

EPIDEMIOLOGY OF TUBERCULOSIS

...the Who, the Where, and
(perhaps) the Why

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Objectives

- Identify trends in global, national, and Michigan TB epidemiology that have contributed to the number of TB cases in 2015
- Identify important risk-factors that have contributed to the number of TB cases in 2015



Main Topics

- Epidemiologic trends in TB Disease across the world, the United States, and Michigan
 - Characteristics of high-risk “moving” TB populations in the US and Michigan including:
 - Foreign Born
 - Homeless
 - Those who moved during therapy
 - Immigrant and Refugee TB screening
-





"It's a small world after all!"

A GLIMPSE OF THE GLOBAL BURDEN

*How many
new cases
of TB were
reported
globally to
WHO in
2014?*

A. 4.1 Million

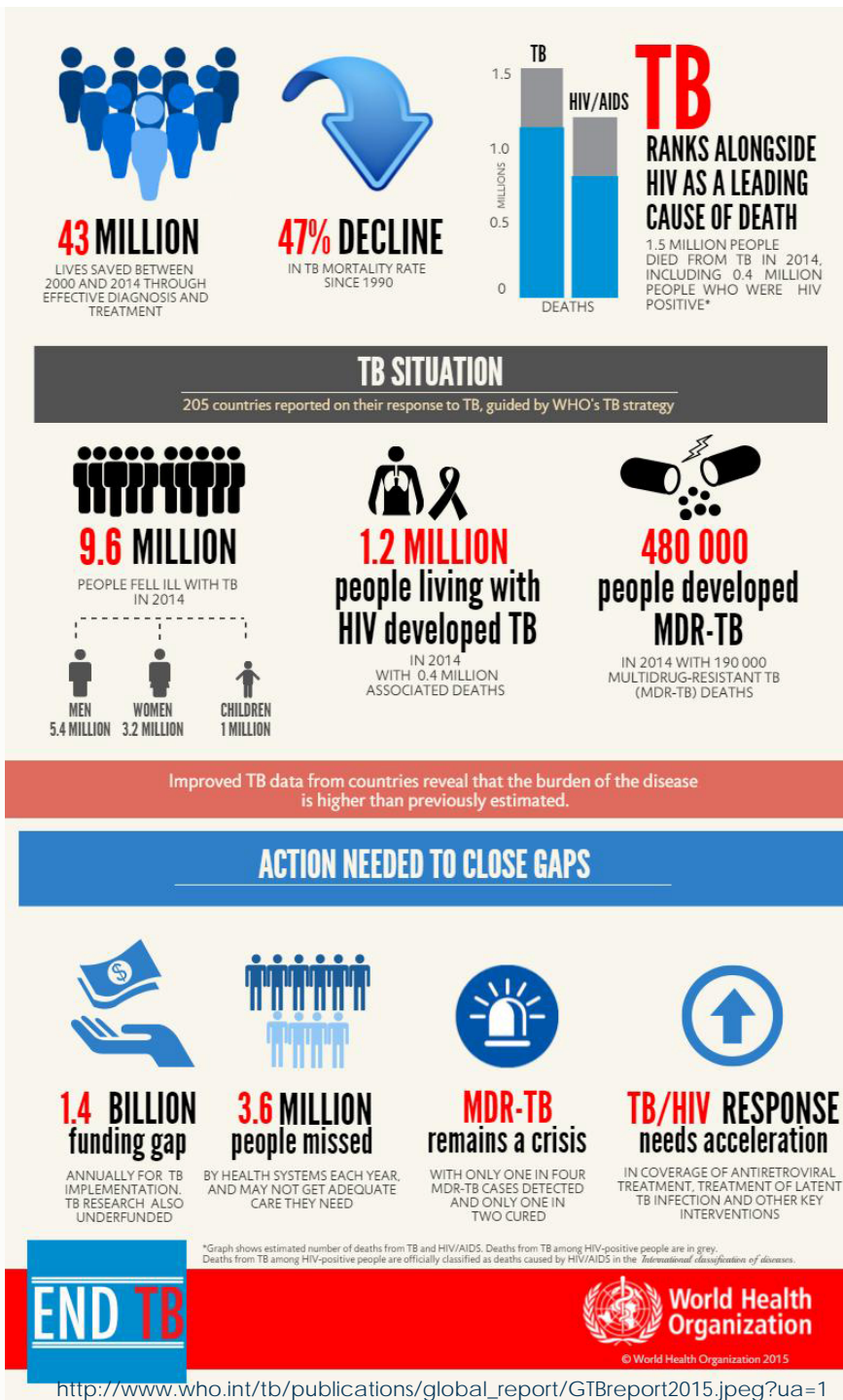
B. 6.3 Million

C. 9.8 Million

D. 12.4 Million

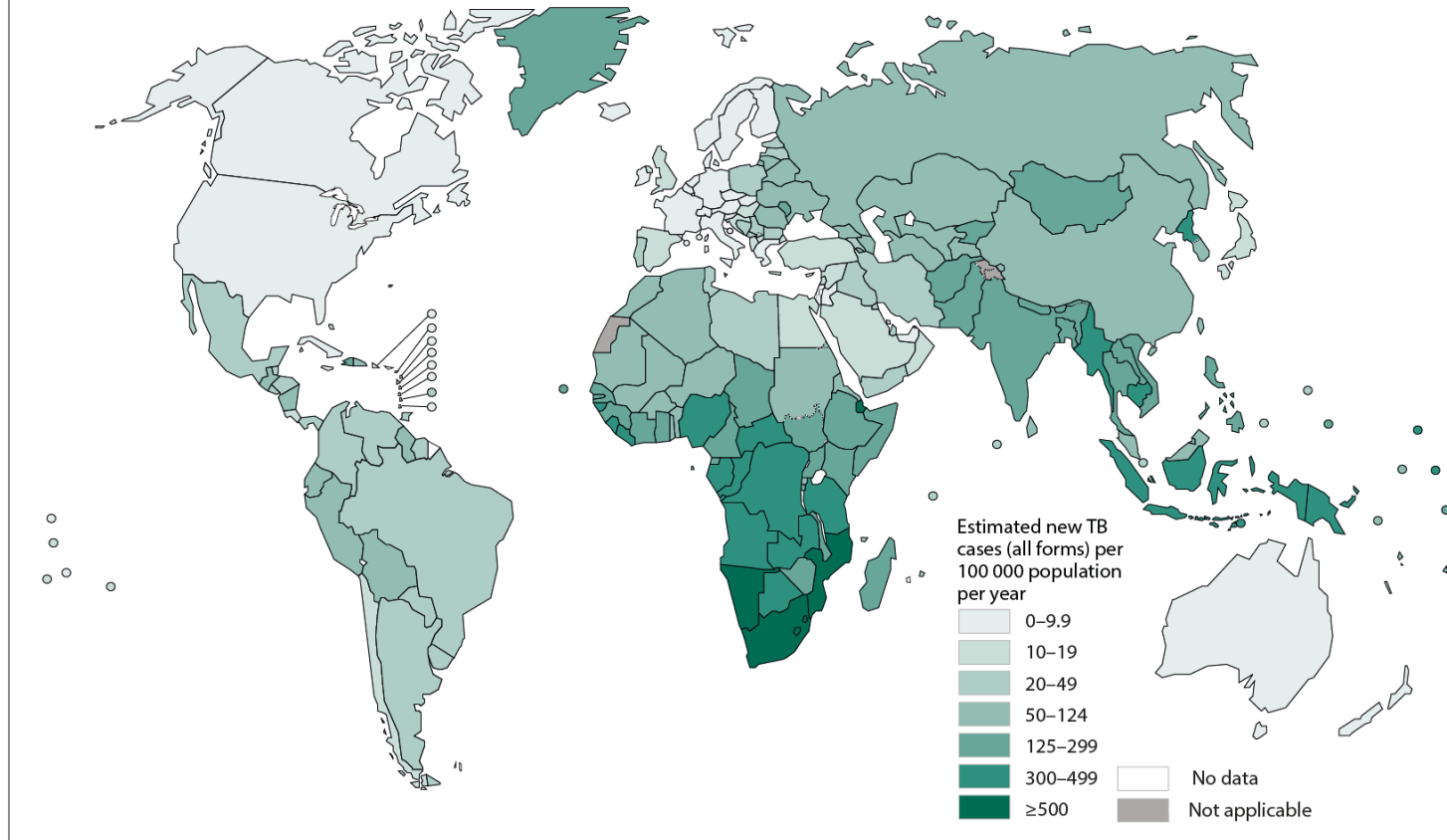


Status of the Global TB Epidemic and Response – *Global Tuberculosis Report 2015*



Global TB Incidence 2014

Estimated TB incidence rates, 2014



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Data Source: *Global Tuberculosis Report 2015*. WHO, 2015.

