

Tristate Clinical TB Intensive Course
September 30, 2016
Dearborn, MI

Tuberculosis in the United States

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Disclosure

- ❑ I have no relevant financial disclosures

Learning objectives

- At the conclusion of this presentation, participants should be able to**
 - 1. Explain recent trends in TB case counts and rates**
 - 2. List sociodemographic factors associated with above average TB case rates**
 - 3. Explain recent trends in drug resistance among TB cases**

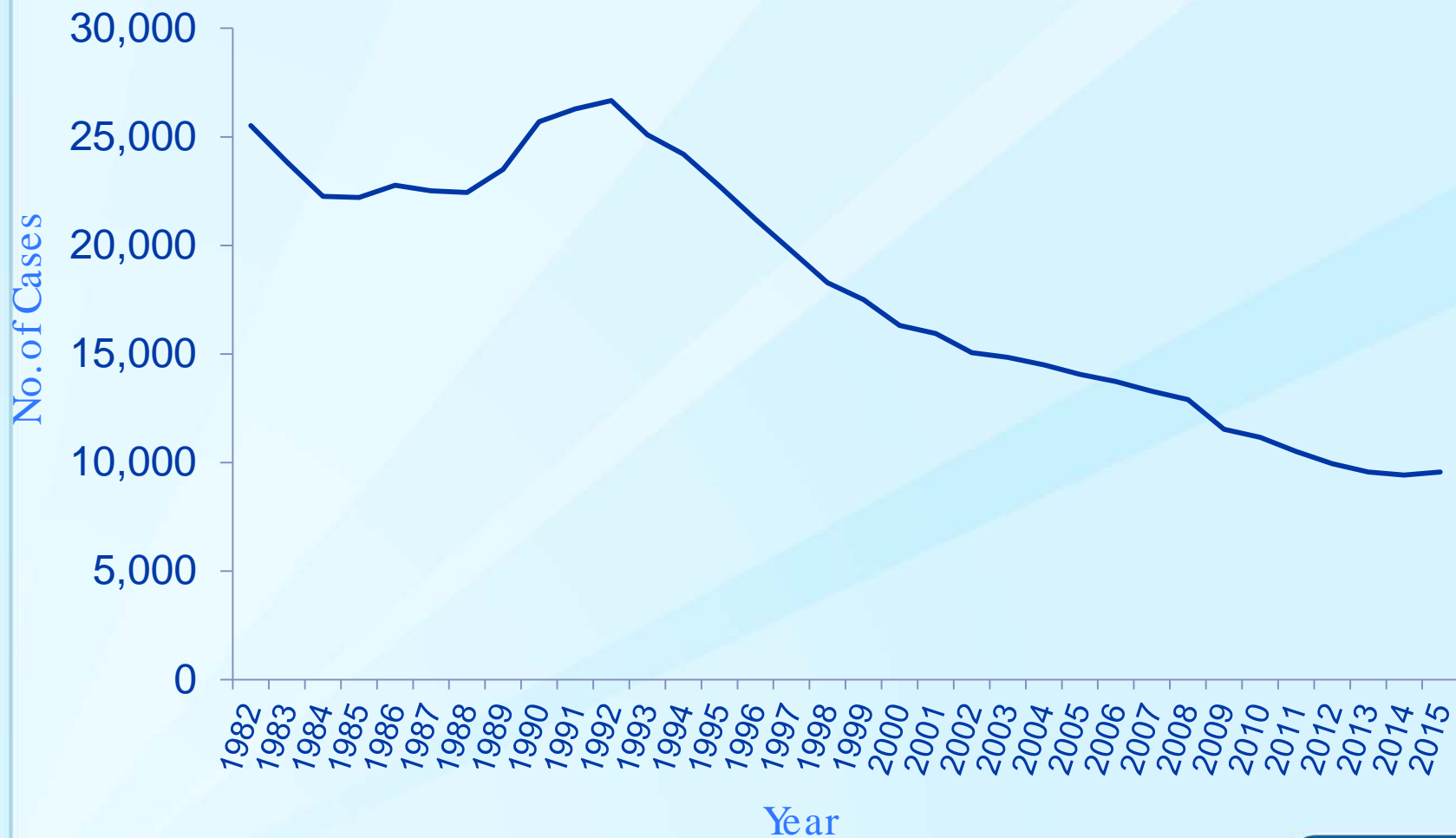
The US Plans to Eliminate TB

- 1989: Advisory Council for the Elimination of TB (ACET) drafts first USTB elimination plan with goal of reaching elimination (< 1 annual incident TB case per 1 million population) by 2010
- Thought possible because
 - TB believed to be retreating into geographically and demographically defined pockets in the United States
 - better diagnostic, treatment, and prevention modalities were available, and new computer and telecommunications technology enhanced capacity for clinicians and public health systems

. . . And Fails

- 2015 (five years after elimination target date): TB case rate is 30 per million (30 times the elimination target)
- 3 years of no decline in TB case rate 2013-2015

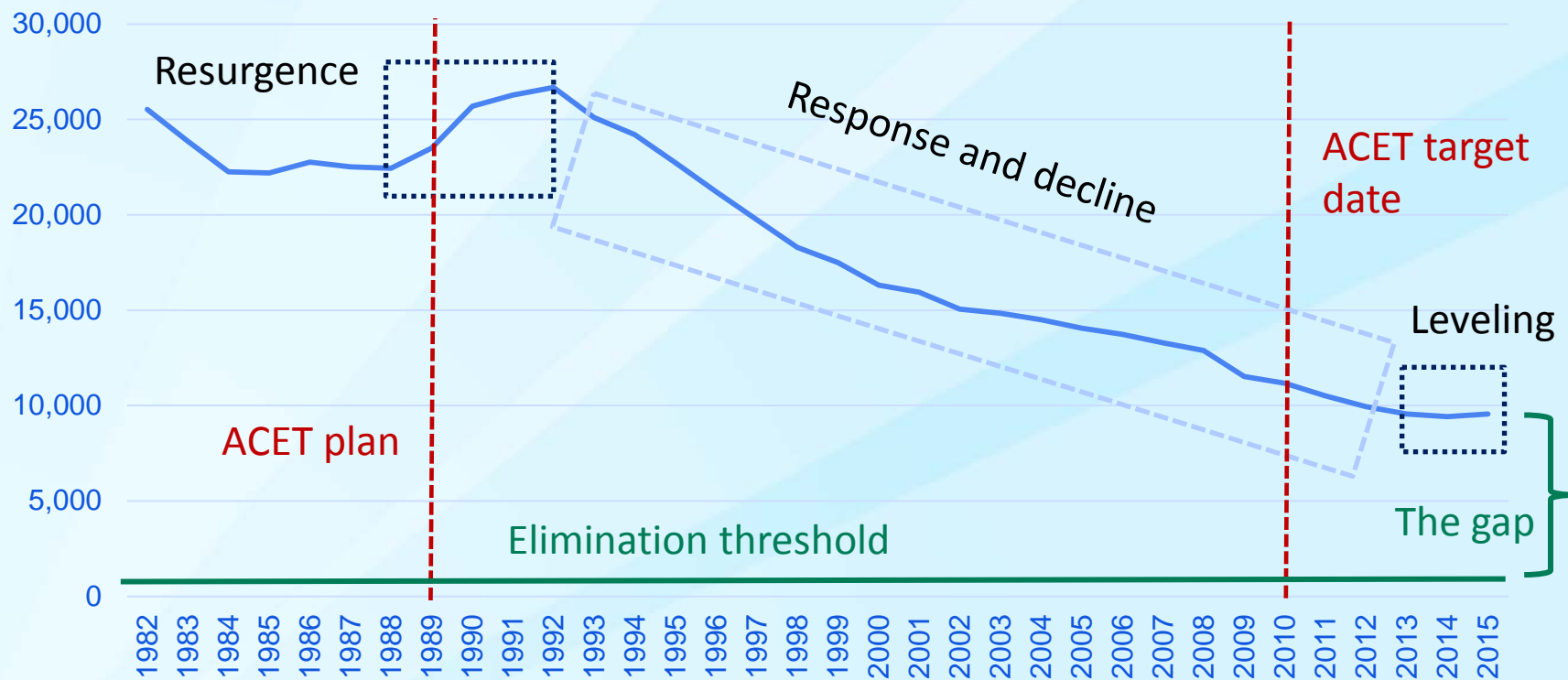
Reported TB Cases United States, 1982–2015*



*2015 data are provisional.



Reported Tuberculosis (TB Disease) Cases United States, 1982–2015



1989-1992: Not Retreating, but Resurging

- TB cases increase from about 22,000 to 26,000
- Factors:
 - HIV epidemic
 - Transmission of TB, including multidrug-resistant (MDR) TB, in healthcare facilities and other congregate settings
 - Deterioration of TB program infrastructure
 - Increased immigration from countries with higher TB rates
- Categorical federal funding for TB moved to block grants for communicable disease control
 - Specific federal TB funding decreased from \$20 million in 1969 to \$0 by 1974

Response and Decline

- Categorical federal TB funding restored
 - Did not reach 1969 level until 1989
 - Major increases in 1990s
- Programmatic and laboratory improvements
 - widespread implementation of directly observed therapy (DOT), systematic contact investigations, infection control measures in congregate settings and liquid culture
- Research investment
 - led to same-day nucleic amplification tests for TB disease, interferon-gamma release assays (IGRAs), and short-course treatment for LTBI

Focus of Response: Stop Transmission

- Hierarchical approach
- 1. Rapidly detect, isolate if necessary, and treat persons with TB disease until completion with DOT
 - 2. Contact investigation
 - 3. Targeted testing and treatment of LTBI
- Successful in reducing TB
 - TB cases declined steadily from 1993 through 2014 when 9,406 TB cases were reported in the United States

Leveling

- No decline in TB rate 2013-2015
- First increase in TB cases since 1992
- Have we reached the limits of response implemented in 1990s?

TB Morbidity

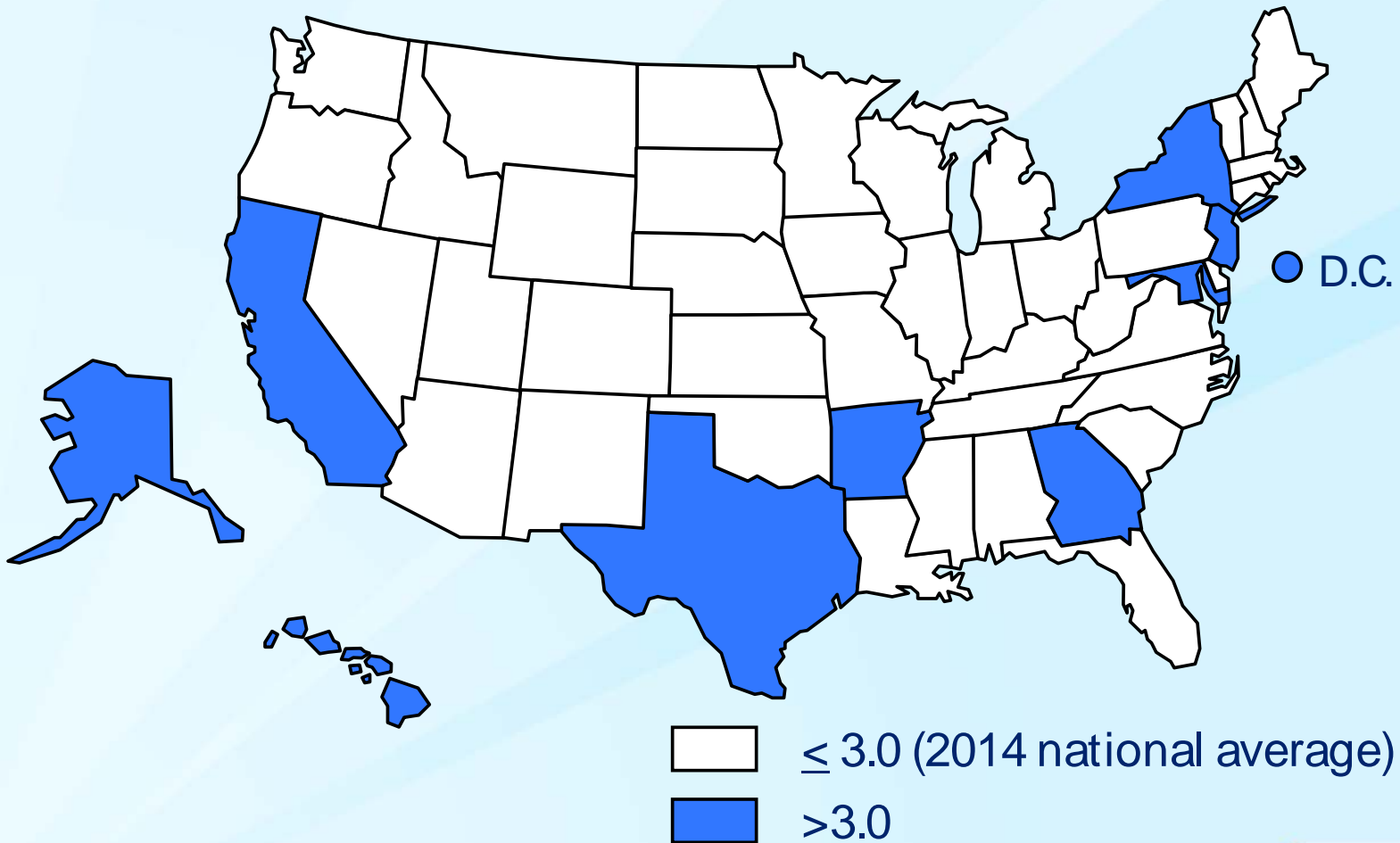
United States, 2009–2015

Year	No.	Rate*
2010	11,161	3.6
2011	10,510	3.4
2012	9,941	3.2
2013	9,565	3.0
2014	9,421	3.0
2015	9,563	3.0

* Cases per 100,000. 2015 data are provisional.



