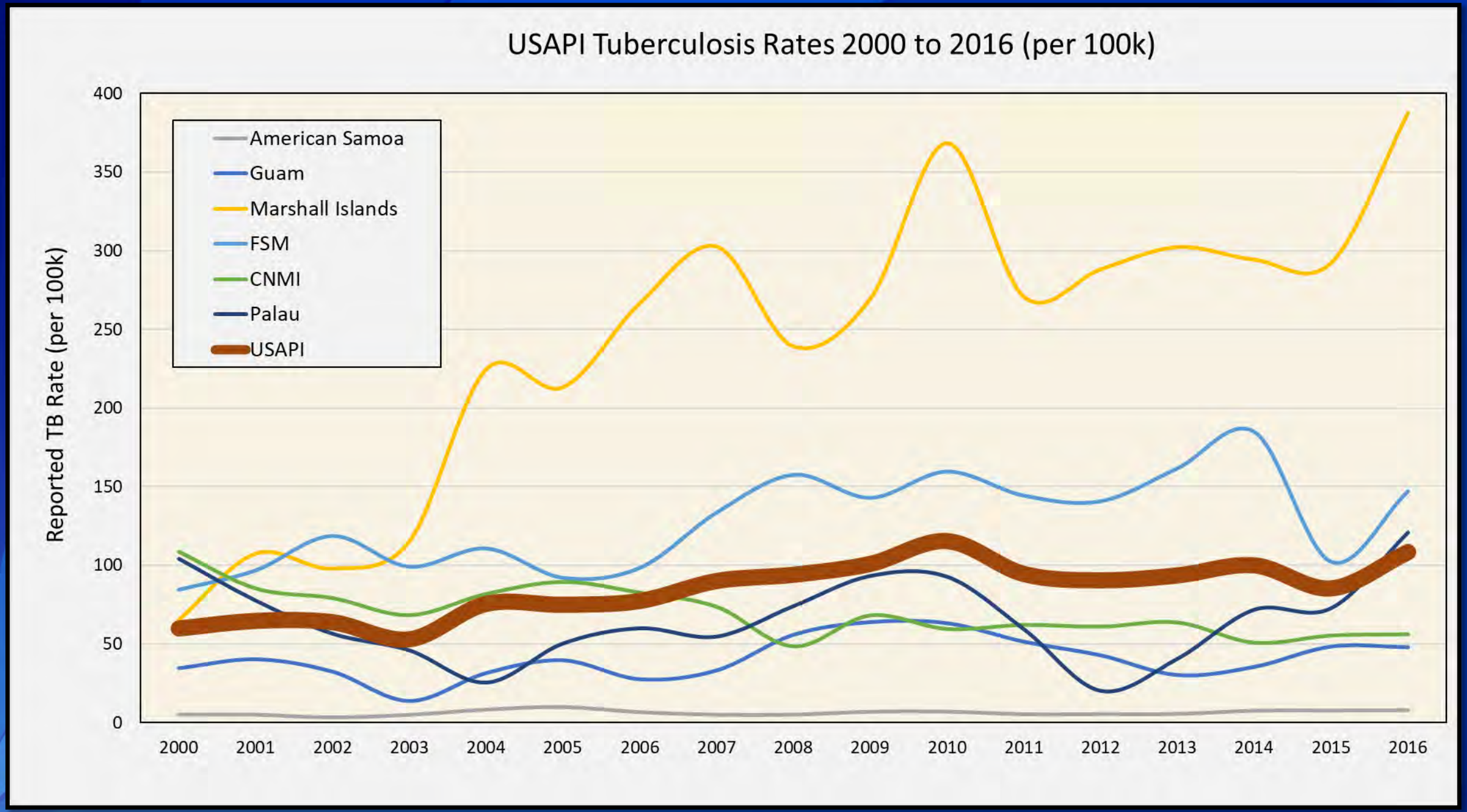
* Cases per 100,000 persons

USAPI Tuberculosis Cases, 1980 to 2016



Source: WHO Global Tuberculosis Data: https://www.who.int/teams/global-tuberculosis-programme/data

USAPI Tuberculosis Rates 2000 to 2016 (per 100k)

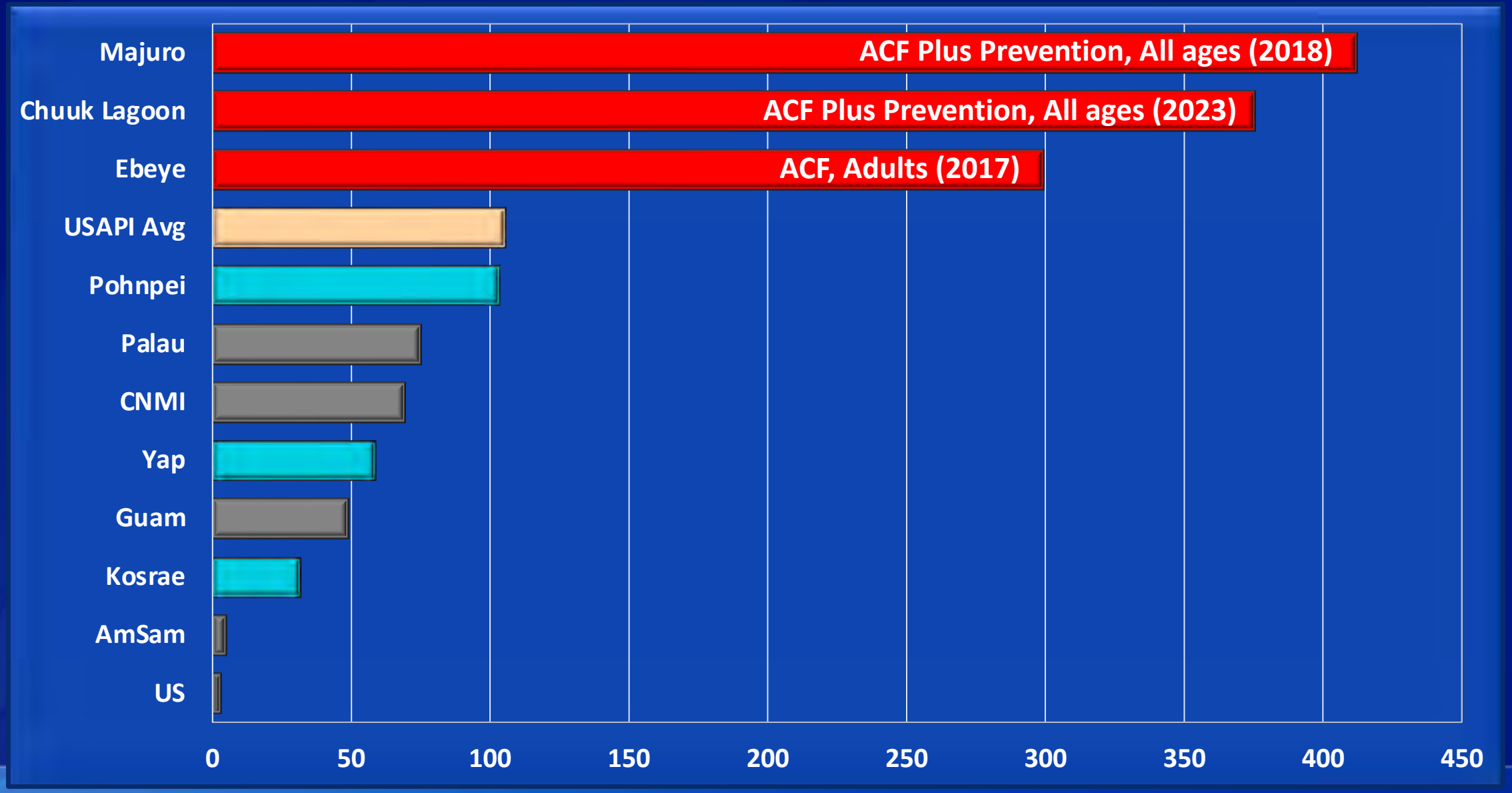


Source: WHO Global Tuberculosis Data: https://www.who.int/teams/global-tuberculosis-programme/data