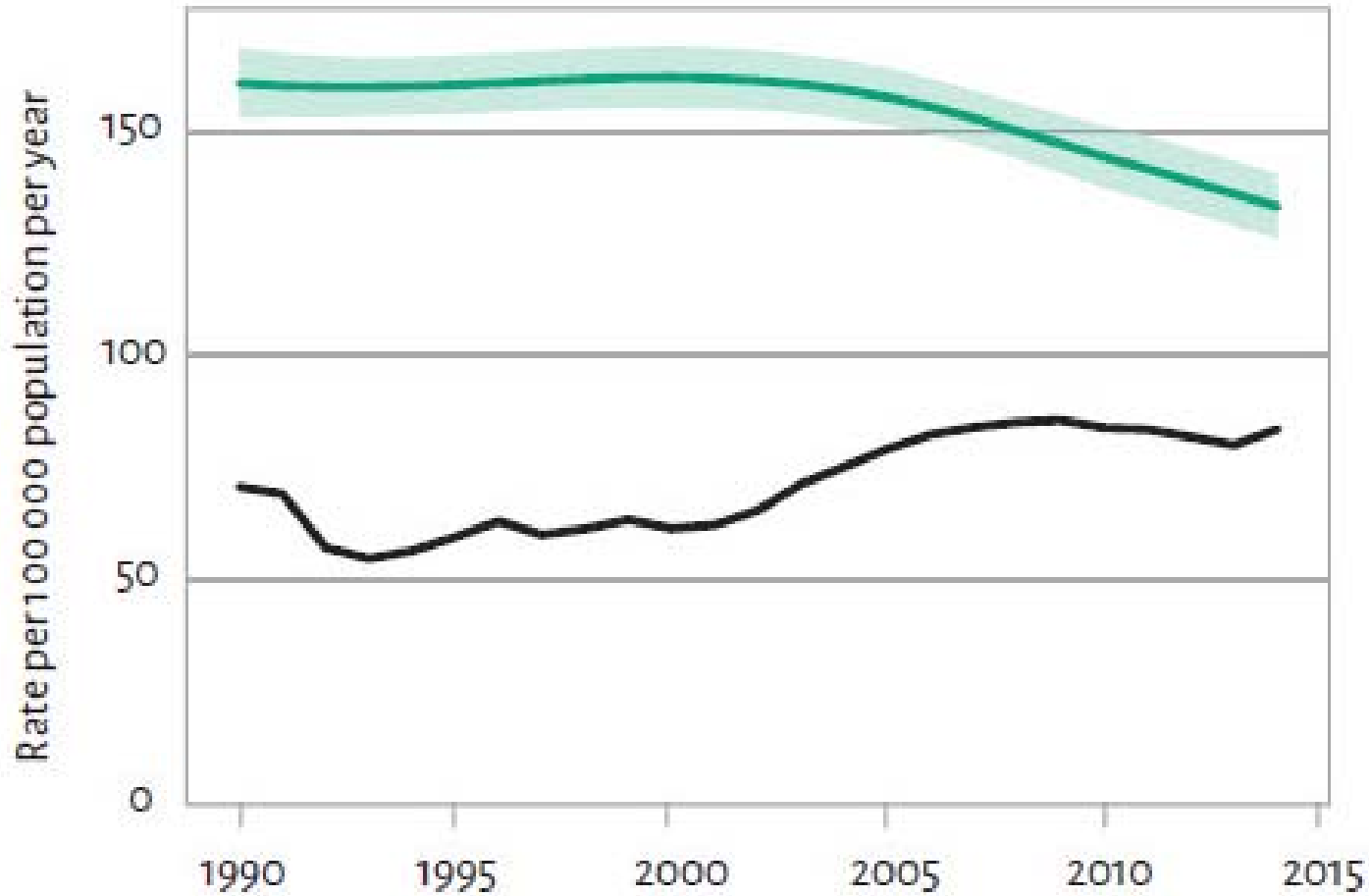
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Global TB Notifications, 1990 -2014

■ FIGURE 3.1

Global trends in absolute number of notified TB cases (black) and estimated TB incidence (green), 1990–2014. Case notifications include new and relapse cases (all forms).

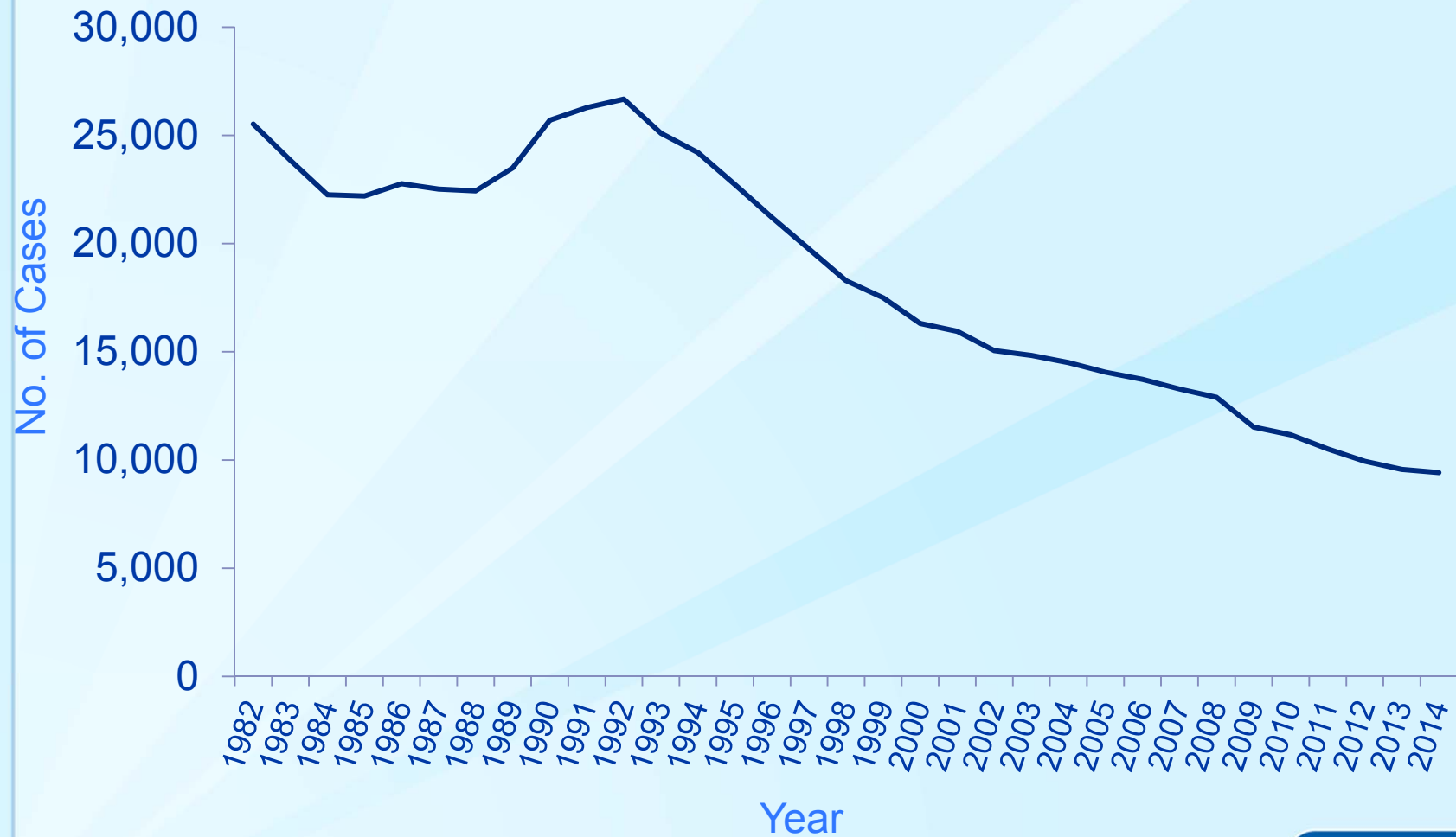




"Think Global. Act Local."

A DOMESTIC DISTRIBUTION OF BURDEN

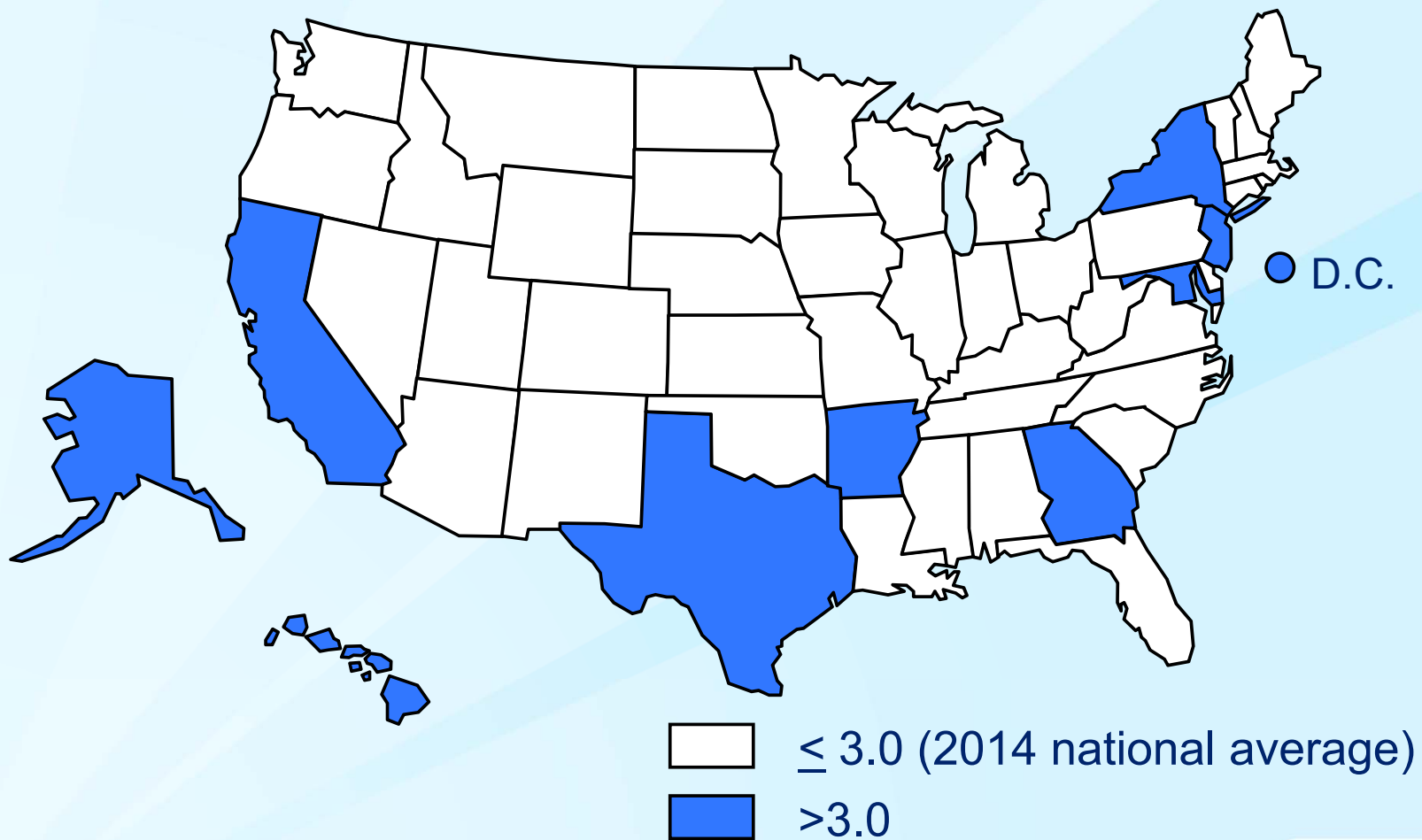
Reported TB Cases United States, 1982–2014*



*Updated as of June 5, 2015.