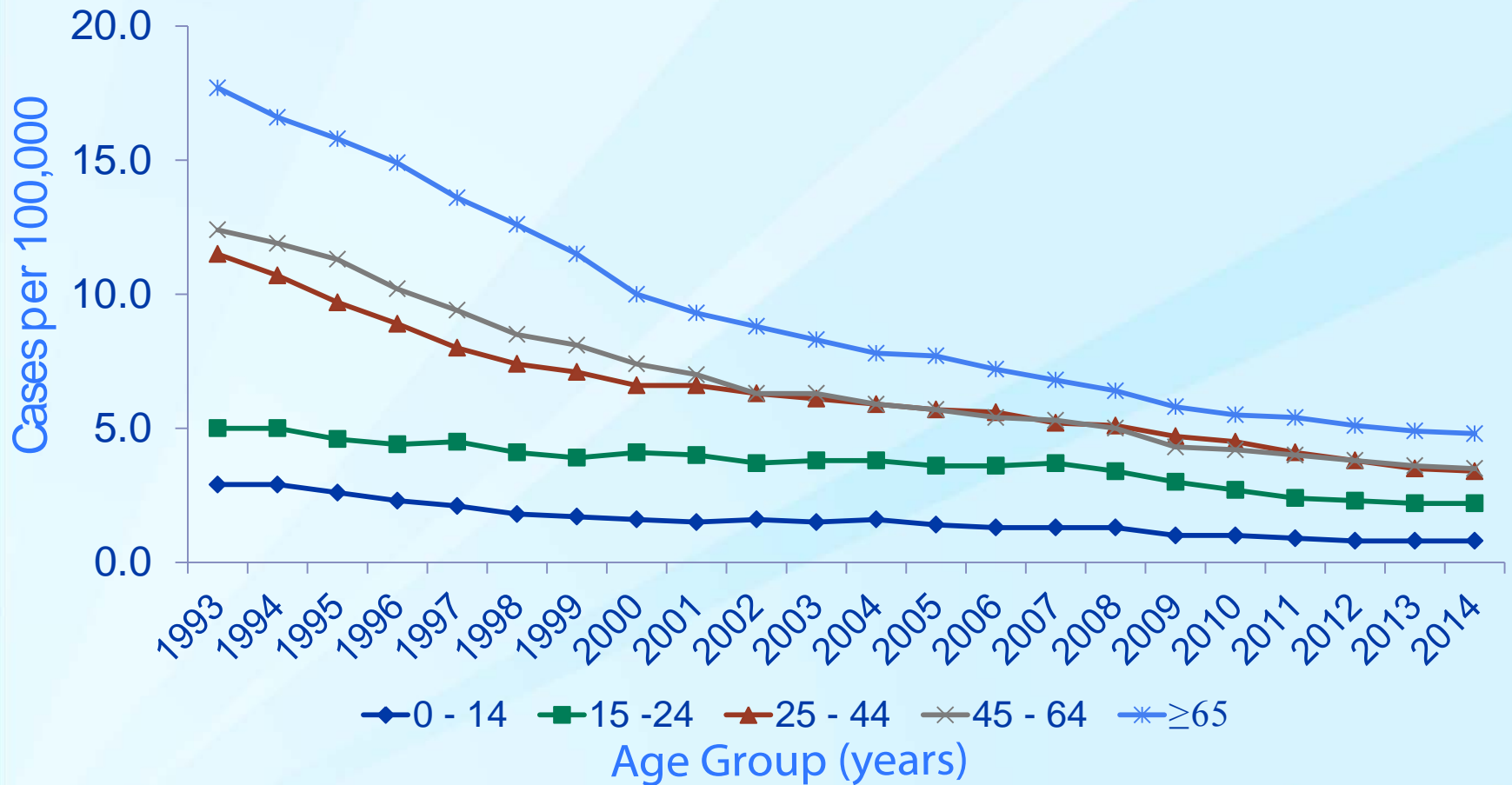
TB Case Rates,* United States, 2014



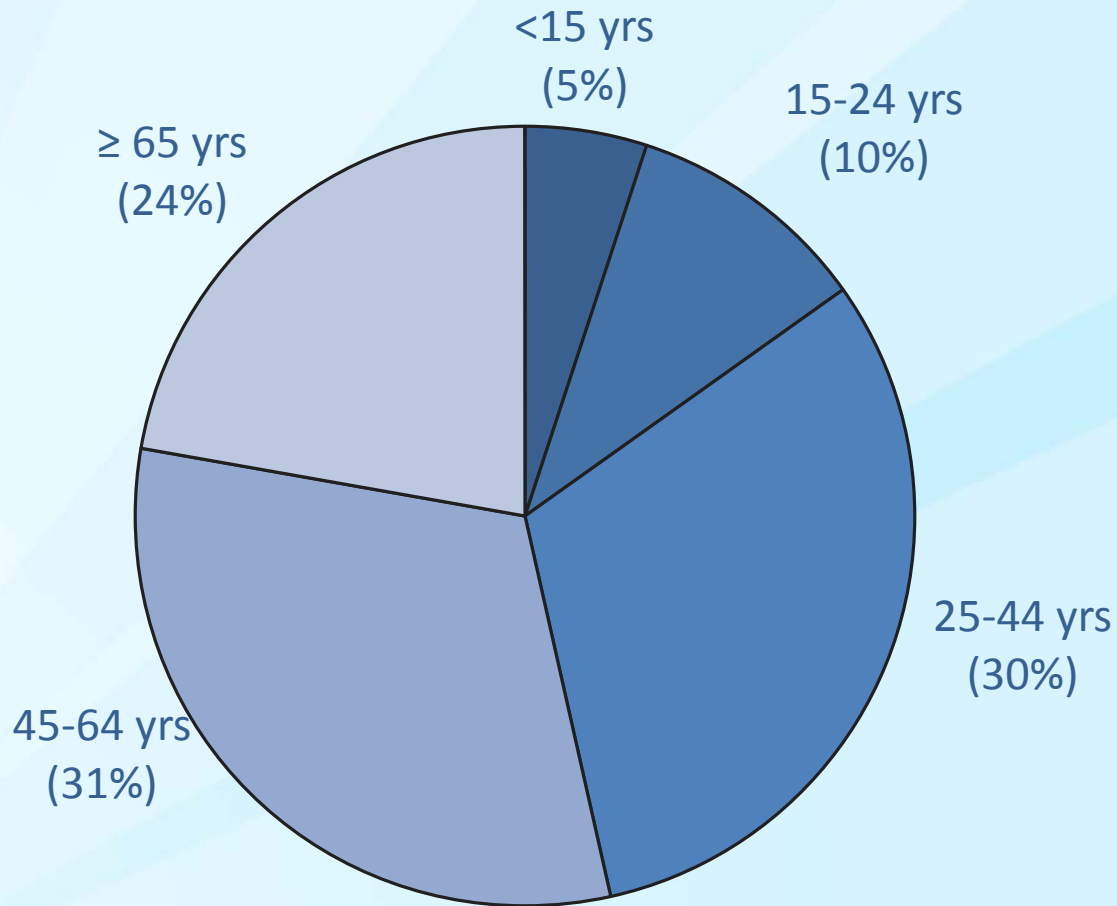
*Cases per 100,000.



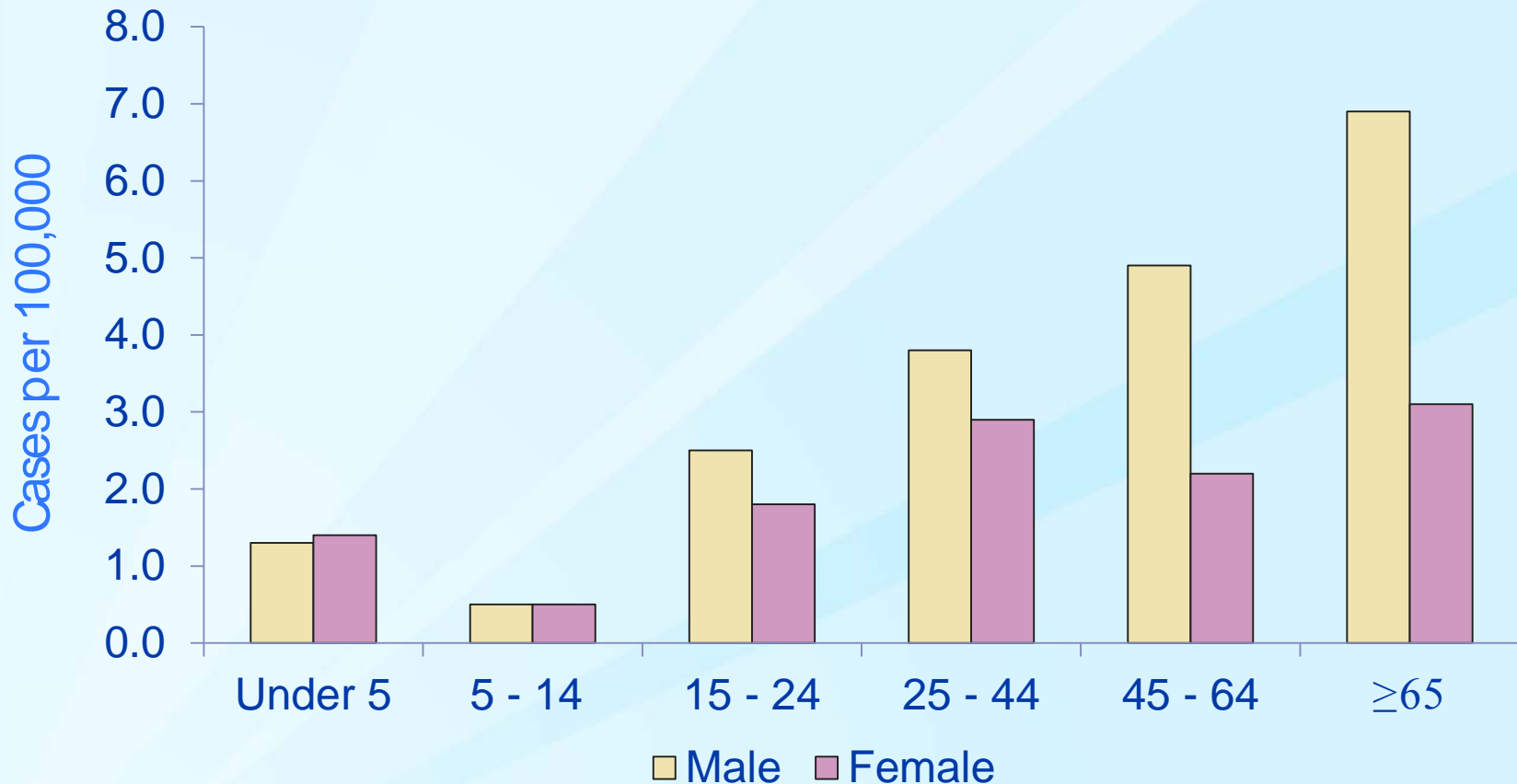
TB Case Rates* by Age Group United States, 1993–2014