USAPI TB Rates

- Reported TB Cases in our US Pacific Region grew at an alarming rate between 1980 and 2016
  - From a 5-year average of **170 cases per year** in 1980's to over **400 cases per year (ave)** from 2007 to 2016
  - Rising numbers of cases was during an era of population decline, so recently reported TB rates were likely ***underestimated***

Addressing TB in the US Pacific: A Targeted Approach (2016)



Source: Average TB Rate 2009 – 2015, EpiAnywhere

Impact of TB-Free in RMI

- Ebeye 2017
  - 5,100 screened, age ≥ 15 y.o. (90% of target)
  - Implemented rif-based prevention, but limited to C.I. only, and a year later in DM clinic
- Majuro 2018
  - 19,700 screened, all ages (84% of target)
  - Provided 3HP to TST positives

TB-Free in the USAPI: Spectacle? Or Spectacular?



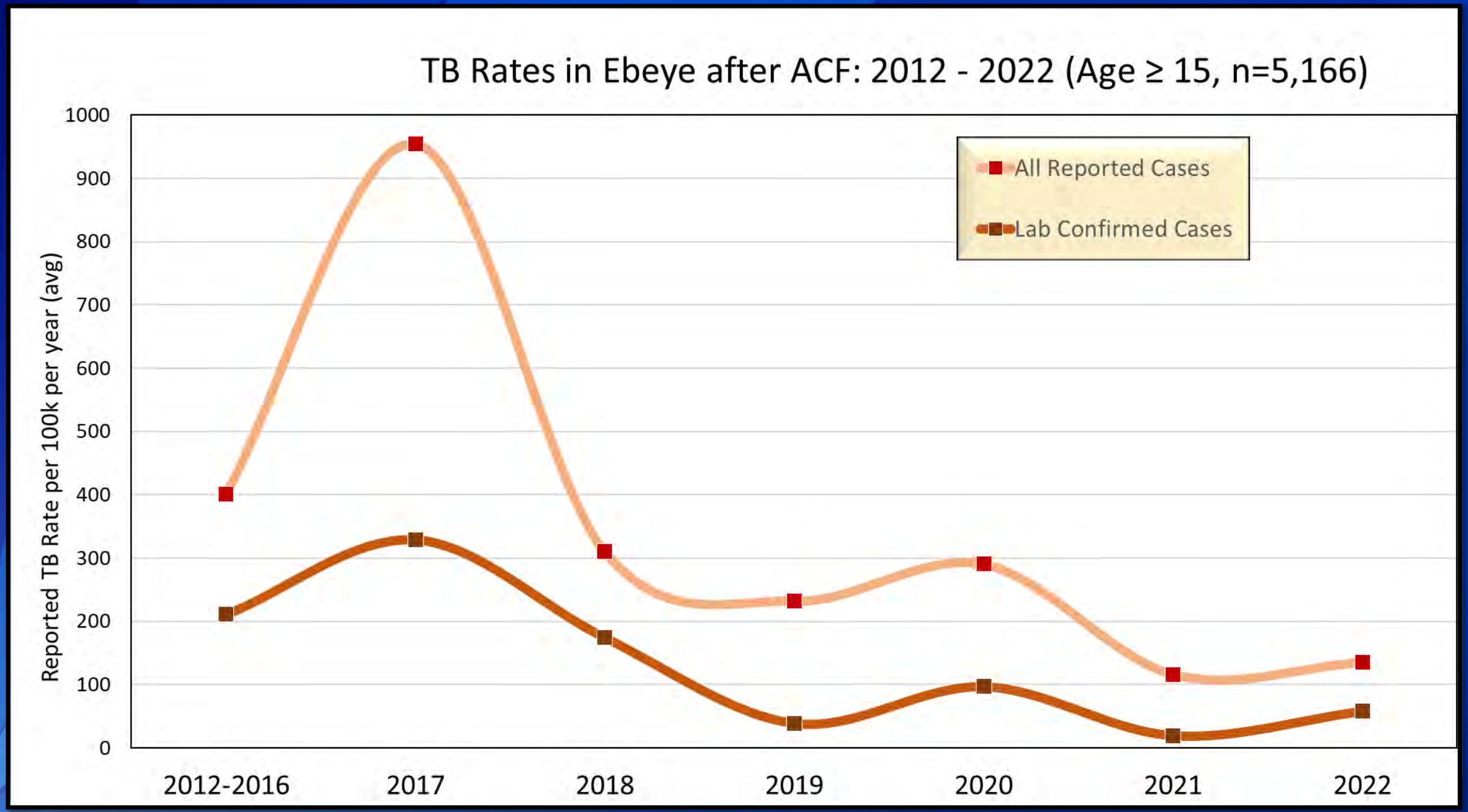


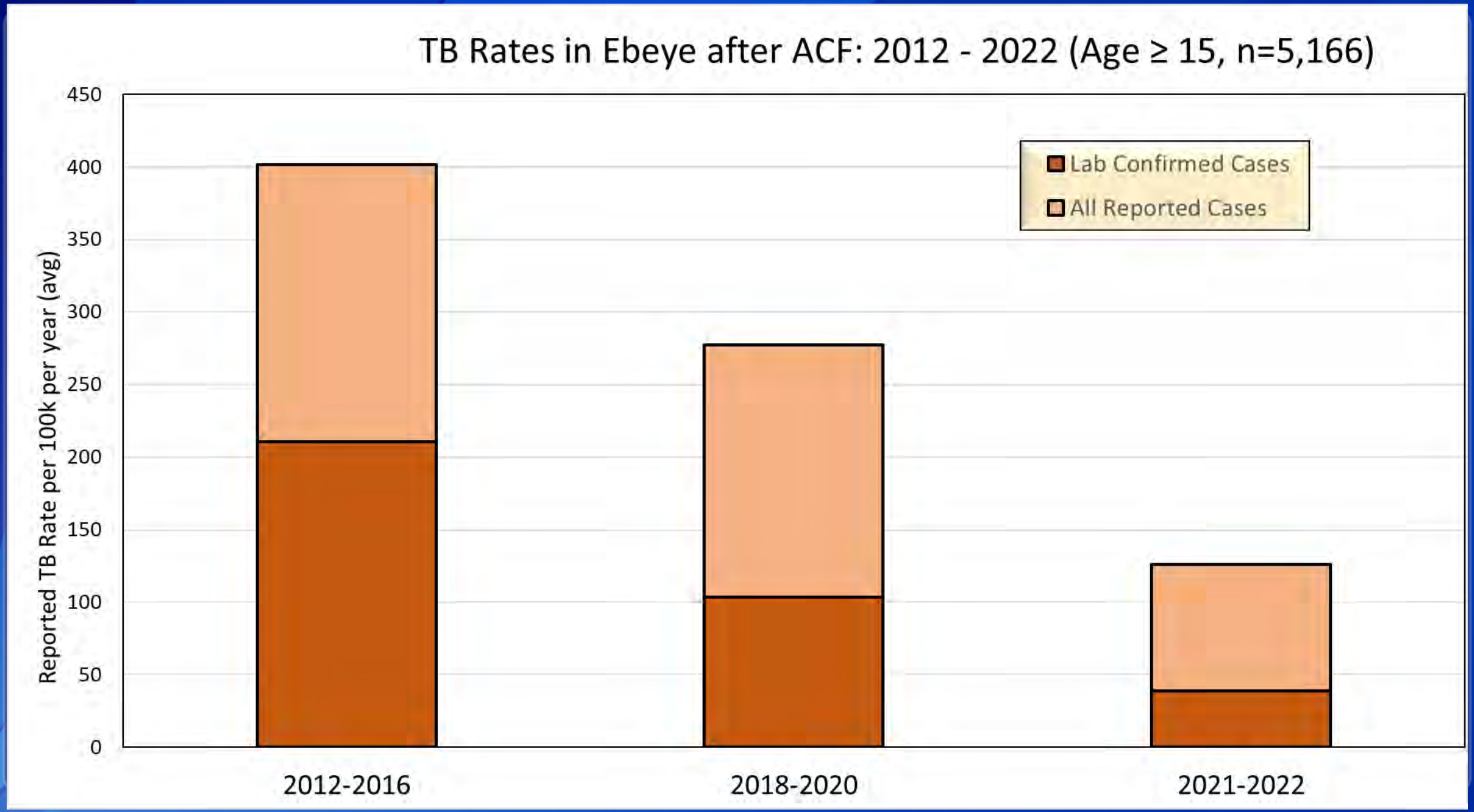


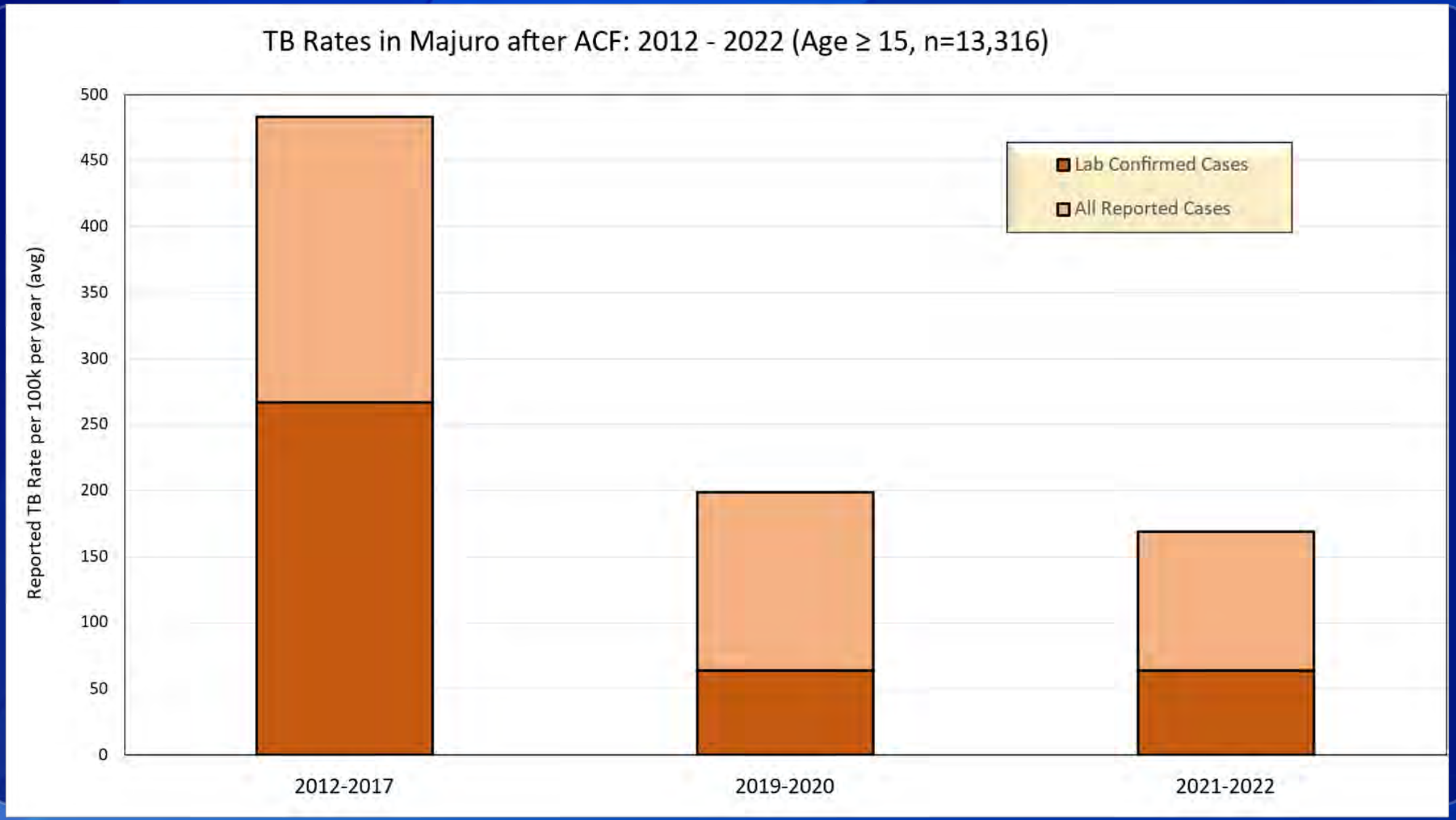


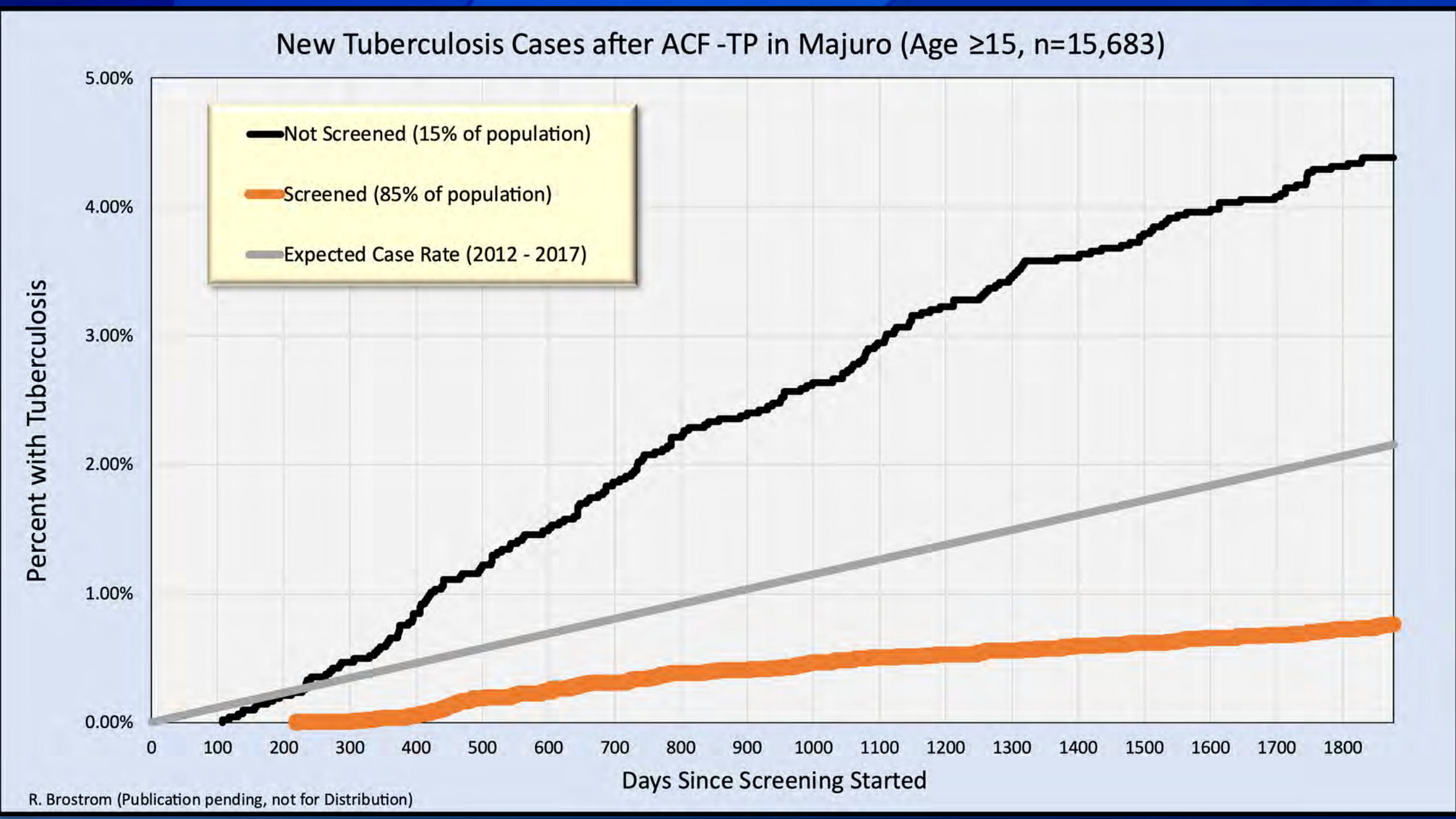