TB Case Rates,* United States, 2014

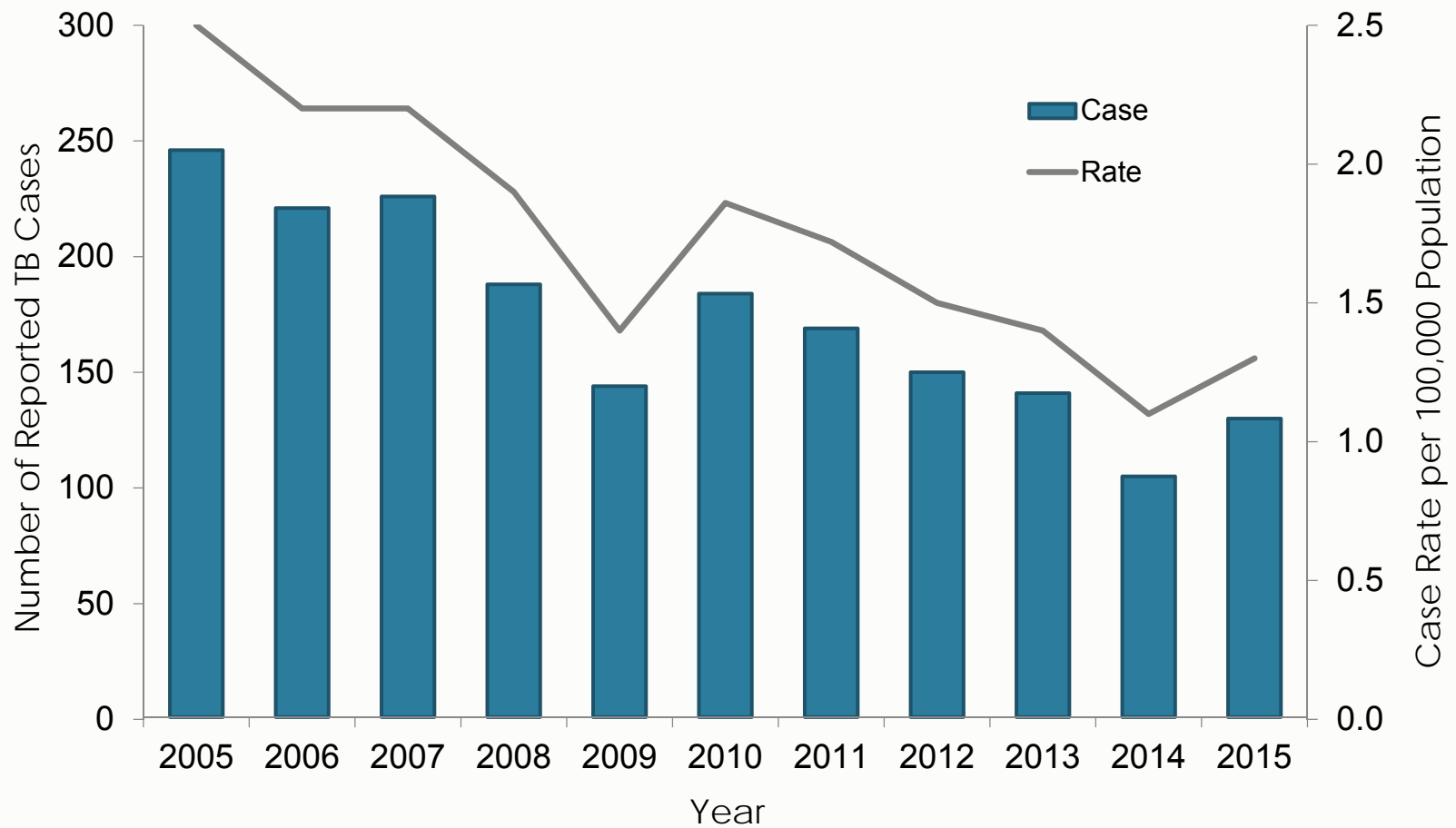


*Cases per 100,000.



Reported Tuberculosis Cases and Rates

Michigan, 2005-2015

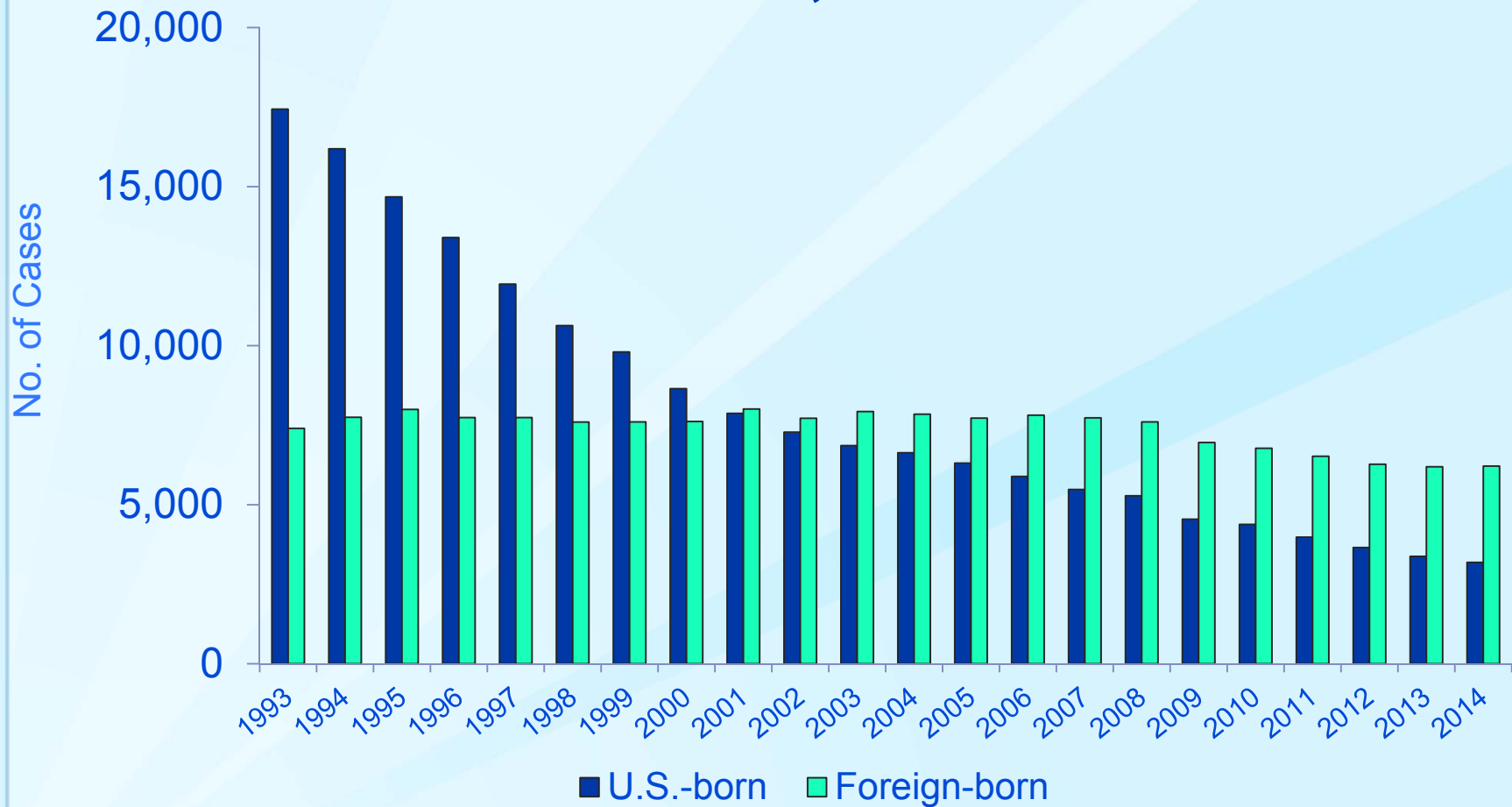


Clinical Characteristics of TB Cases, Michigan, 2015

- Verification Criteria:
 - 71% Culture Positive
 - <1% NAAT Positive (no culture)
 - 24% Clinical
 - 5% Provider Diagnosed
 - Site of TB Disease:
 - 55% Pulmonary
 - 33% Extrapulmonary
 - 25% Ocular
 - 12% Concurrent
 - 100% of culture positive cases were genotyped
 - 15% in a genotype cluster
-