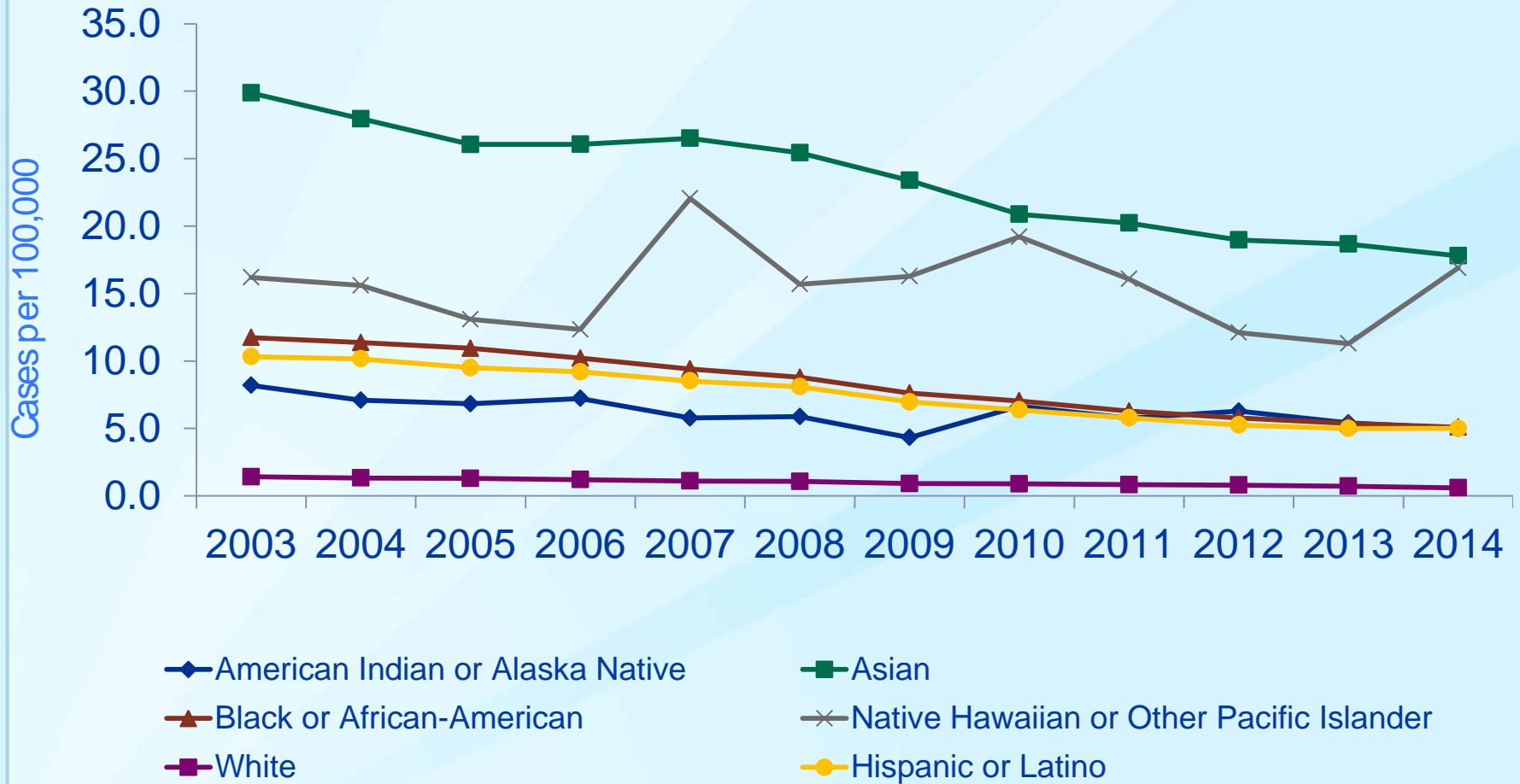
Reported TB Cases by Age Group, United States, 2014



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



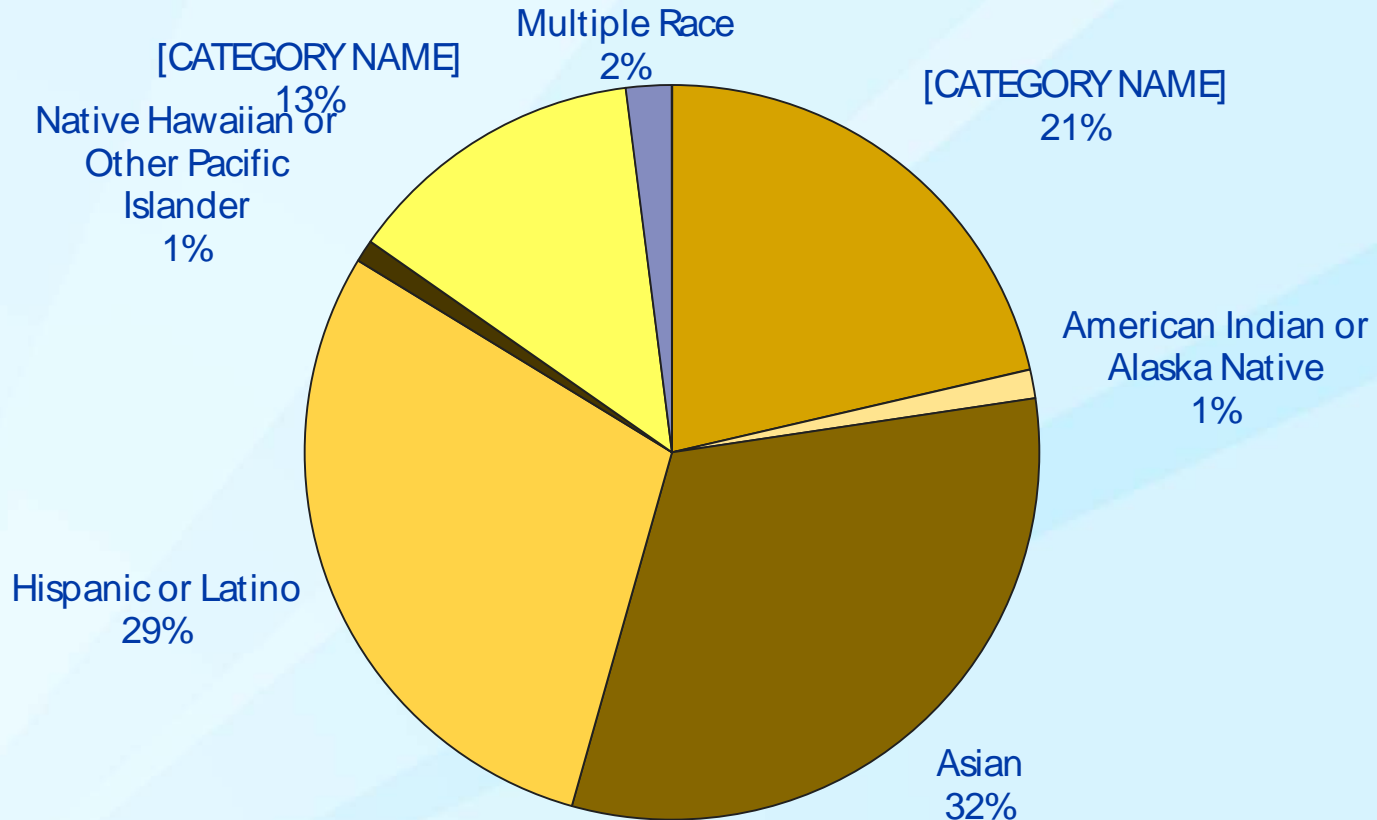
TB Case Rates by Race/Ethnicity,* United States, 2003–2014**



* All races are non-Hispanic.



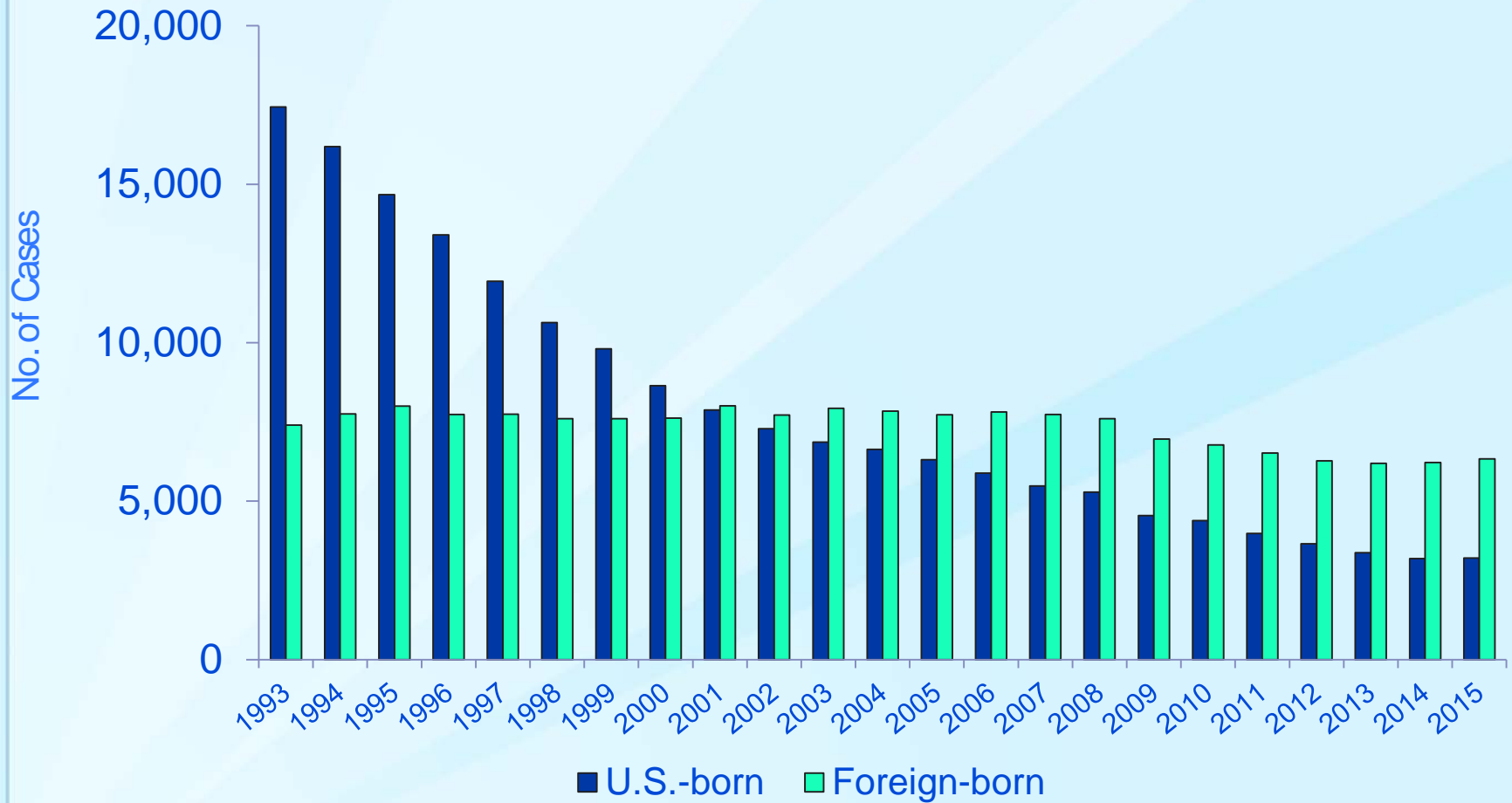
Reported TB Cases by Race/Ethnicity,* United States, 2014



*All races are non-Hispanic. Multiple Race indicates two or more races reported for a person. Does not include persons of Hispanic or Latino origin.