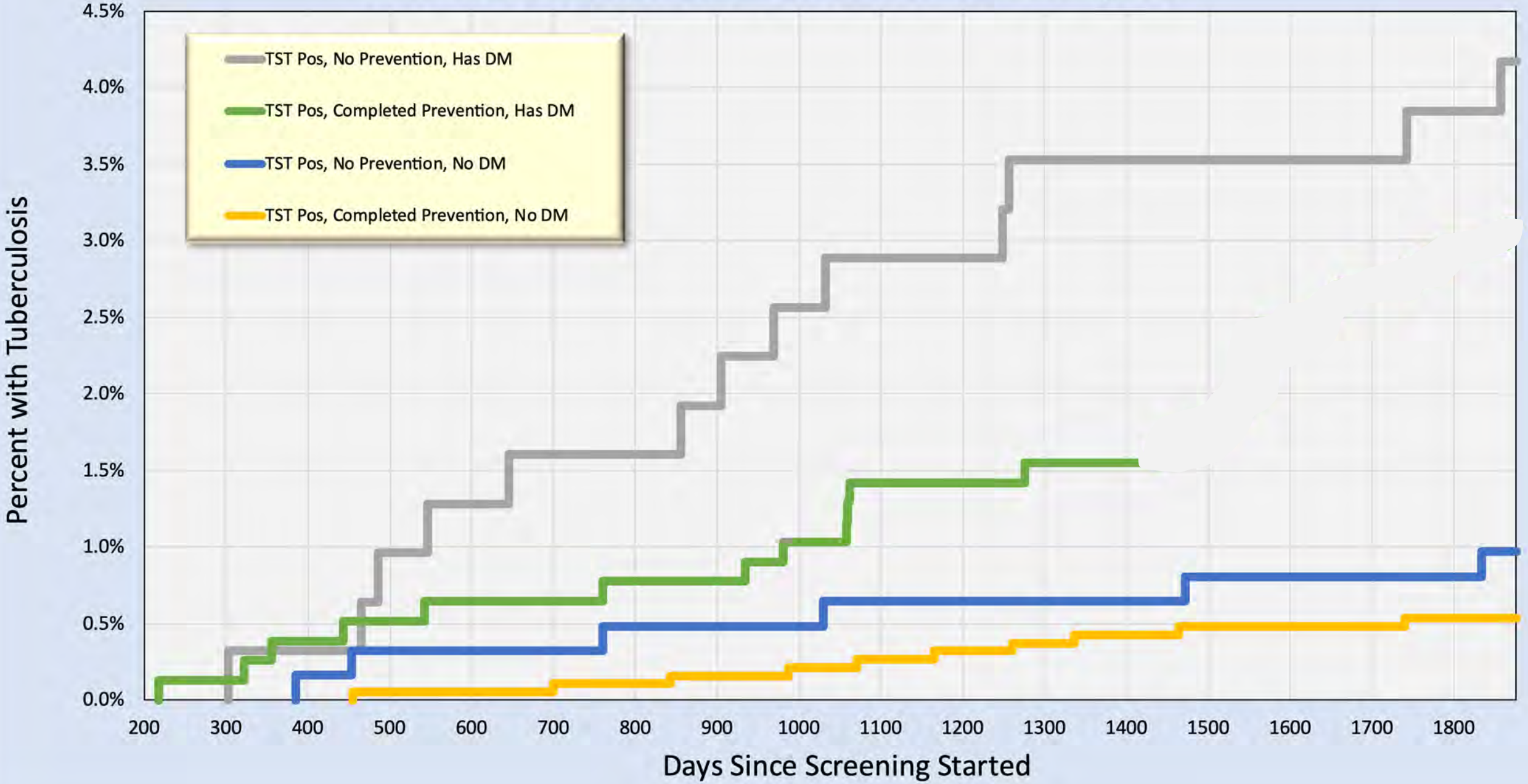

TB Rates in Ebeye after ACF: 2012 - 2022 (Age ≥ 15, n=5,166)
Reported TB Rate per 100k per year (avg)
1000
900
800
700
600
500
400
300
200
100
0
All Reported Cases
Lab Confirmed Cases
2012-2016
2017
2018
2019
2020
2021
2022


TB Rates in Ebeye after ACF: 2012 - 2022 (Age ≥ 15, n=5,166)
Reported TB Rate per 100k per year (avg)
450
400
350
300
250
200
150
100
50
0
Lab Confirmed Cases
All Reported Cases
2012-2016
2018-2020
2021-2022