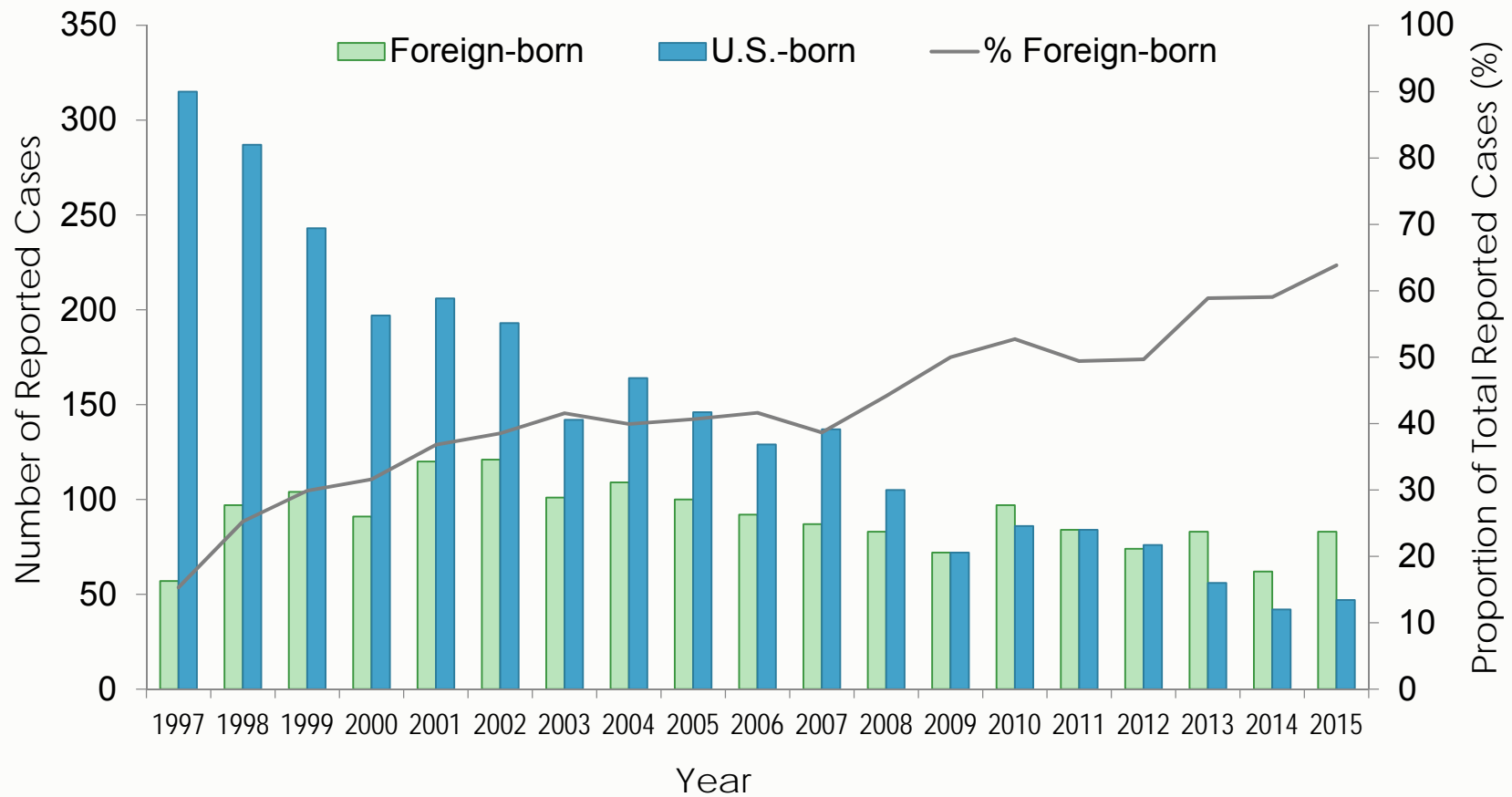
Number of TB Cases in U.S.-born vs. Foreign-born Persons, United States, 1993–2014*



*Updated as of June 5, 2015



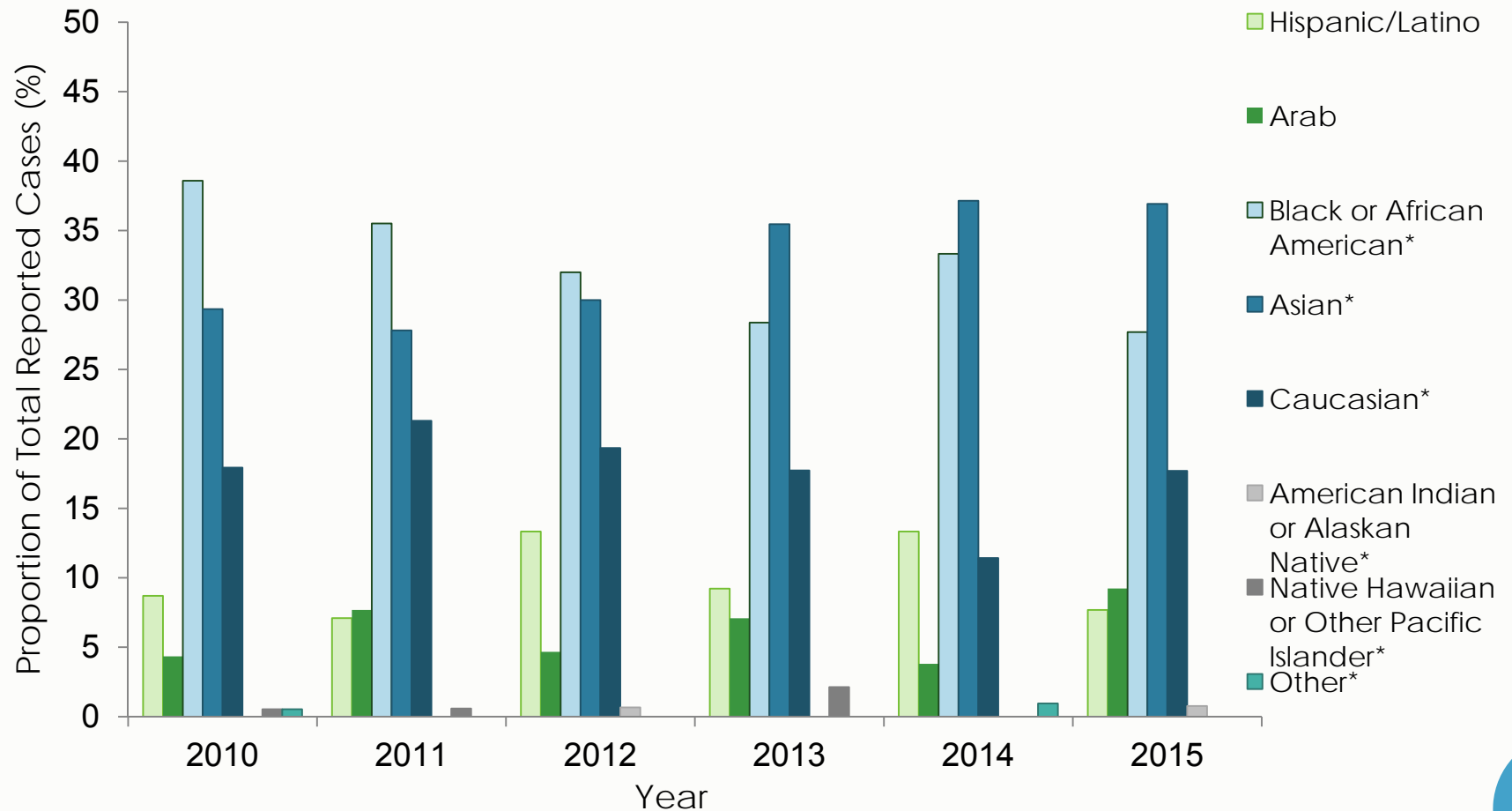
Number and Proportion of U.S. vs. Foreign-born TB Cases Michigan, 1997-2015