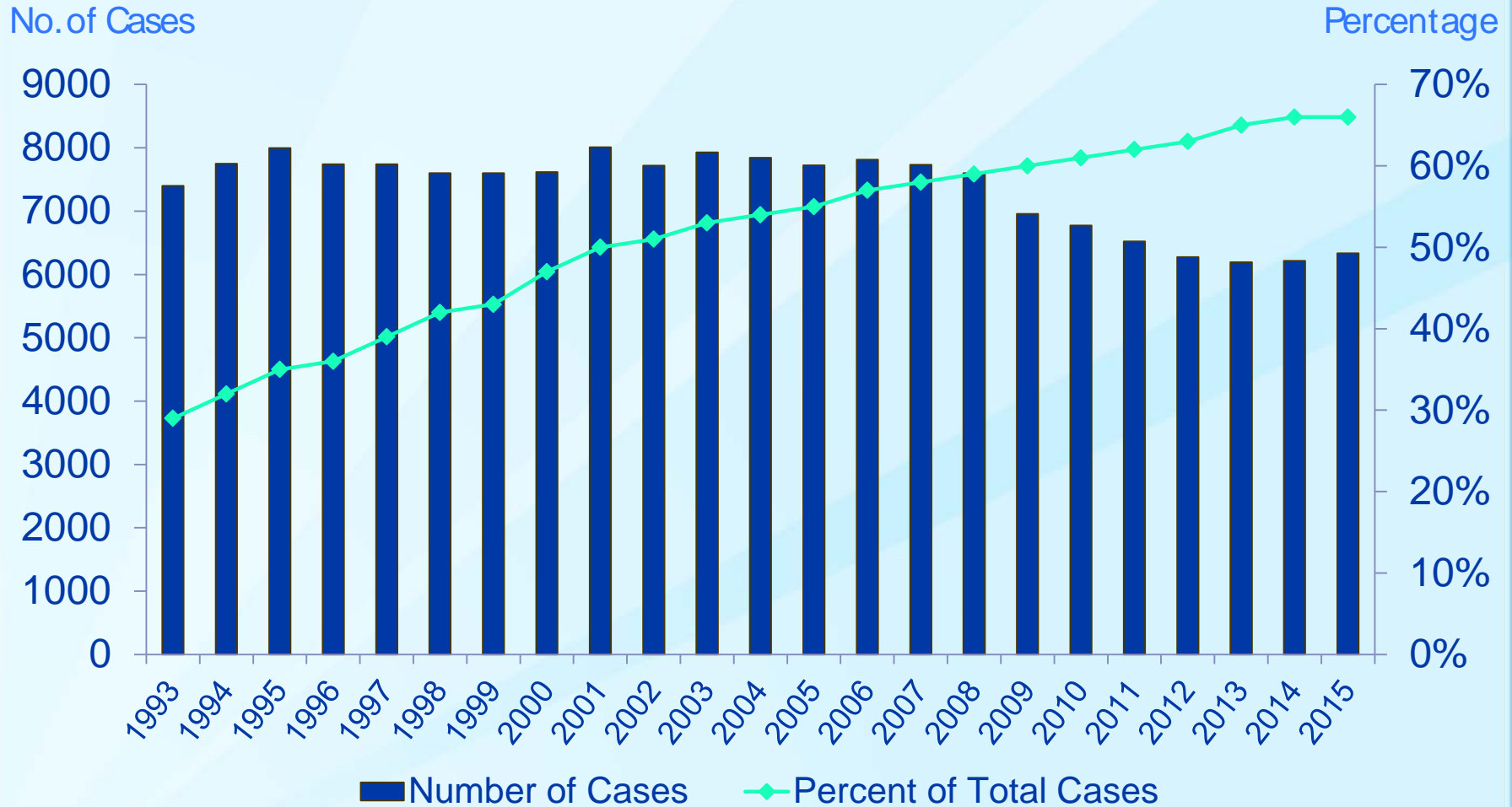
Number of TB Cases in U.S.-born vs. Foreign-born Persons, United States, 1993–2015*



*2015 data are provisional.



Trends in TB Cases in Foreign-born Persons, United States, 1993 – 2015*

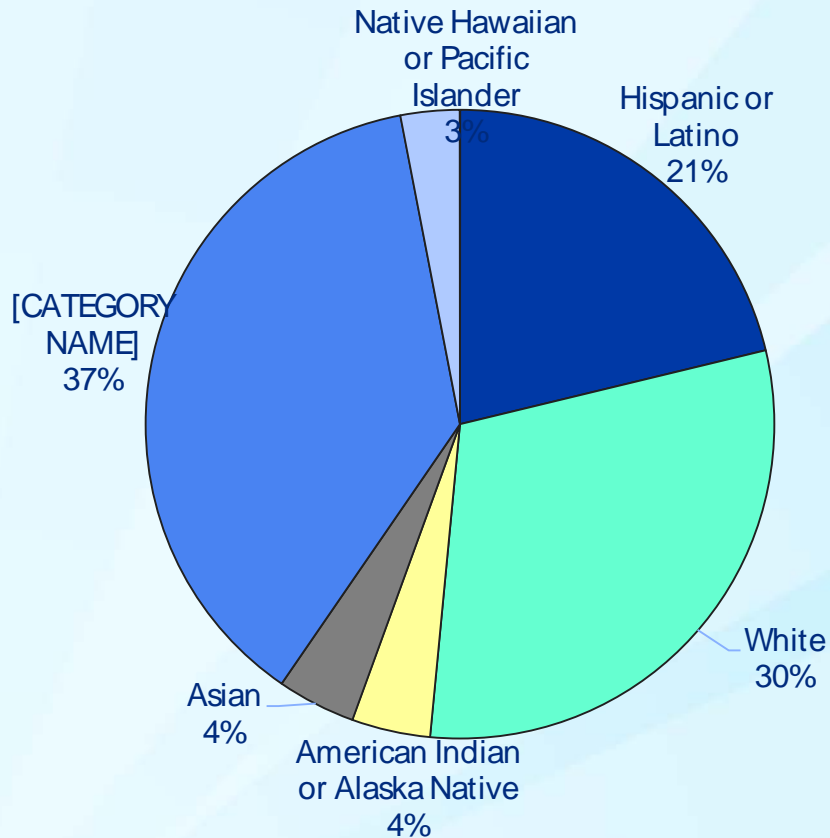


*2015 data are provisional.

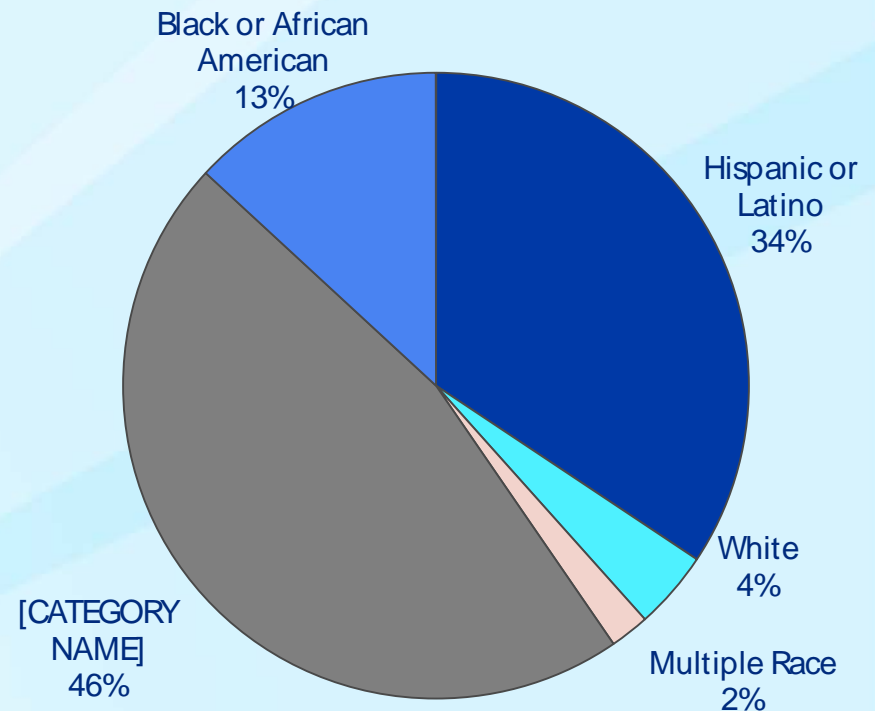


Reported TB Cases by Origin and Race/Ethnicity, United States, 2014

U.S.-born*



Foreign-born**



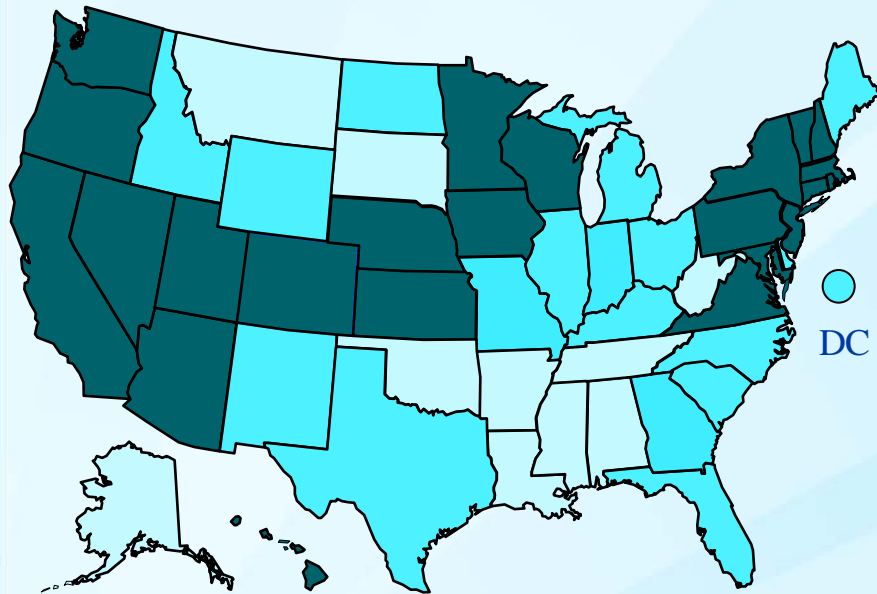
*All races are non-Hispanic. Persons reporting two or more races accounted for 1% of all cases for U.S. born cases and are not shown.

** American Indian or Alaska Native and Native Hawaiian or Other Pacific Islander accounted for less than 1% of foreign-born cases and are not shown. Multiple Race indicates two or more races reported for a person. Does not include persons of Hispanic or Latino origin.