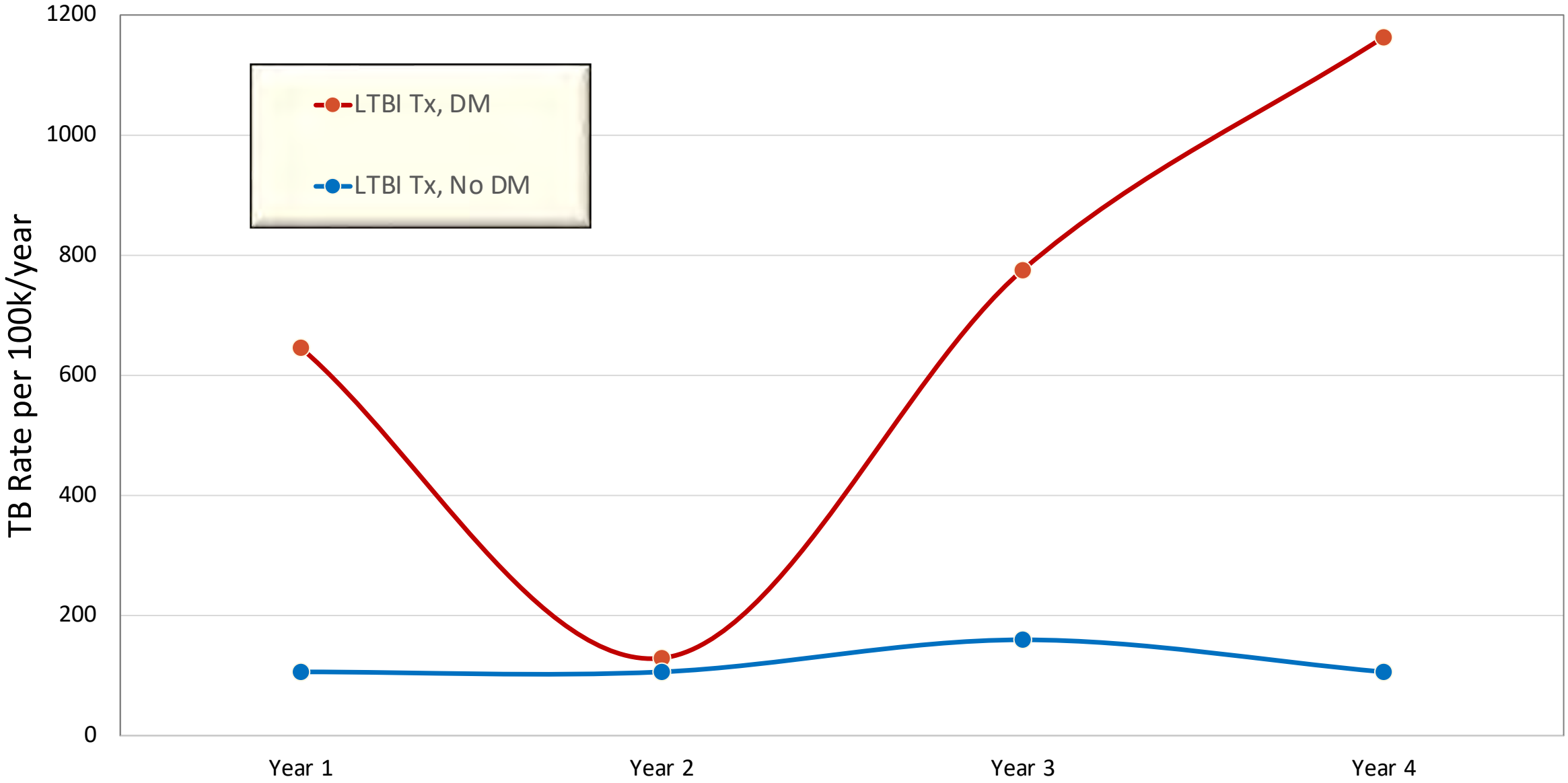

TB Rates in Majuro after ACF: 2012 - 2022 (Age ≥ 15, n=13,316)
Reported TB Rate per 100k per year (avg)
500
450
400
350
300
250
200
150
100
50
0
Lab Confirmed Cases
All Reported Cases
2012-2017
2019-2020
2021-2022


New Tuberculosis Cases after ACF -TP in Majuro (Age ≥15, n=15,683)
Not Screened (15% of population)
Screened (85% of population)
Expected Case Rate (2012 - 2017)
Percent with Tuberculosis
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
Days Since Screening Started
R. Brostrom (Publication pending, not for Distribution)

New Tuberculosis Cases after ACF-TP in Majuro



TB after LTBI in Majuro: Jan 1, 2019 to Jan 1, 2023 (Age ≥ 15, n=2,674)



TB after 3HP Prevention in Majuro

1. No prevention for TST negative
2. Potential differences in 3HP effectiveness for people with diabetes
3. Important to find pre-intervention TB rates to measure our impact

Average annual rate of TB among Majuro age ≥21, 2012-2017	
	Rate/100k
TST negative	290
TST positive, without DM	365
TST positive, with DM	1798

TB after 3HP Prevention in Majuro

Group 1: TST Negative

Case rate dropped by half after enhanced ACF

TBFM screening data (F/up cohort 2019 - July 23, TST neg, age 21+)	
Total population	5,676
Total follow-up TB cases	39
Years of follow-up:	4.58
Follow-up Patient Years	26,013
Cases per 100 patient-years	0.15

Rate of TB cases before and after TBFM, TST negative, age 21+			
		Rate Ratio	
	Average TB rate per 100k	RR (95%CI)	P-value
Majuro pre-TBFM (2012-2017)	290	reference	
TBFM Follow up (2018 - 2022)	149	**0.51 (0.36 - 0.72)**	**0.0001**

TB after 3HP Prevention in Majuro

Group 2: TST Positive, No Diabetes

Case rate dropped by 60% with enhanced ACF and nearly 80% if LTBI was completed. After ACF, the TB risk was further cut by about 50% with 3HP.

TBFM screening data (F/up cohort 2019 - Jul 2023, TST+, No DM, age 21+)	
Total population	2,401
Total follow-up TB cases	12
Years of follow-up:	4.58
Follow-up Patient Years	11,004
Cases per 100 patient-years	0.11

Rate of TB cases before and after TBFM, TST positive without diabetes, age 21+			
		Rate Ratio	
	Average TB rate per 100k	RR (95%CI)	P-value
Majuro pre-TBFM (2012-2017)	365	reference	
TBFM Follow up *No LTBI treatment*	150	0.41 (0.10, 1.15)	0.1016
TBFM Follow up *LTBI treatment*	81	**0.22 (0.09, 0.45)**	**<0.0001**

TB after 3HP Prevention in Majuro

Group 3: TST Positive, With Diabetes:

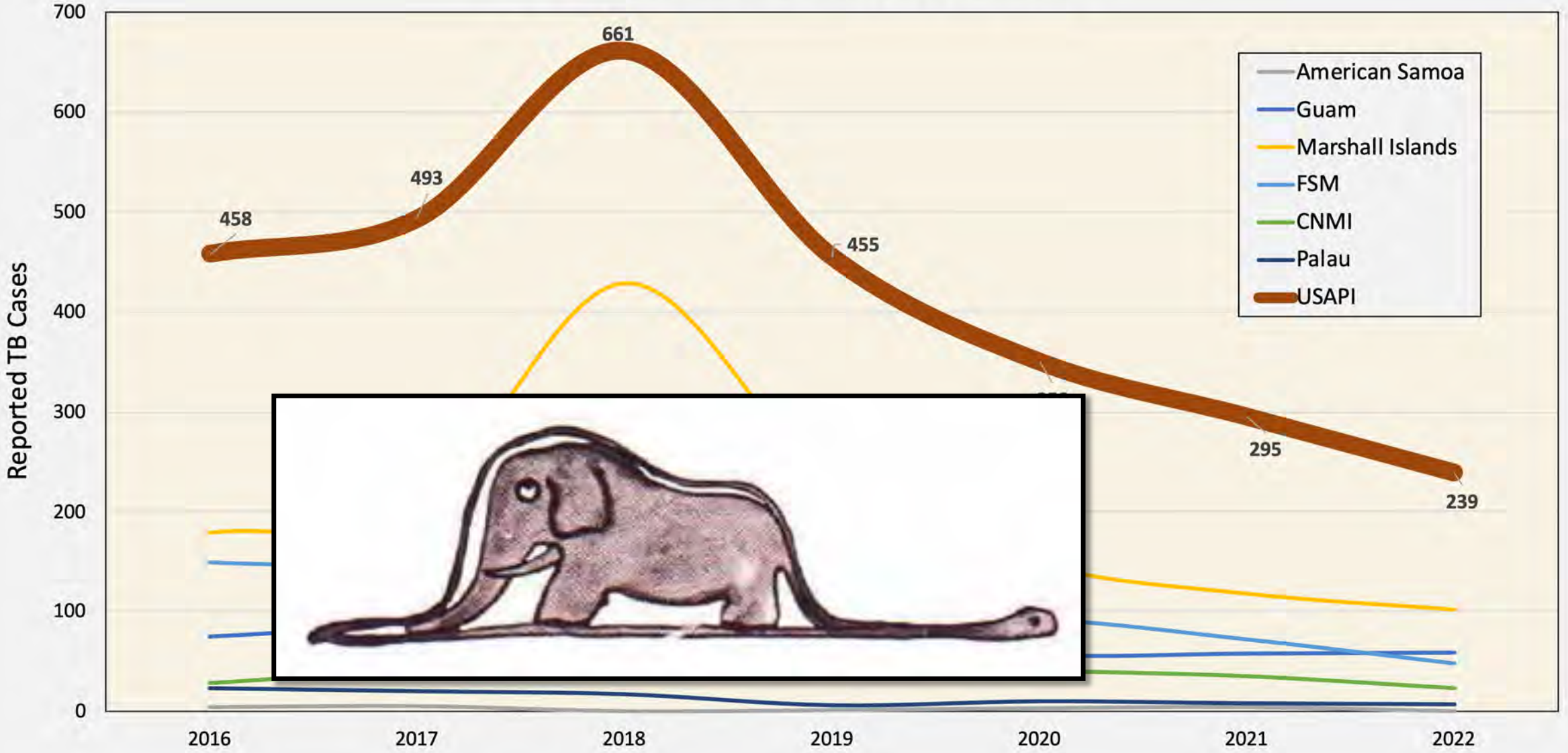
Case rate dropped by 33% with enhanced ACF and nearly 66% if LTBI was completed. After ACF, the TB risk was further cut by about 48% with 3HP.

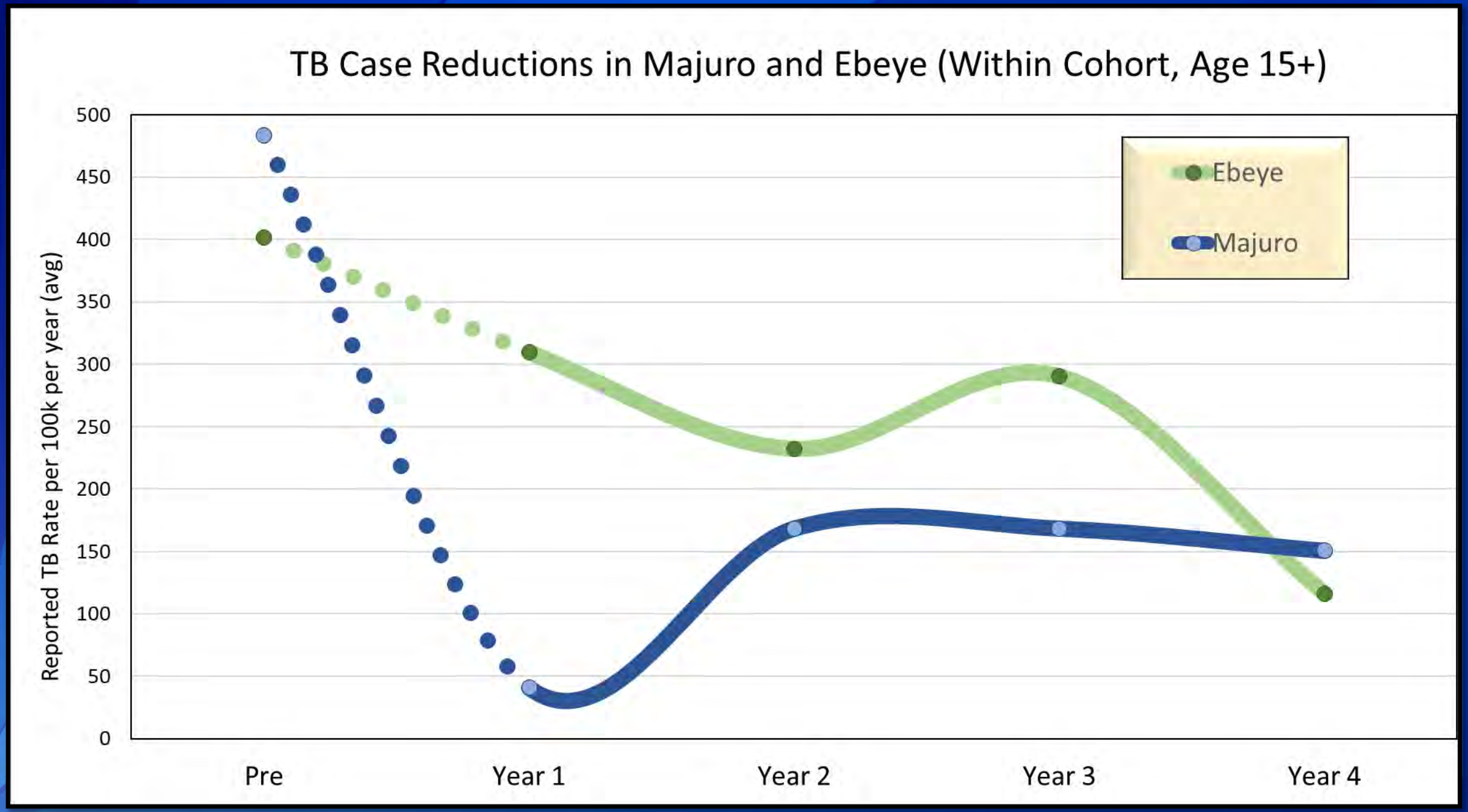
TBFM screening data (F/up cohort 2019 - Jul 2023, TST+, No DM, age 21+)	
Total population	1,083
Total follow-up TB cases	36
Years of follow-up:	4.58
Follow-up Patient Years	4,963
Cases per 100 patient-years	0.73

Rate of TB cases before and after TBFM, TST positive with diabetes, age 21+

		Rate Ratio	
	Average TB rate per 100k	RR (95%CI)	P-value
Majuro pre-TBFM (2012-2017)	1798	reference	
TBFM Follow up *No LTBI treatment*	1196	0.66 (0.35, 1.16)	0.1599
TBFM Follow up *LTBI treatment*	617	**0.34 (0.22, 0.52)**	**<0.0001**