Proportion of TB Cases by Race/ Ethnicity

Michigan, 2010–2015



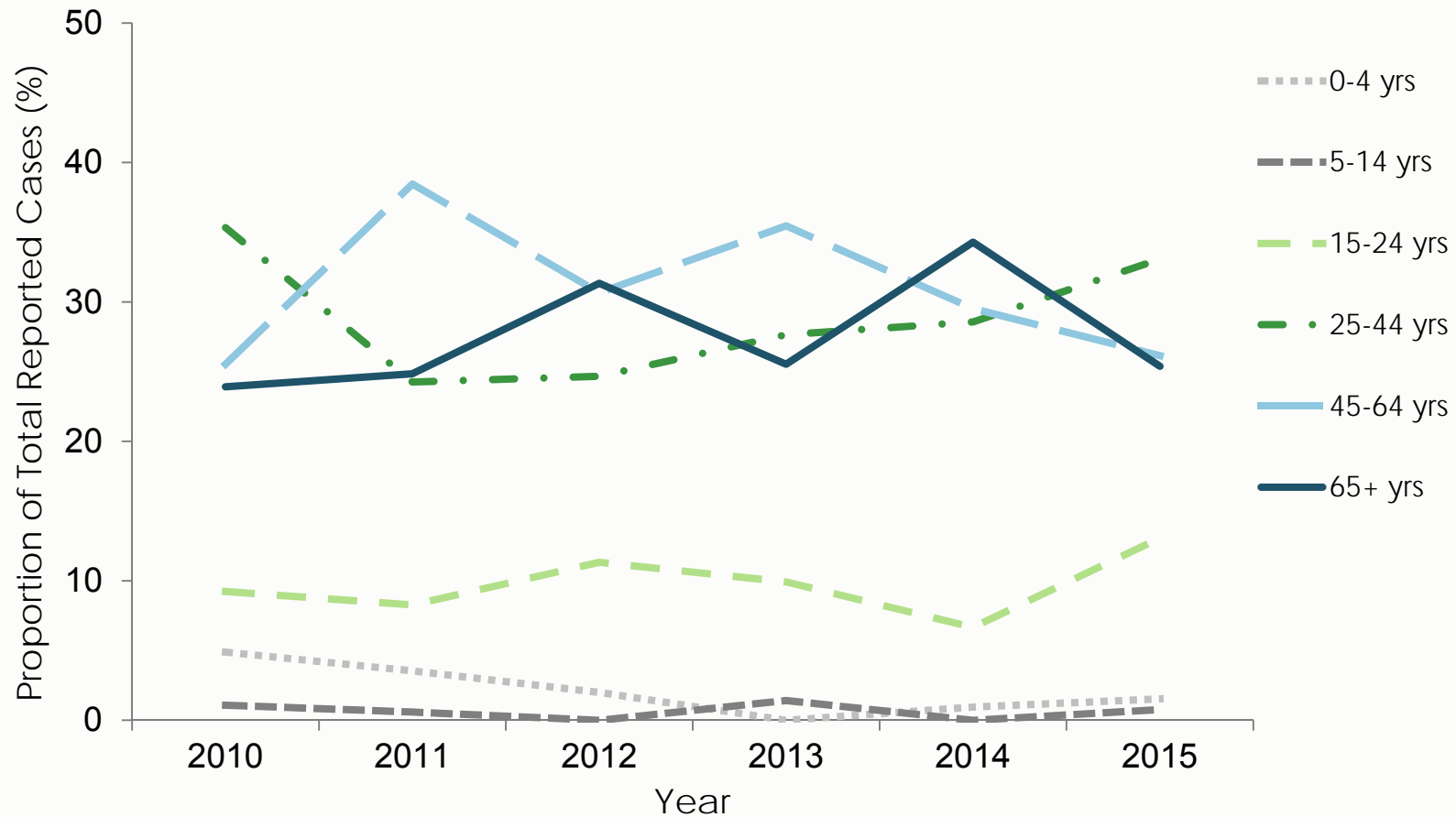
U.S-born: 62% Black or African American

Foreign-born: 58% Asian



Proportion of TB Cases by Age

Michigan, 2010-2015



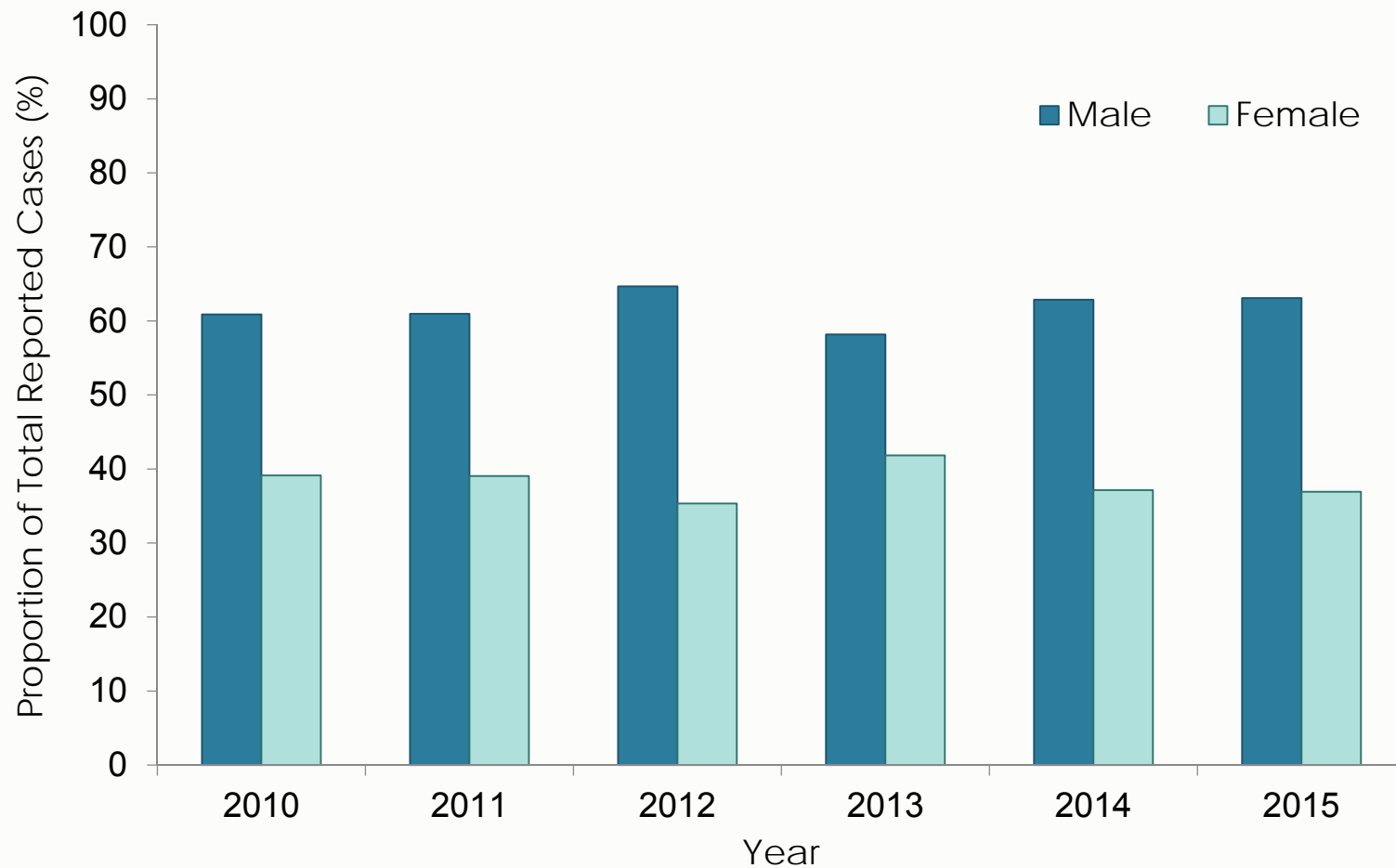
U.S-born: 37% 45-64 year olds

Foreign-born: 38% 25-44 year olds



Proportion of TB Cases by Gender

Michigan, 2010–2015

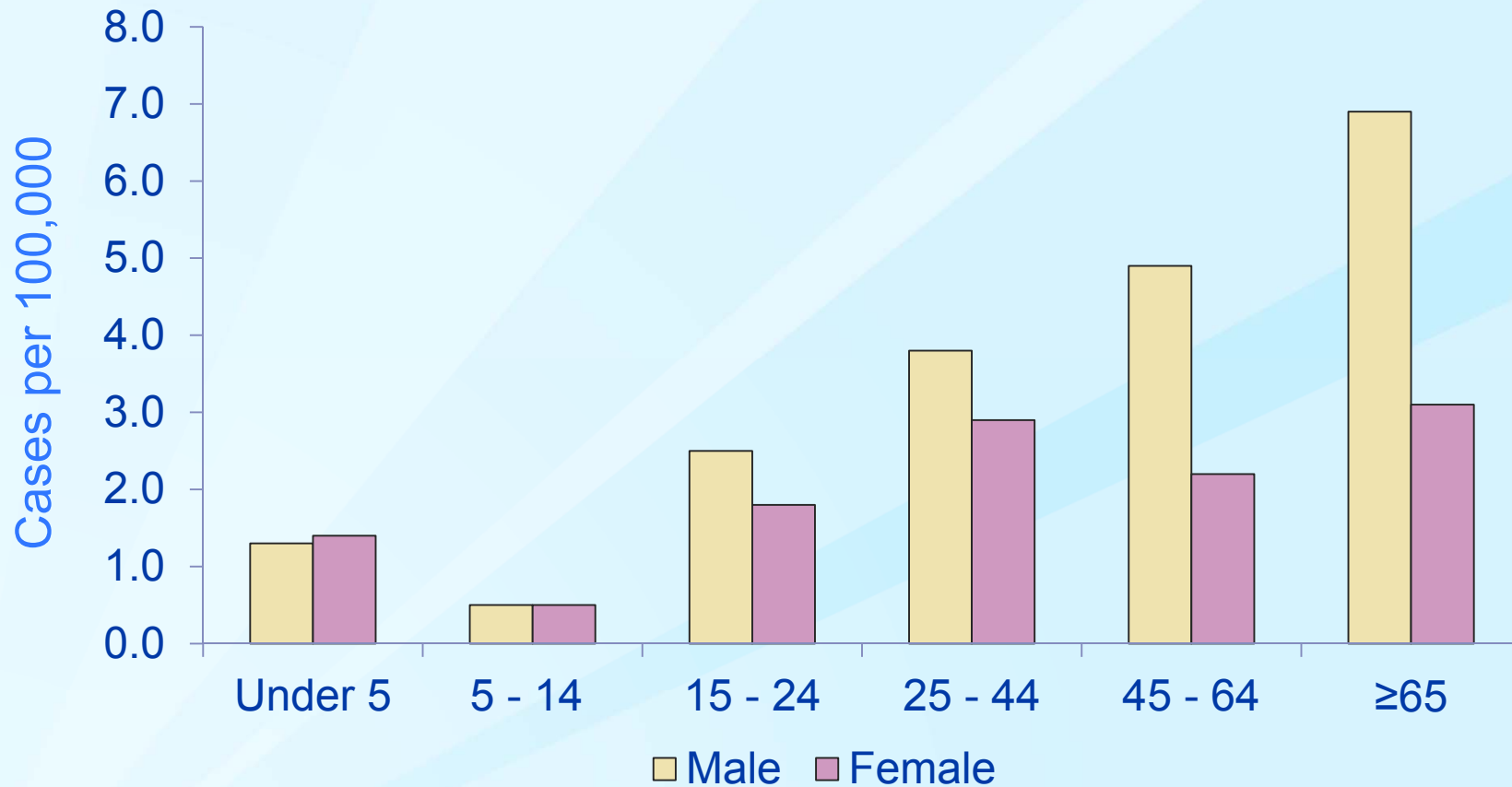


U.S-born: 67% Male