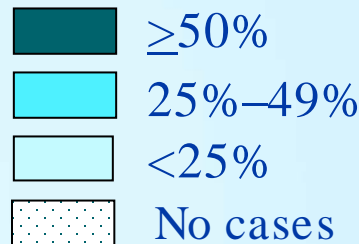
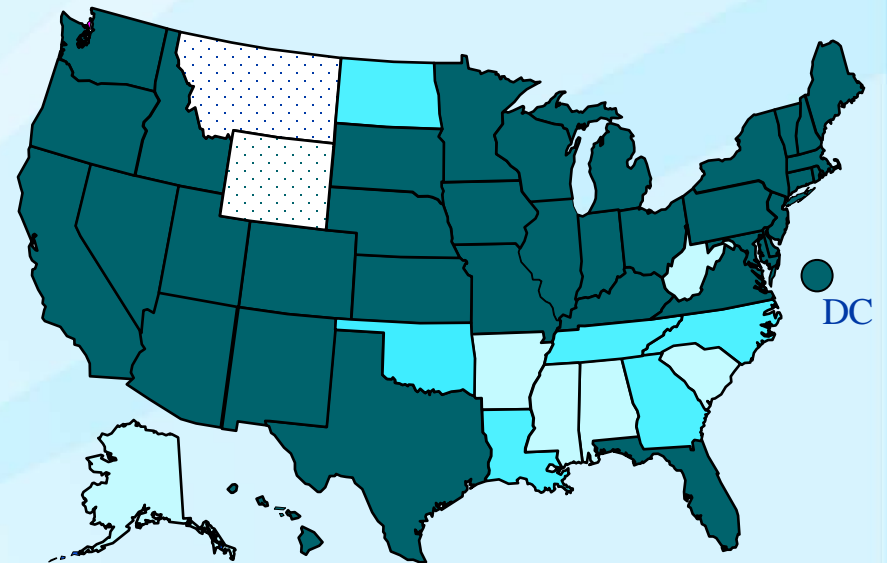


Percentage of TB Cases Among Foreign-born Persons, United States*

2004



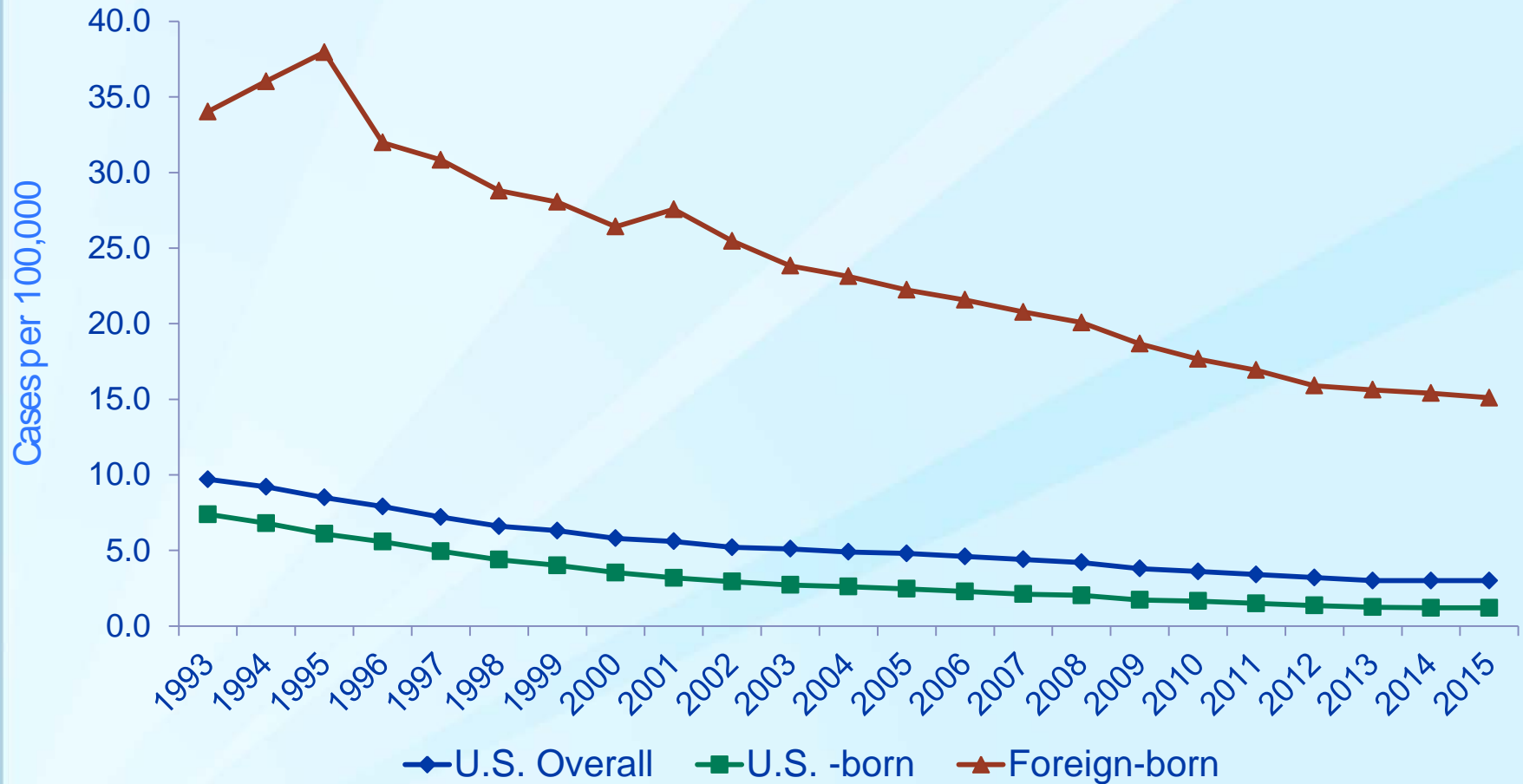
2014



*Updated as of June 5, 2015.



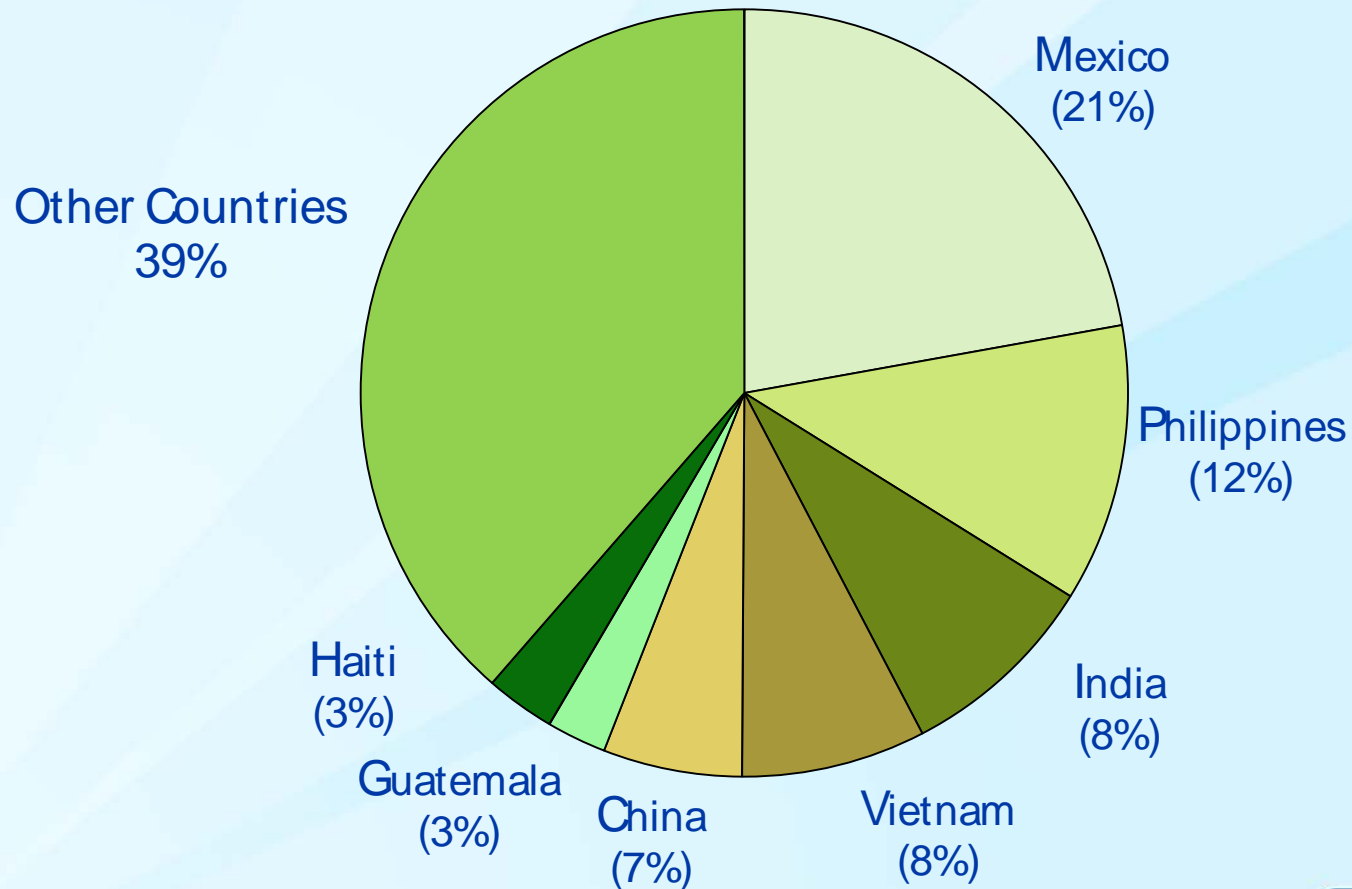
TB Case Rates in U.S.-born vs. Foreign-born Persons, United States, 1993 – 2015*



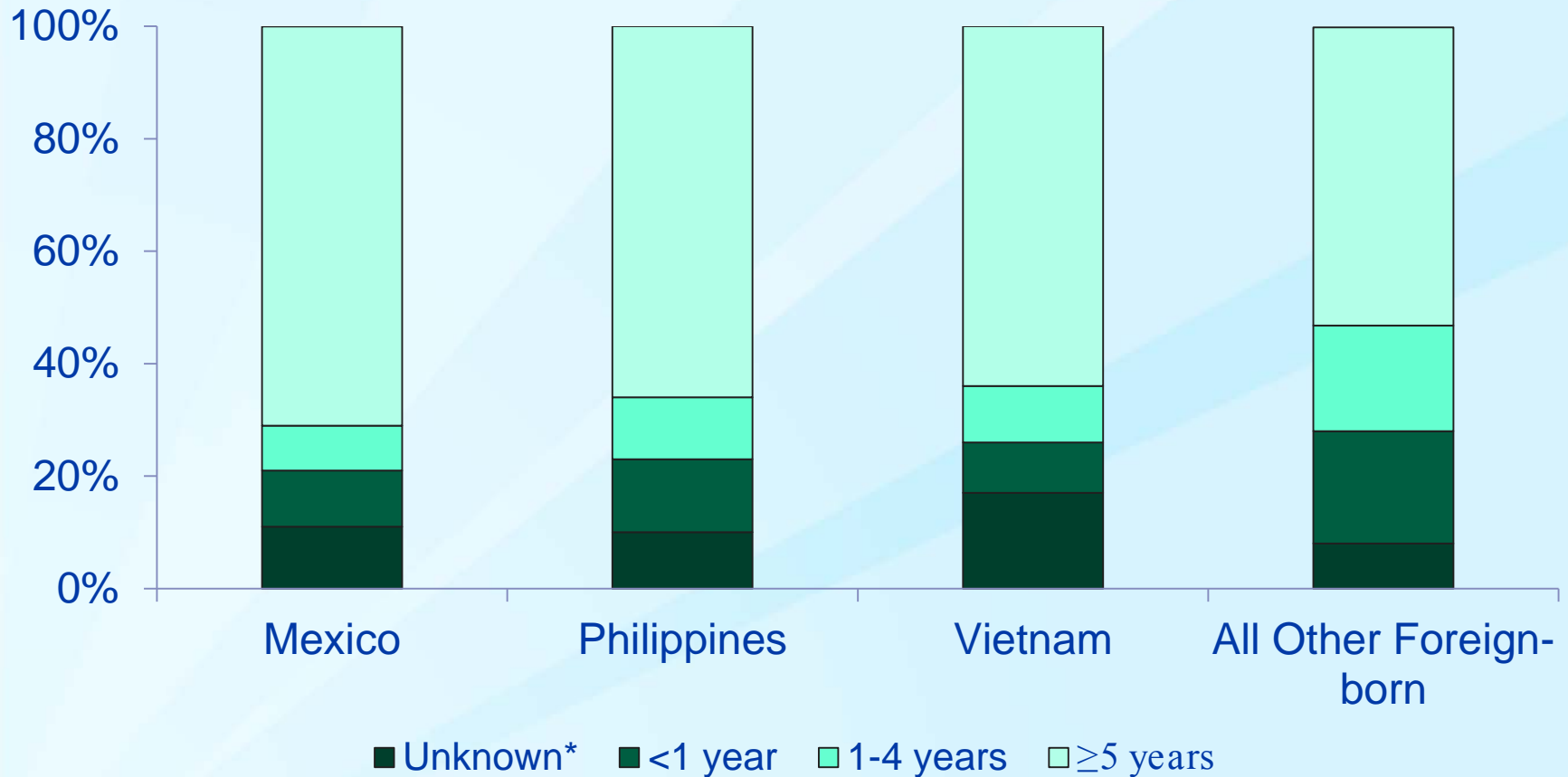
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Countries of Birth of Foreign-born Persons Reported with TB, United States, 2014