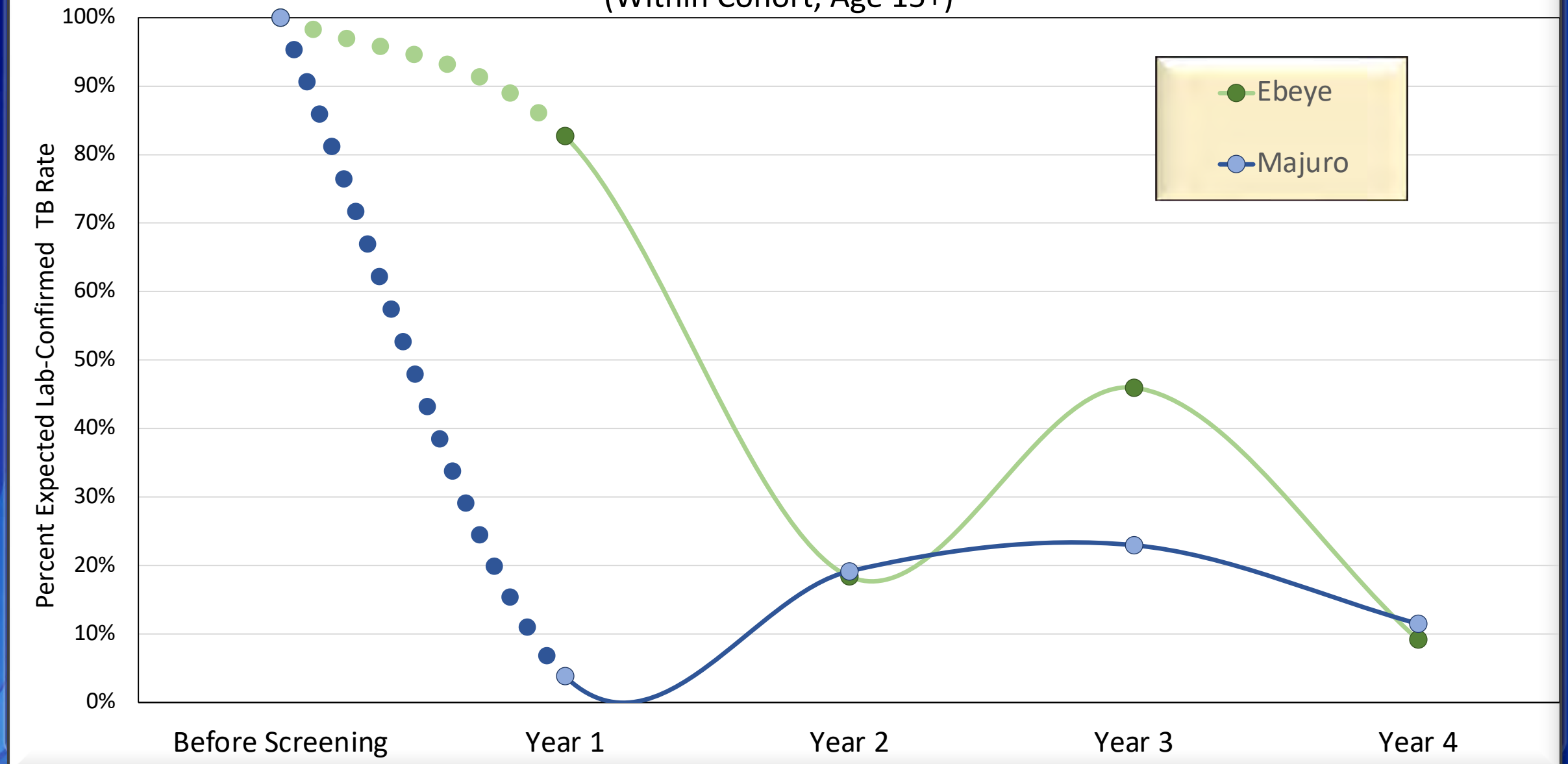
USAPI Tuberculosis Cases, 2000 to 2022



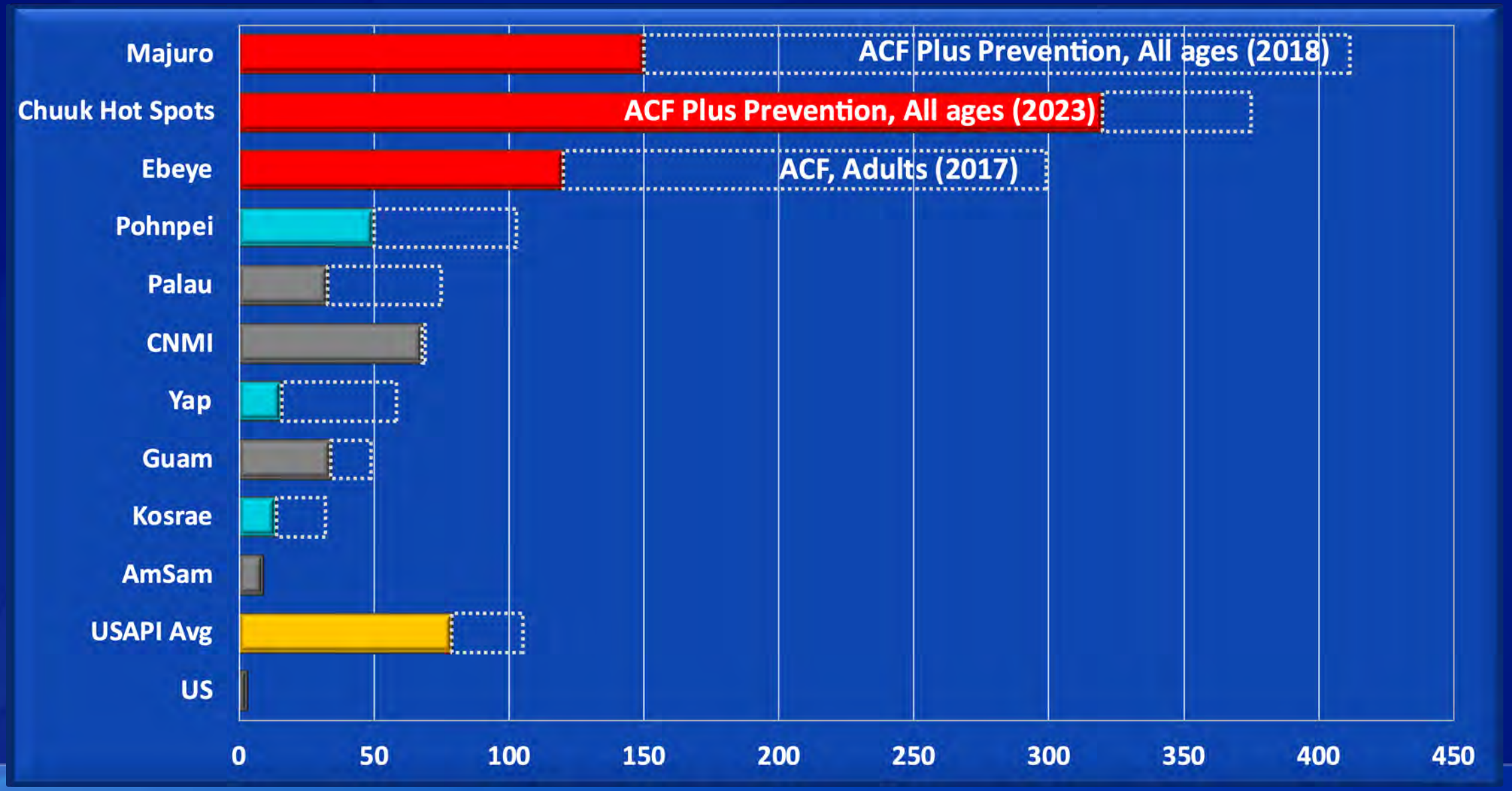

TB Case Reductions in Majuro and Ebeye (Within Cohort, Age 15+)
Reported TB Rate per 100k per year (avg)
500
450
400
350
300
250
200
150
100
50
0
Pre
Year 1
Year 2
Year 3
Year 4
Ebeye
Majuro

Lab Confirmed TB Case Reductions in Majuro and Ebeye

(Within Cohort, Age 15+)