Foreign-born: 57% Male

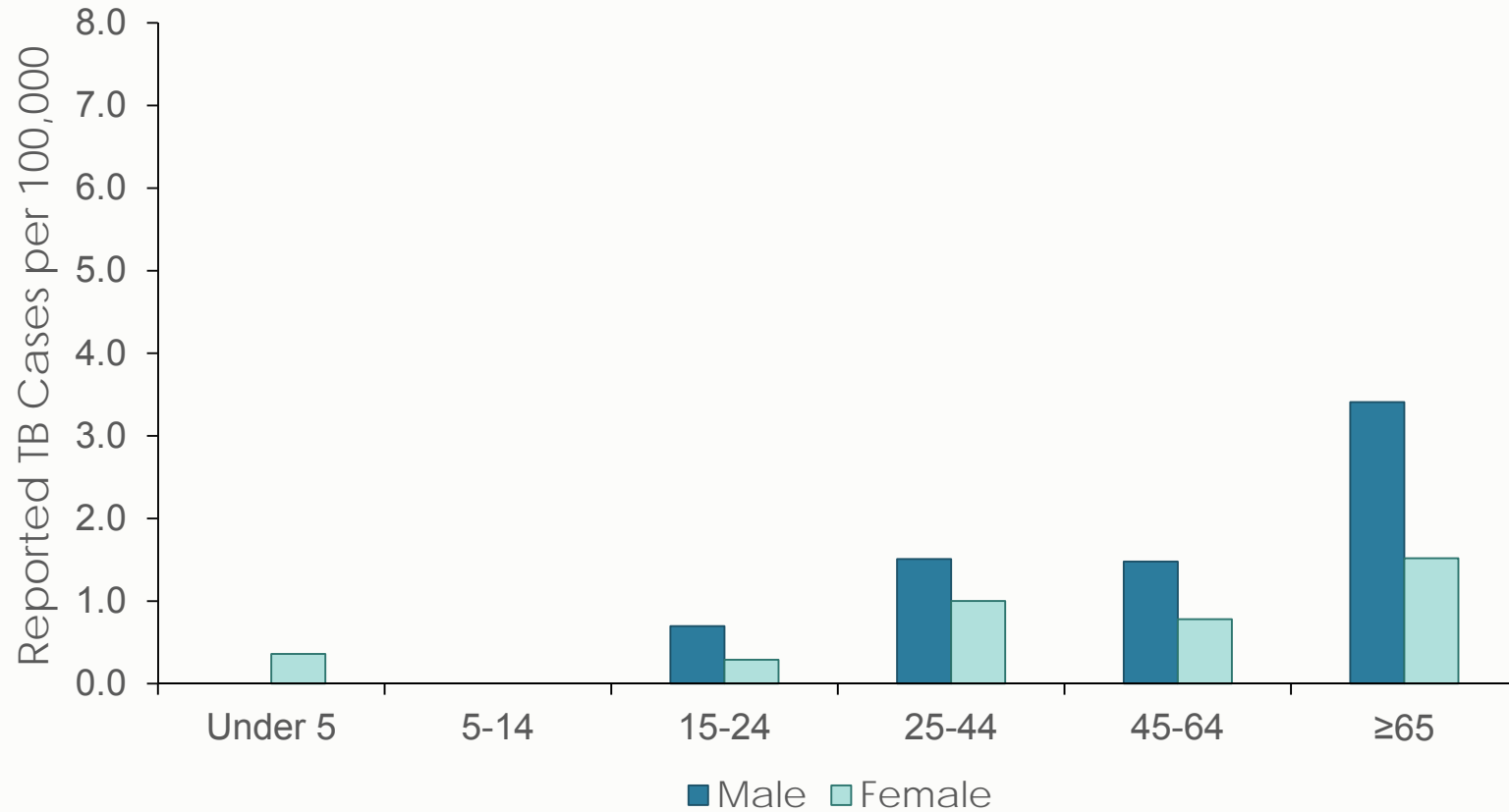


TB Case Rates by Age Group and Sex, United States, 2014

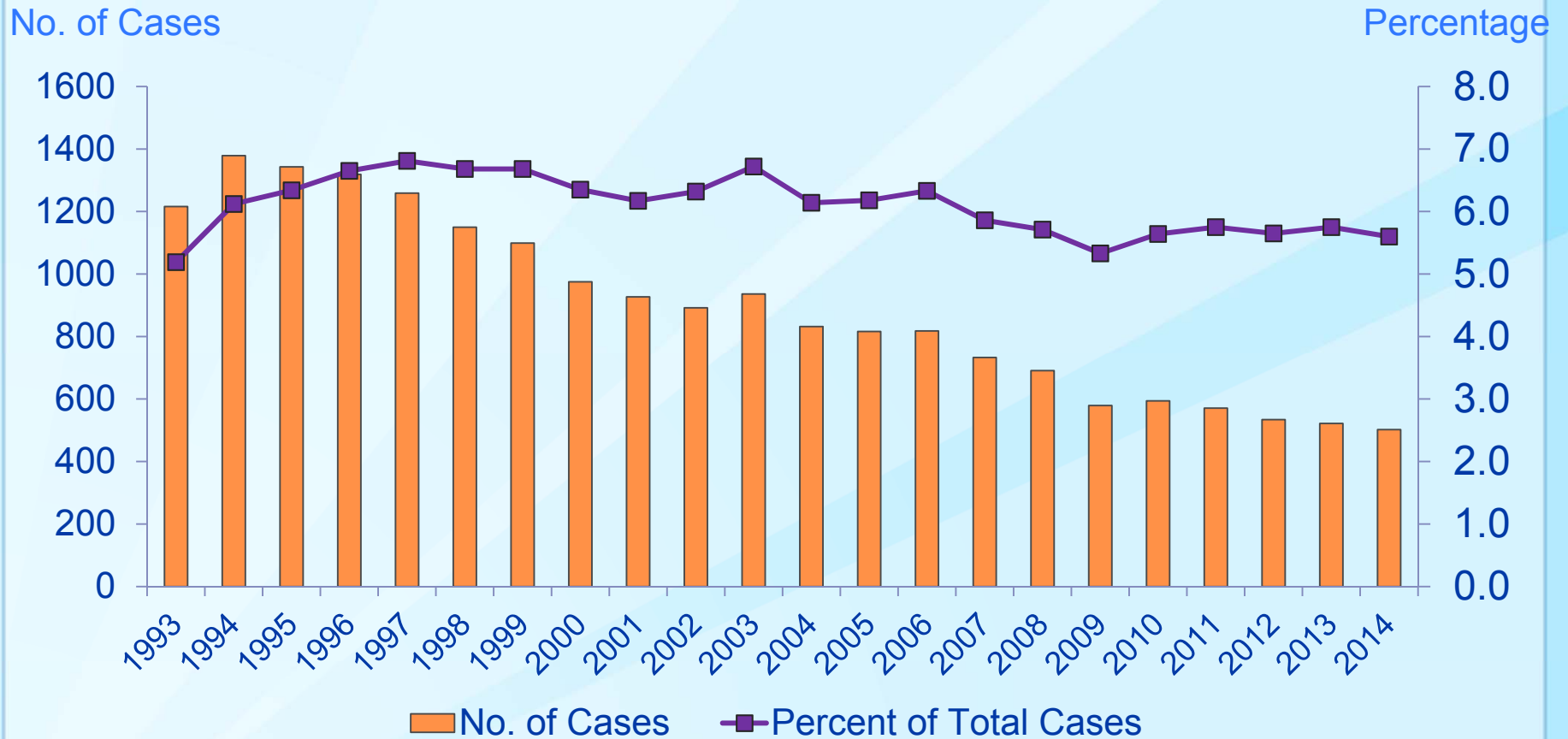


TB Case Rates by Age Group and Sex

Michigan, 2014



TB Cases Reported as Homeless in the 12 Months Prior to Diagnosis, Age ≥15, United States, 1993-2014*



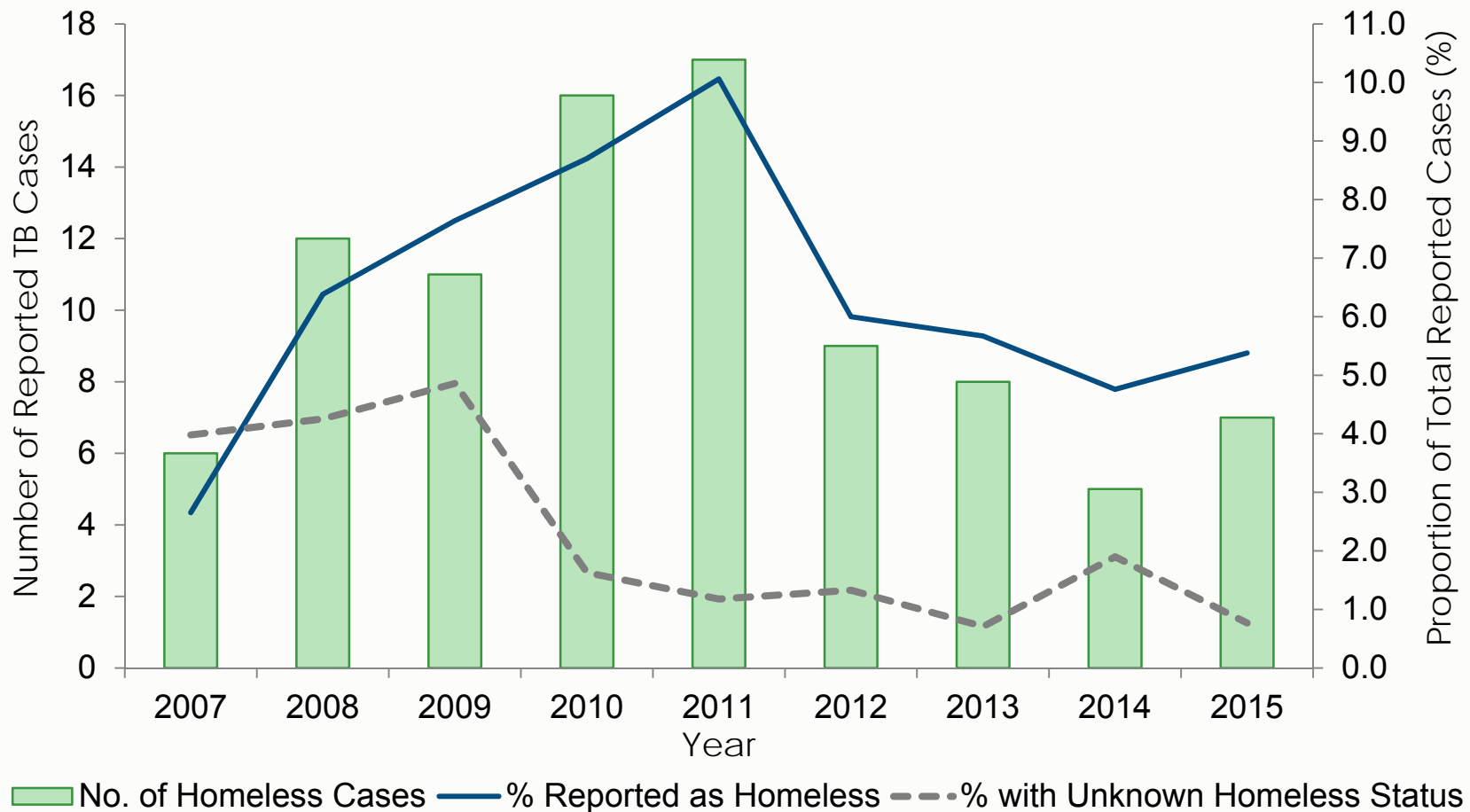
*Updated as of June 5, 2015.

Note: Homeless within past 12 months of TB diagnosis.