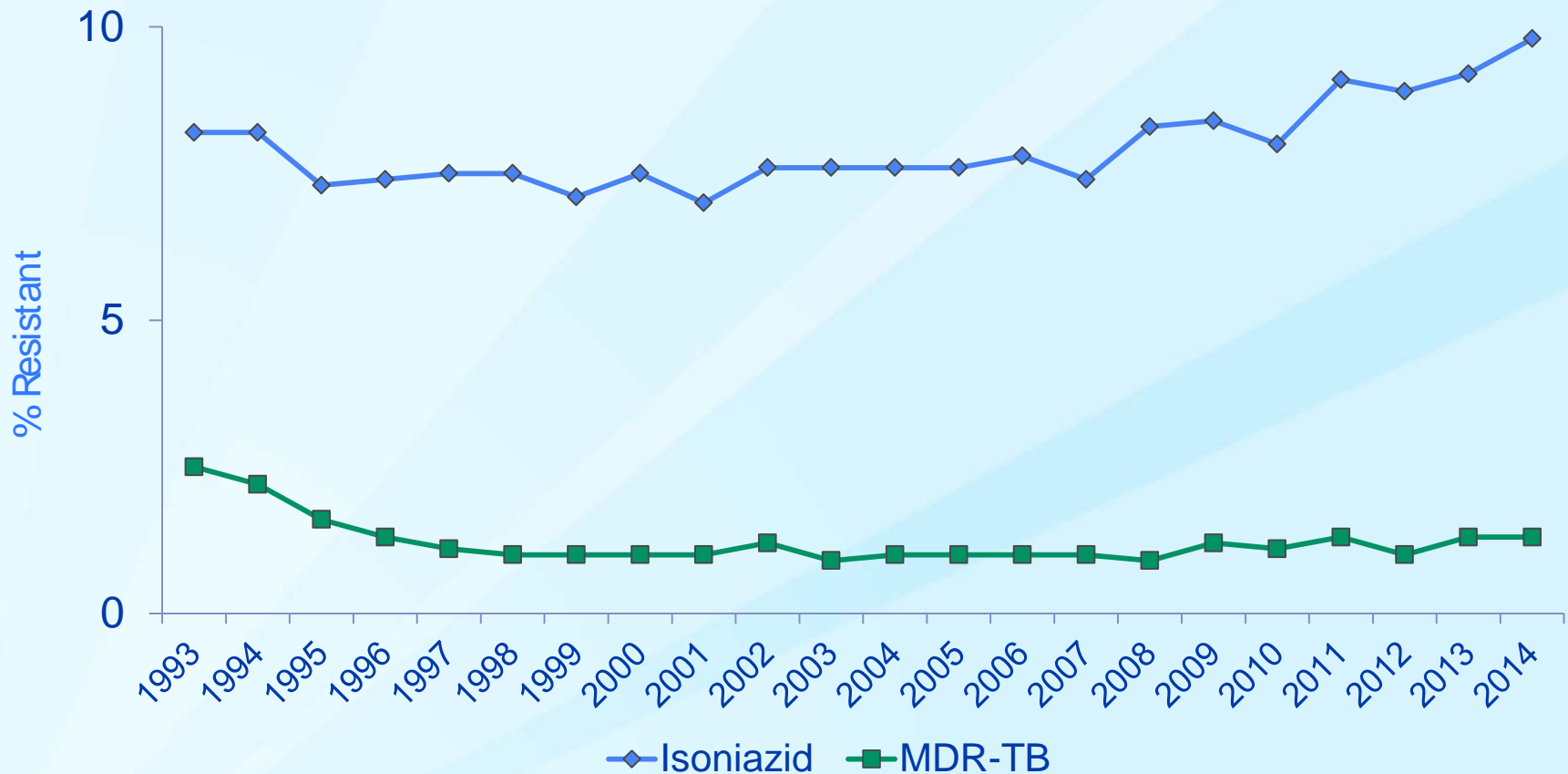
Percent of Foreign-born with TB by Time of Residence in U.S. Prior to Diagnosis, 2014



* Foreign-born TB patients for whom information on length of residence in the U.S. prior to diagnosis is unknown or missing.



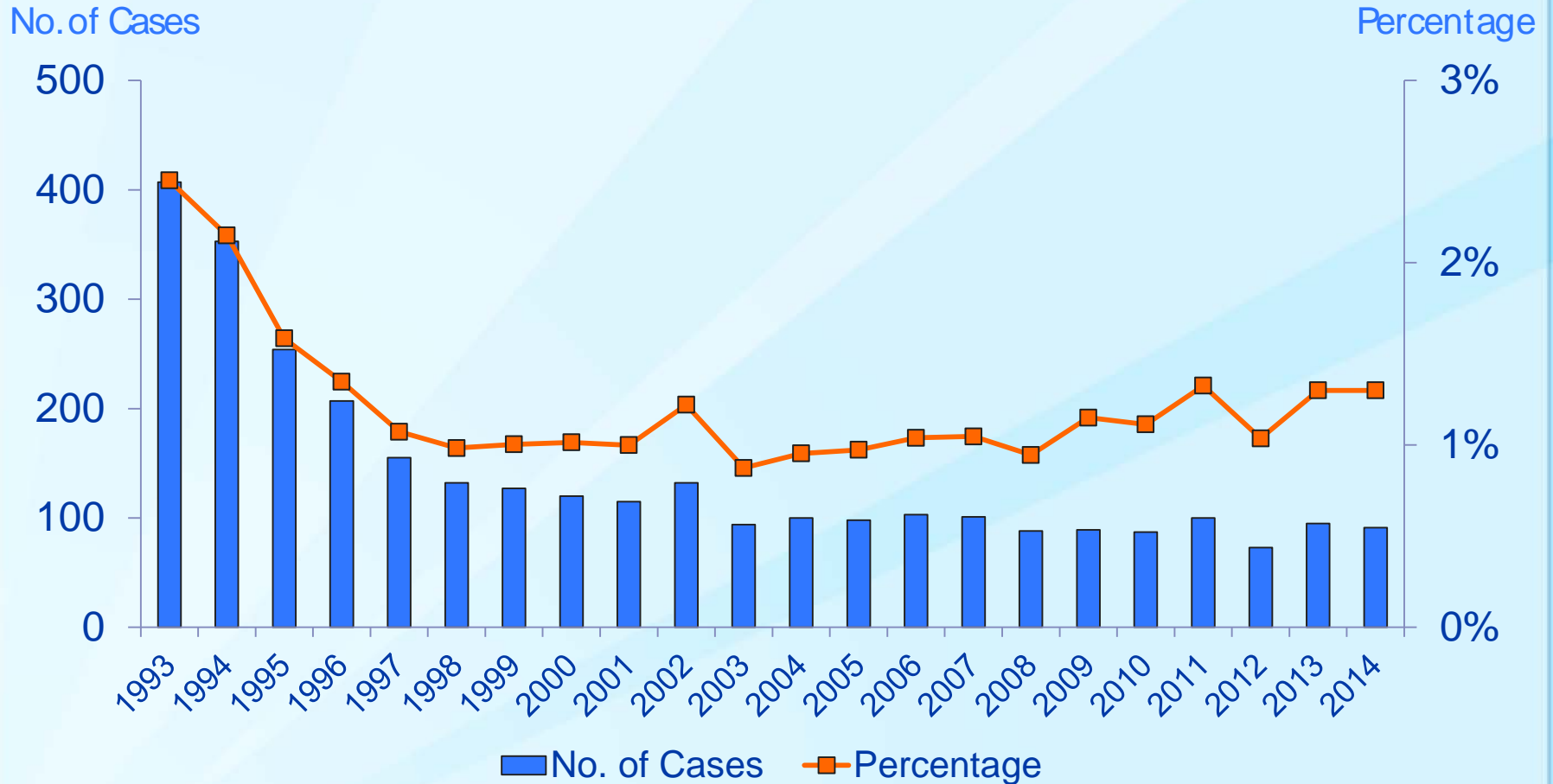
Primary Anti-TB Drug Resistance, United States, 1993 – 2014



Note: Based on initial isolates from persons with no prior history of TB. Multidrug resistant TB (MDR-TB) is defined as resistance to at least isoniazid and rifampin.



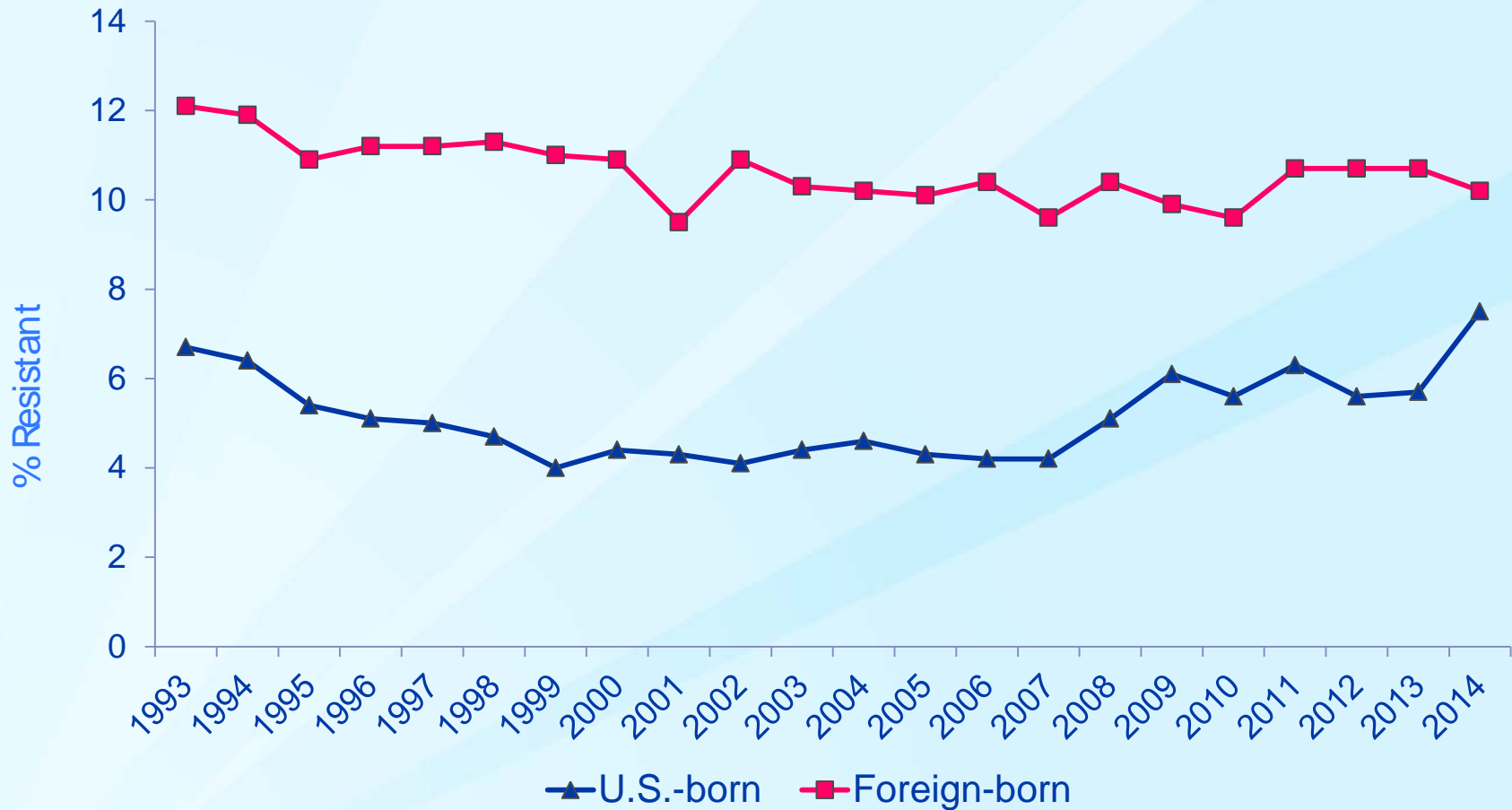
Primary MDR TB, United States, 1993 – 2014



Note: Based on initial isolates from persons with no prior history of TB. MDR TB defined as resistance to at least isoniazid and rifampin.