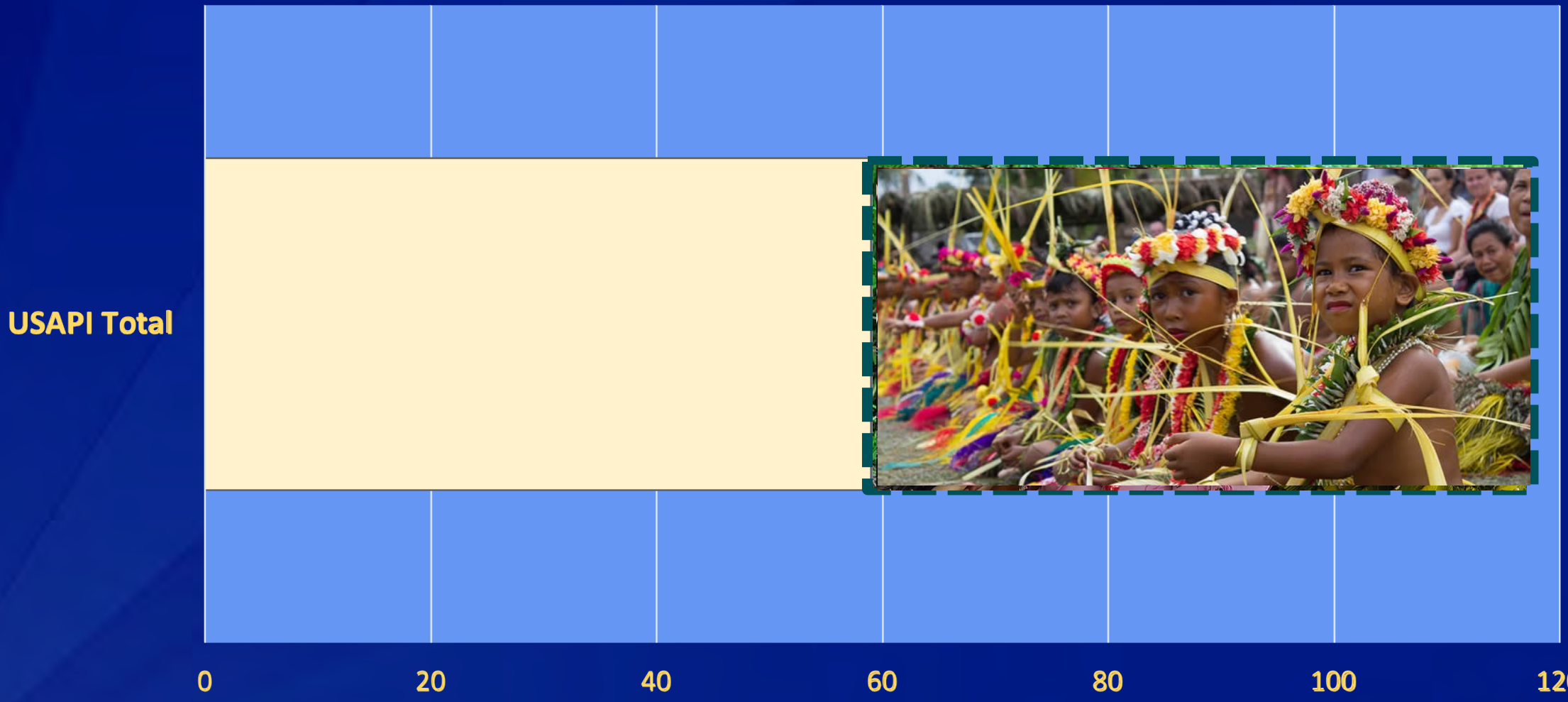


Addressing TB in the US Pacific: 2016 and 2021



Source: Average TB Rate 2009 – 2015, EpiAnywhere

Addressing TB in the US Pacific: 2018 Regional Case Rate



Impact of TB-Free in Hawaii?

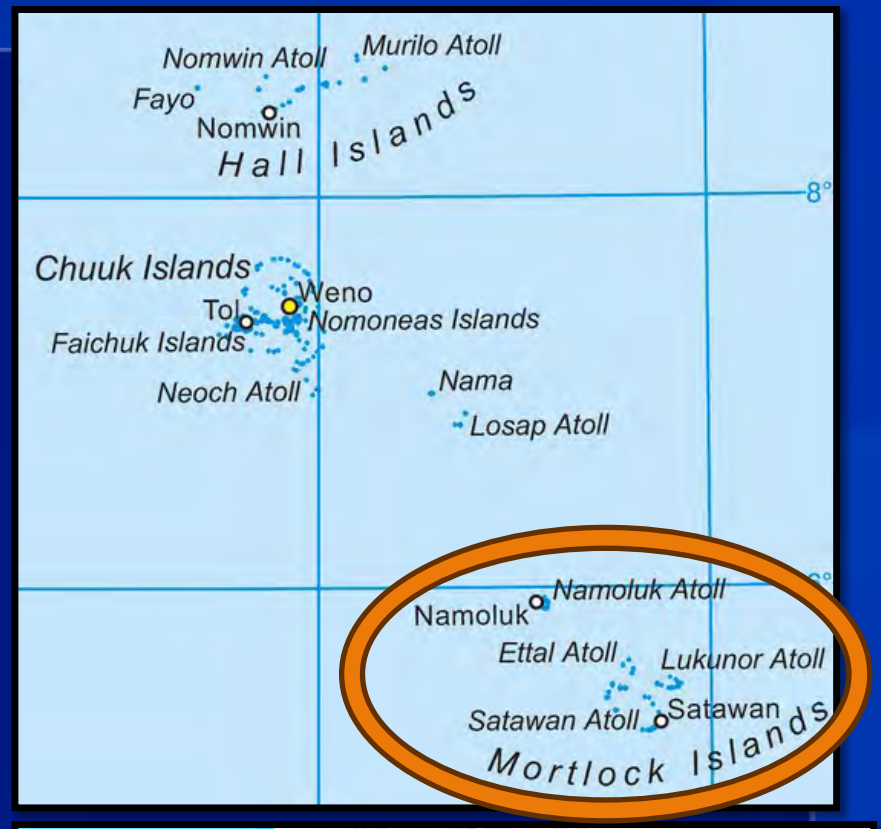
Arrivers to Hawaii with TB
Total Number of Arrivers with TB
Years in Hawaii before TB dx (ave)
Number with TB dx within 1 year of arrival
Number with TB dx after 1 year of arrival
Percent of cases within 1 year of arrival

Preliminary data from CDC and Hawaii State DOH as compiled by Amanda Moreno, CDC PHA


MISSION ACCOMPLISHED

USAPI TB Effort: Miles to go……

- Our USAPI hot spots are still hot spots
- Mortlocks, Halls (2,000 ppl. May, 2024)
- Polynesian Village (1,500 ppl. ?Aug, 2024)
- **Need to assure household contacts to infectious cases of all ages are finishing rif-based prevention across the USAPI**
- **Need to assure high-risk populations (HIV clinic, DM clinic) are routinely tested and treated for LTBI with rif-based prevention across the USAPI**





Time Out

Public Epi-Announcement!

- Together, our USAPI reported 239 cases of TB in 2022



- *Expect nearly **300 "extra" ACF TB** cases in the region in 2023, which will more than double the regional caseload.*

TB-Free in our USAPI

- TB in the Pacific, TB from the Pacific (3 min)
- TB Free Chuuk Overview (18 min)
- TB Free Chuuk Epi Update (12 min)
- Impact of TB Free effort in RMI (17 min)
- Q and A (10 min)

Special thanks to:

- RMI MOH
- US Department of the Interior, Insular Affairs Office
- NTCA
- US CDC
- WHO, WPRO Office
- PIHOA
- UNDP
- JICA