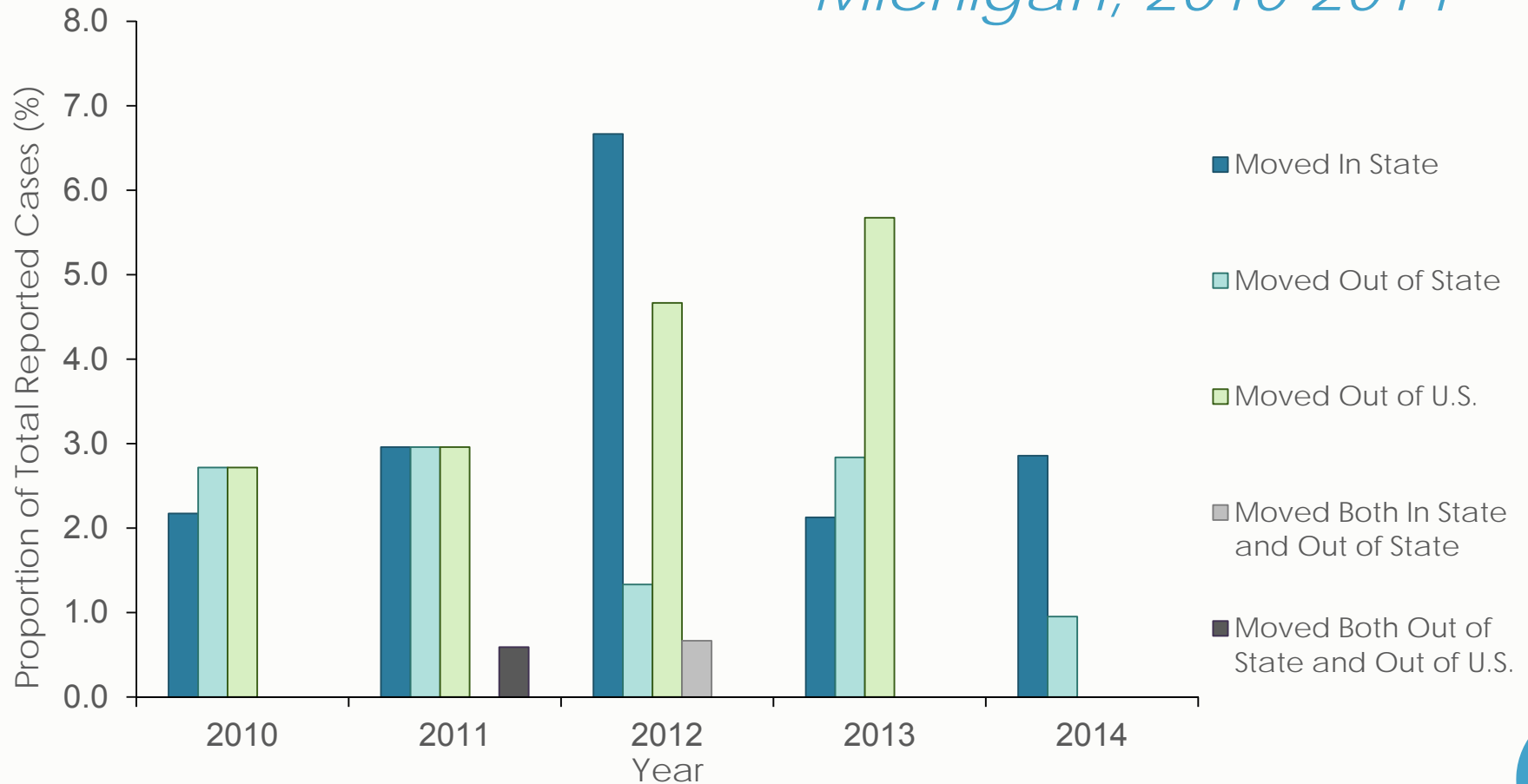
TB Cases Reported as Homeless in the 12 Months Prior to Diagnosis

Michigan, 2007 - 2015



Proportion of TB Cases Reported as Moved During Treatment

Michigan, 2010-2014

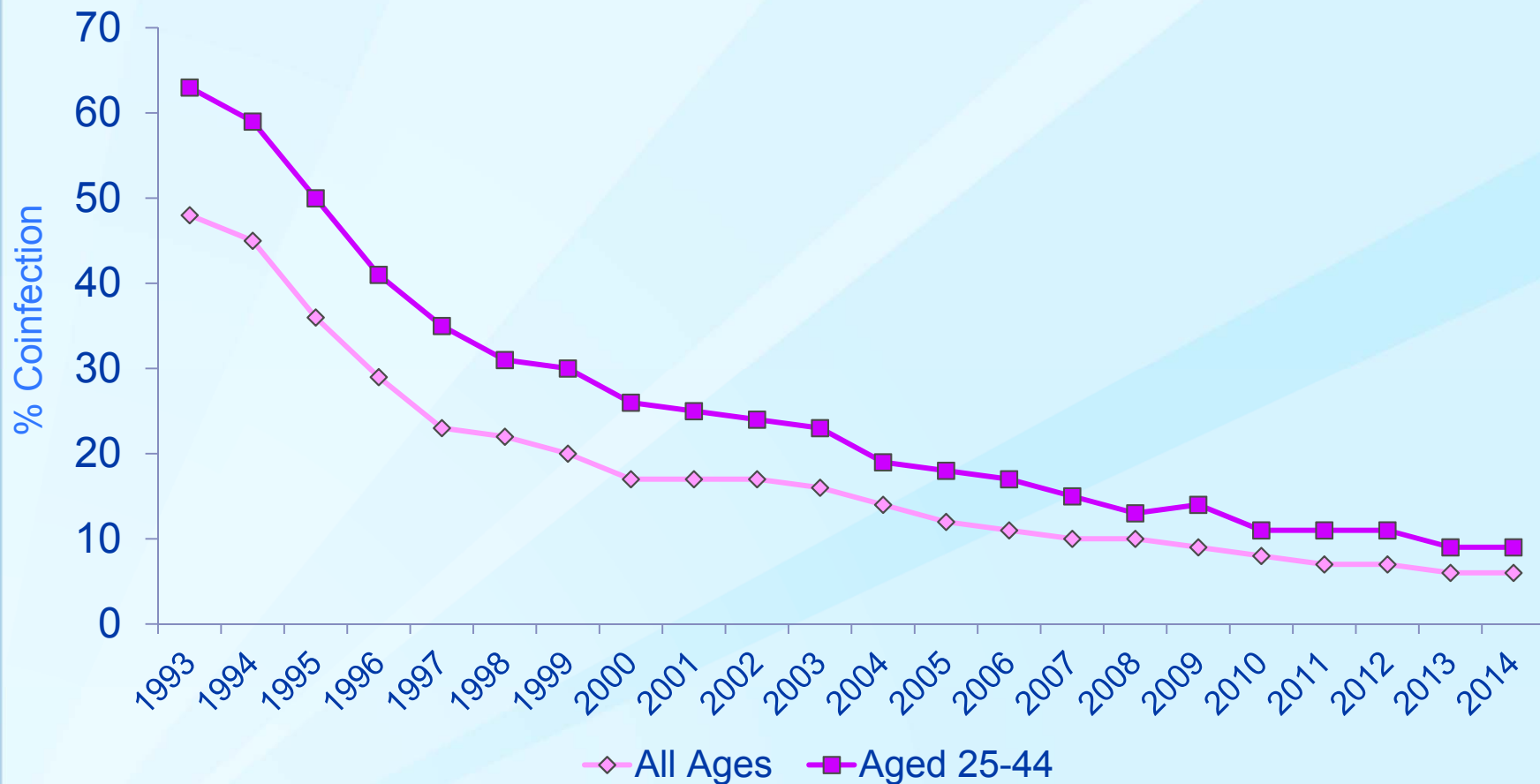


U.S-born: 6.9%

Foreign-born: 14.0%



Estimated HIV Coinfection in Persons Reported with TB, United States, 1993 – 2014*



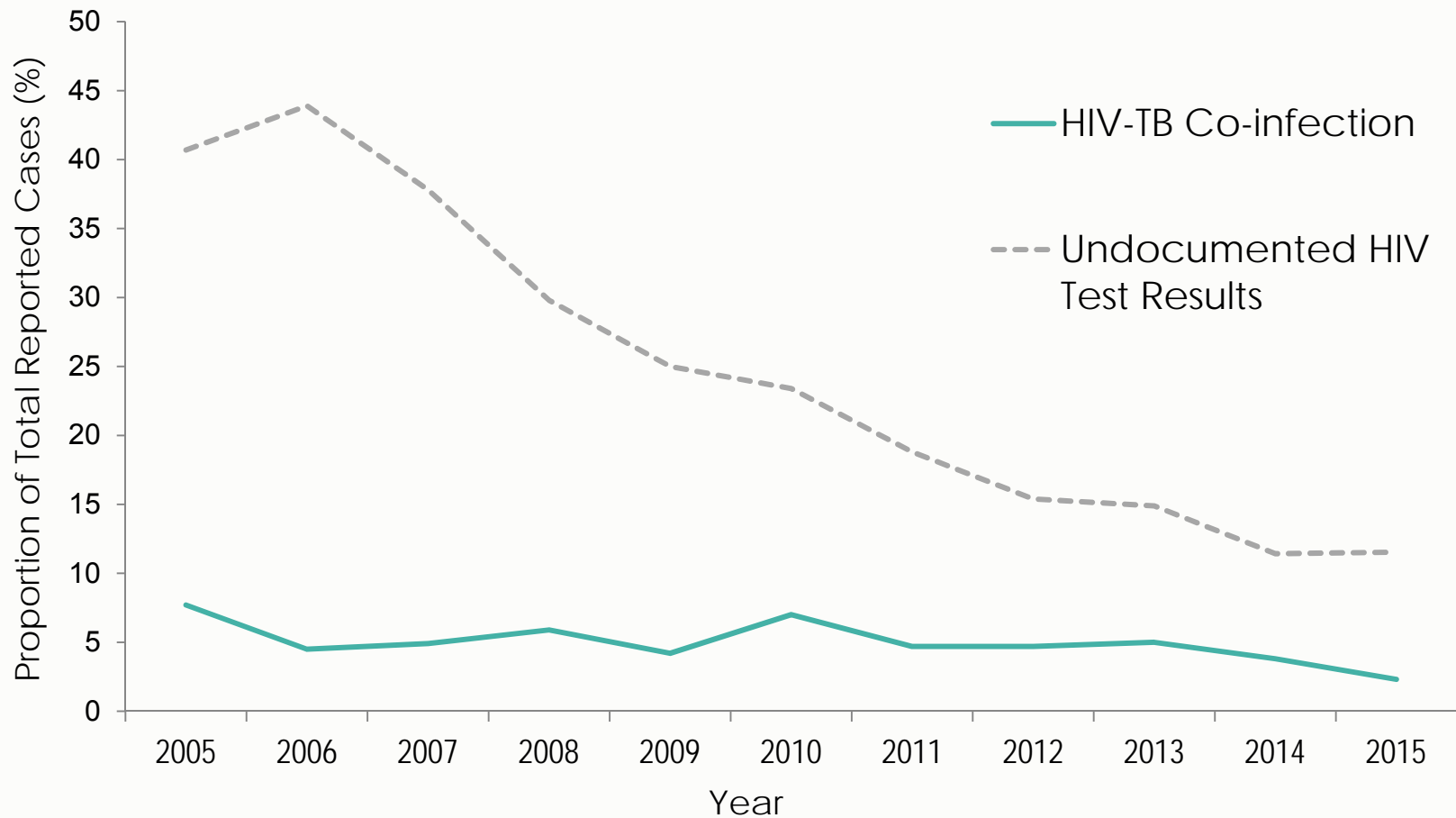
*Updated as of June 5, 2015.