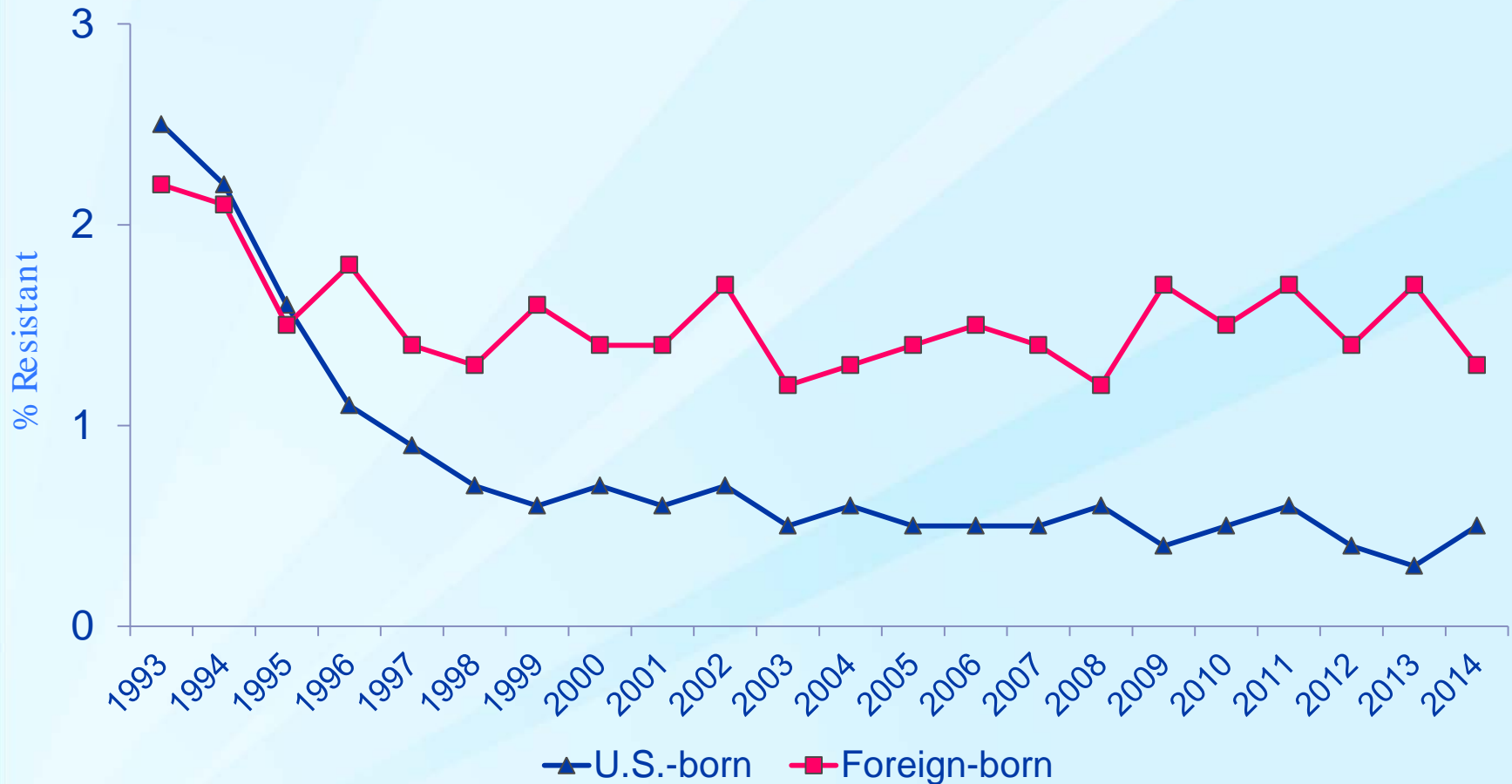
Primary Isoniazid Resistance in U.S.-born vs. Foreign-born Persons, United States, 1993 – 2014



Note: Based on initial isolates from persons with no prior history of TB.



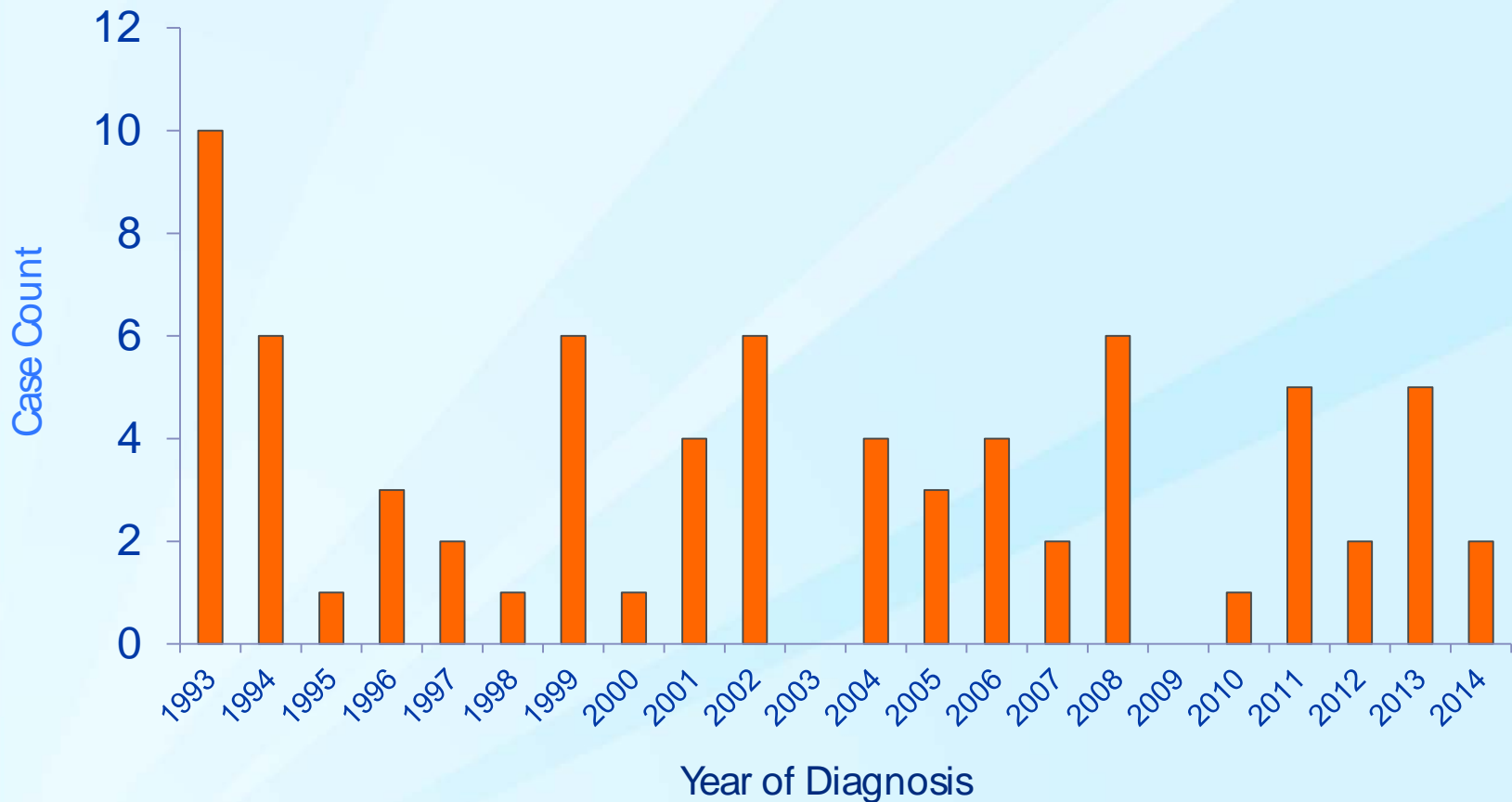
Primary MDR TB in U.S.-born vs. Foreign-born Persons United States, 1993 – 2014



Note: Based on initial isolates from persons with no prior history of TB. MDR TB defined as resistance to at least isoniazid and rifampin.



XDR TB Case Count Defined on Initial DST* by Year, 1993 – 2014

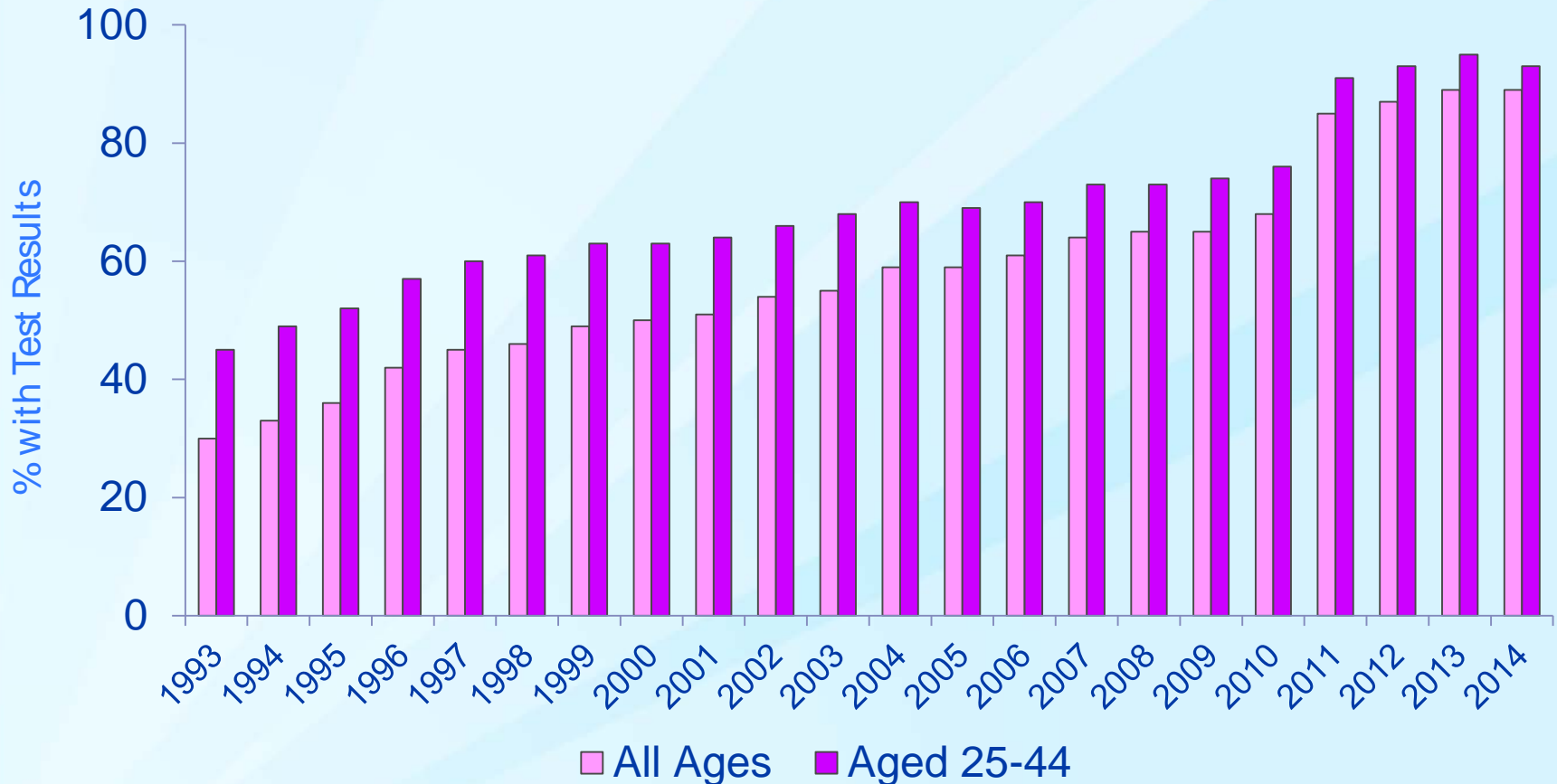


* Drug susceptibility test.

Note: Extensively drug-resistant TB (XDR TB) is defined as resistance to isoniazid and rifampin, plus resistance to any fluoroquinolone and at least one of three injectable second-line anti-TB drugs.