Note: Minimum estimates based on reported HIV-positive status among all TB cases in the age group.



TB-HIV Coinfection and Undocumented HIV Test Result in TB Cases


Michigan, 2005 - 2015



Additional Characteristics and TB Risk Factors among U.S-born Vs. Foreign-born Cases, Michigan, 2005-2015

Characteristic	U.S.-born	Foreign-born	Total
Previous Diagnosis of TB	4.3%	6.0%	5.2%
Student	4.1%	8.1%	6.3%
Resident of Correctional Facility at Diagnosis	2.3%	0.6%	1.4%
Resident of a Long-term Care Facility at Diagnosis	7.6%	1.4%	4.2%
Injecting Drug Use	4.8%	0.6%	2.5%
Non-Injecting Drug Use	18.3%	0.6%	8.5%
Excess Alcohol Use	20.4%	3.9%	11.3%
Diabetes	11.7%	15.8%	14.2%



A photograph of an iceberg floating in the ocean. The top part of the iceberg is visible above the water, while a much larger, jagged portion is submerged below the surface. The sky is blue with scattered white clouds. The text is overlaid on the image.

"Don't Tell Me What I Can't Do – Tell Me How To Do It!"

SCREENING OF IMMIGRANT AND REFUGEES

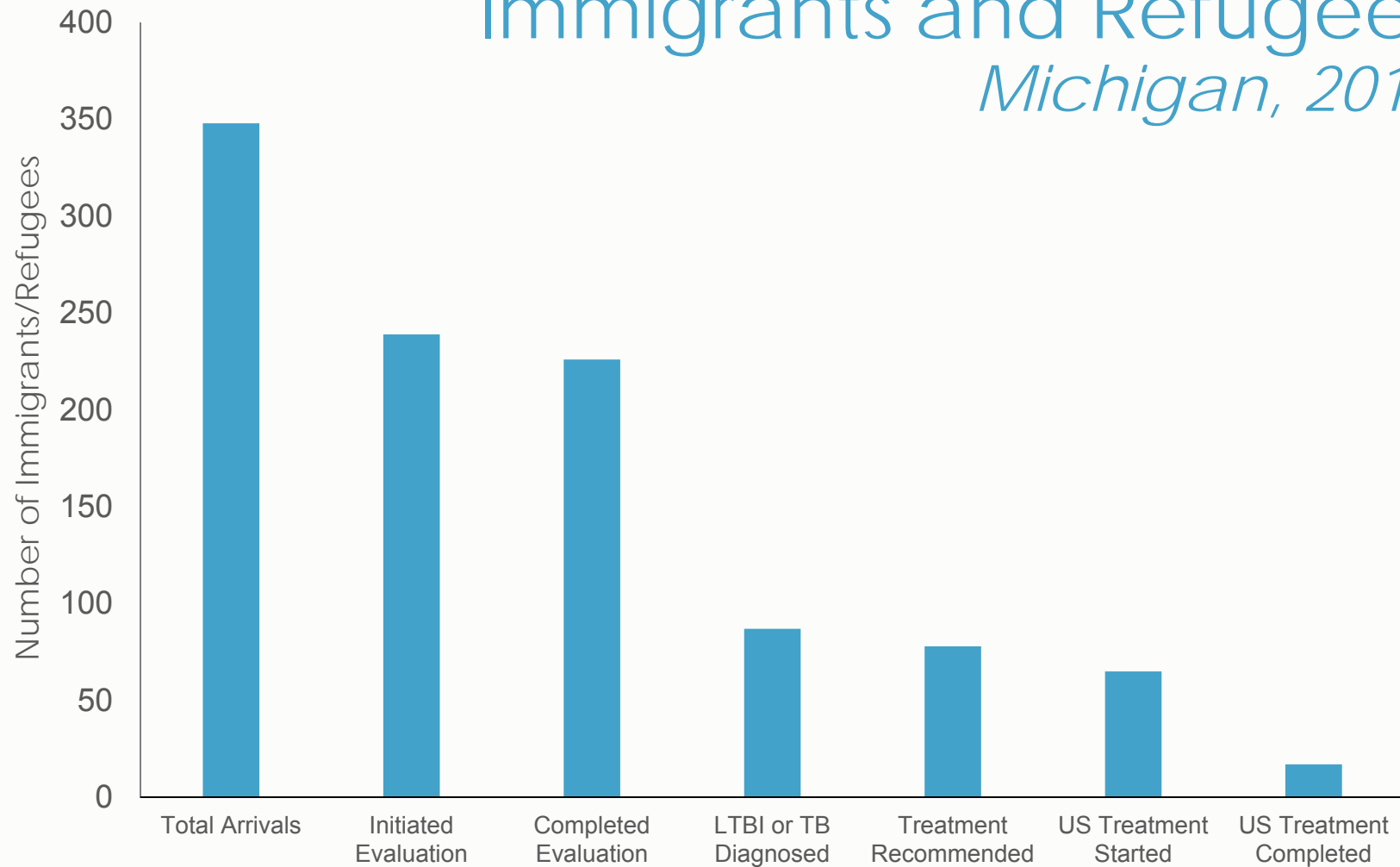
Immigrant and Refugee Arrivals to Michigan

- Immigrant and Refugee Classifications Requiring TB Screening:
 - Class A – active TB disease
 - **Class B1 – suspect TB disease**
 - **Class B2 – suspect LTBI**
 - Class B3 – TB Contact
- 2015: 353 arrivals requiring screening
- 2014: 348 arrivals requiring screening



TB Evaluation and Treatment of Immigrants and Refugees

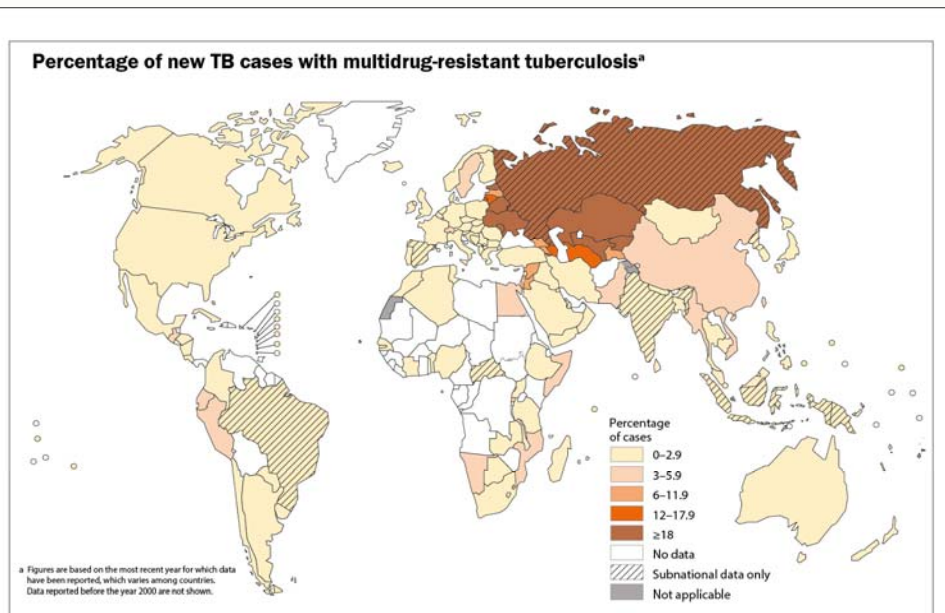
Michigan, 2014



Drug – Resistant Tuberculosis

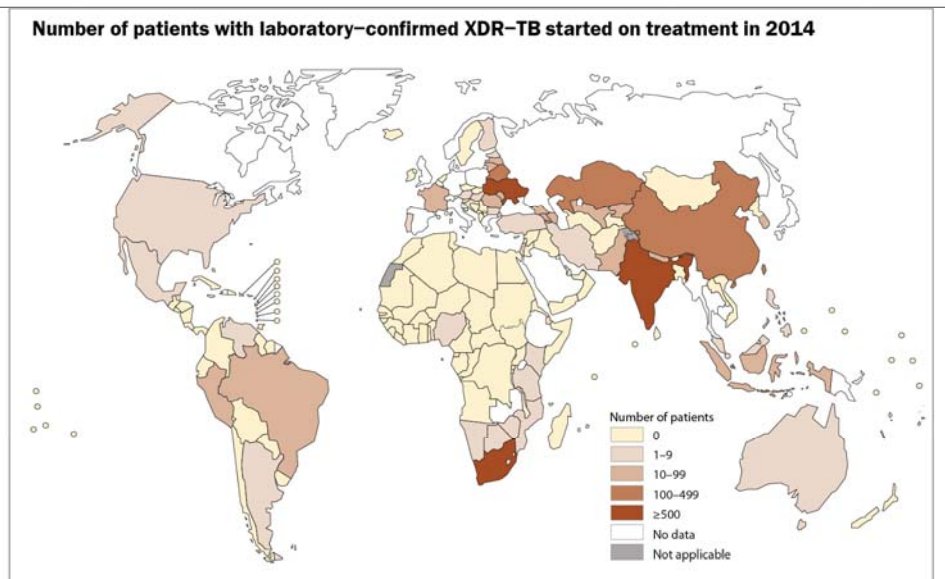
Multi-Drug and Isoniazid Resistance, U.S., 2010-2015

	U.S.		Michigan	
	MDR	INH	MDR	INH
2010	1.1%	8.0%	1.1%	4.9%
2011	1.3%	9.1%	0.6%	5.9%
2012	1.0%	8.9%	1.3%	1.3%
2013	1.3%	9.2%	0.0%	2.1%
2014	1.3%	9.8%	0.0%	6.7%
2015	--	--	0.0%	3.8%



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Thank you!

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- MDHHS TB Control Unit

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 4. US Census Bureau. Current estimates data. Washington, DC: US Census Bureau; 2014. <http://www.census.gov/popest/data/state/asrh/2014/index.html>
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