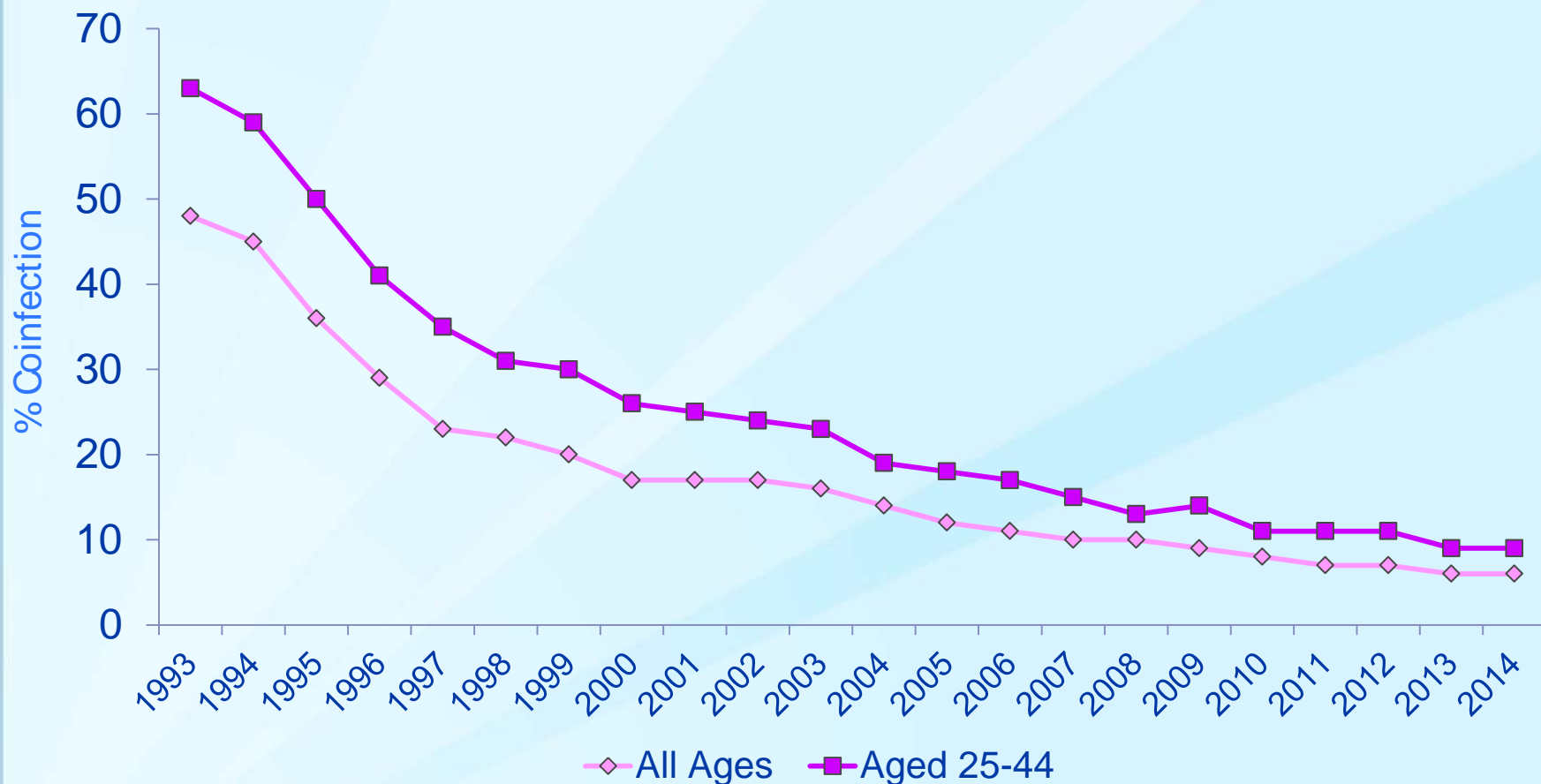
Reporting of HIV Test Results in Persons with TB by Age Group, United States, 1993 – 2014



Note: Includes persons with positive, negative, or indeterminate HIV test results and persons from California with co-diagnosis of TB and AIDS. Rhode Island did not report HIV test results for years 1993–1997. HIV test results for Vermont are not included for years 2007–2010. HIV test results for California are not included for years 2005 – 2010.



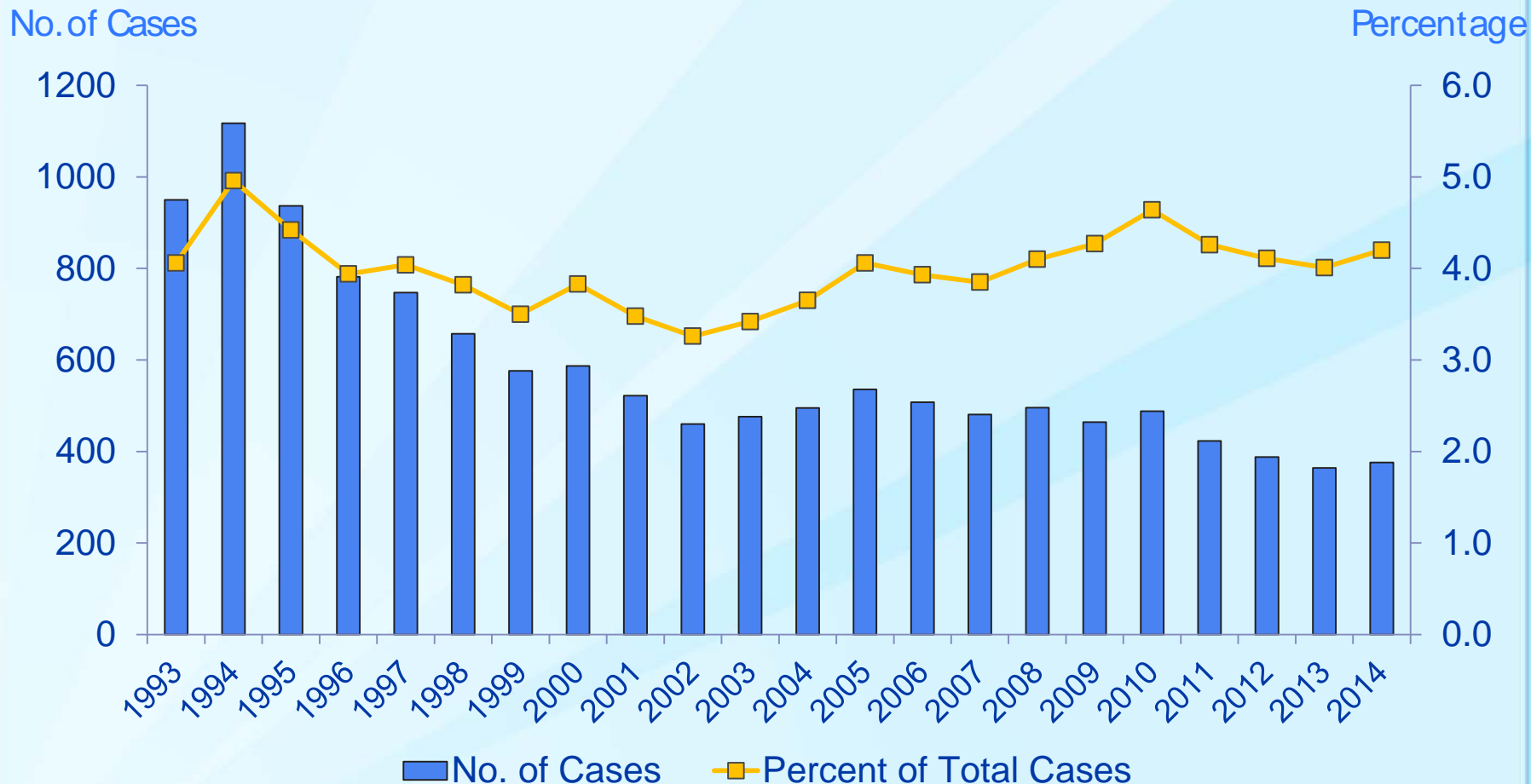
Estimated HIV Coinfection in Persons Reported with TB, United States, 1993 – 2014



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



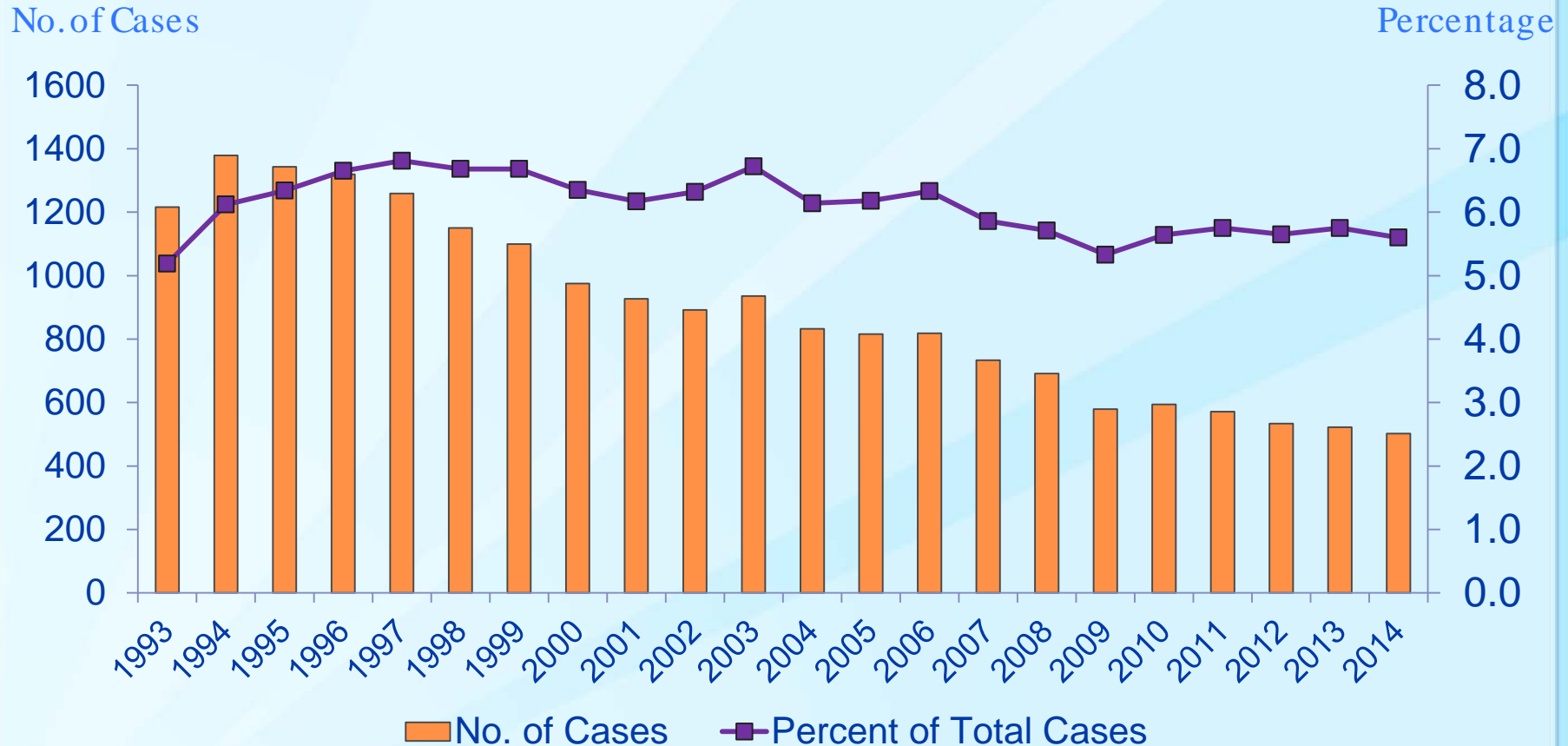
TB Cases by Residence in Correctional Facilities, Age ≥ 15 , United States, 1993-2014



Note: Resident of correctional facility at time of TB diagnosis.



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



Note: Homeless within past 12 months of TB diagnosis.



Thank You !

Questions?