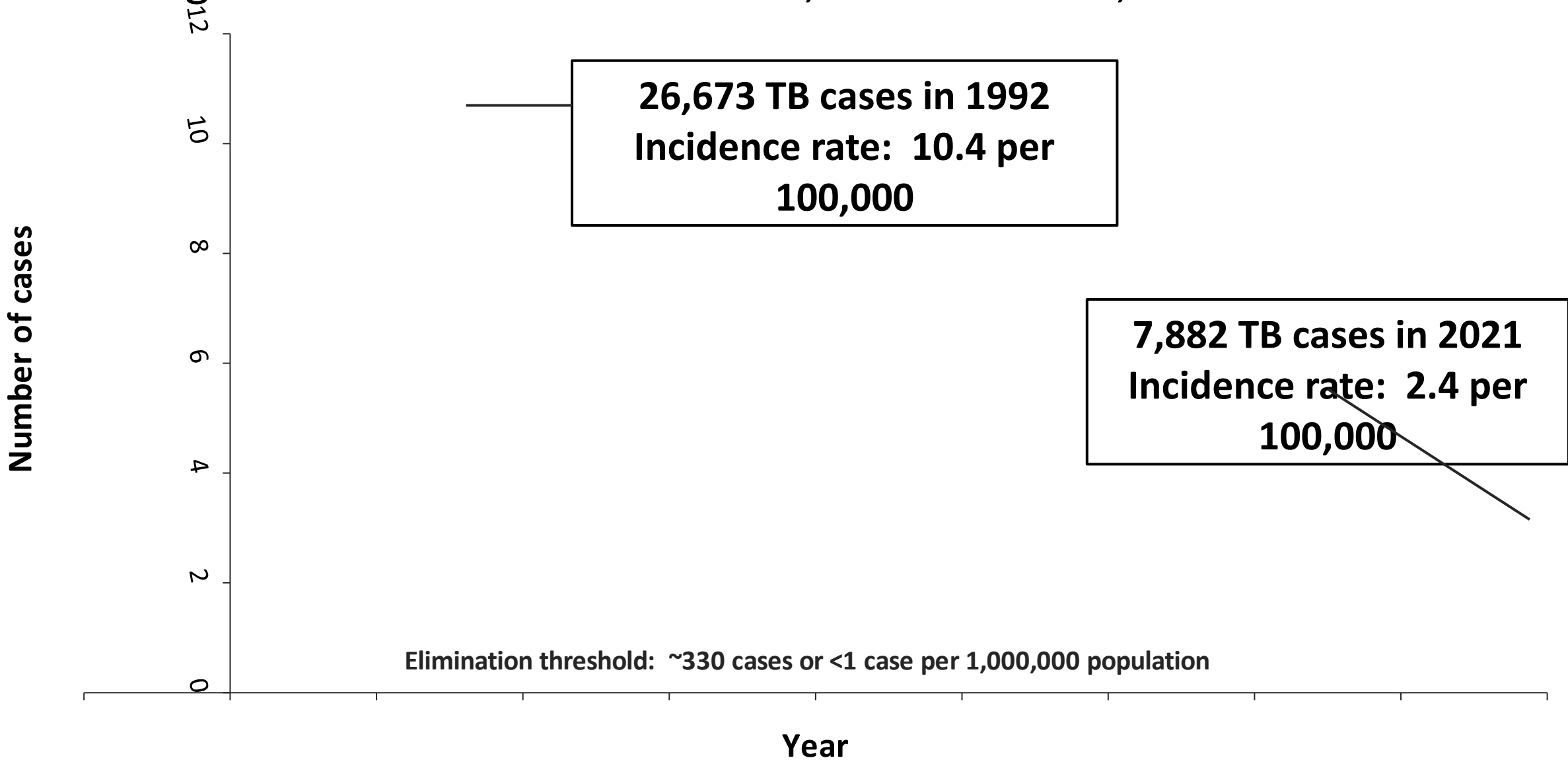




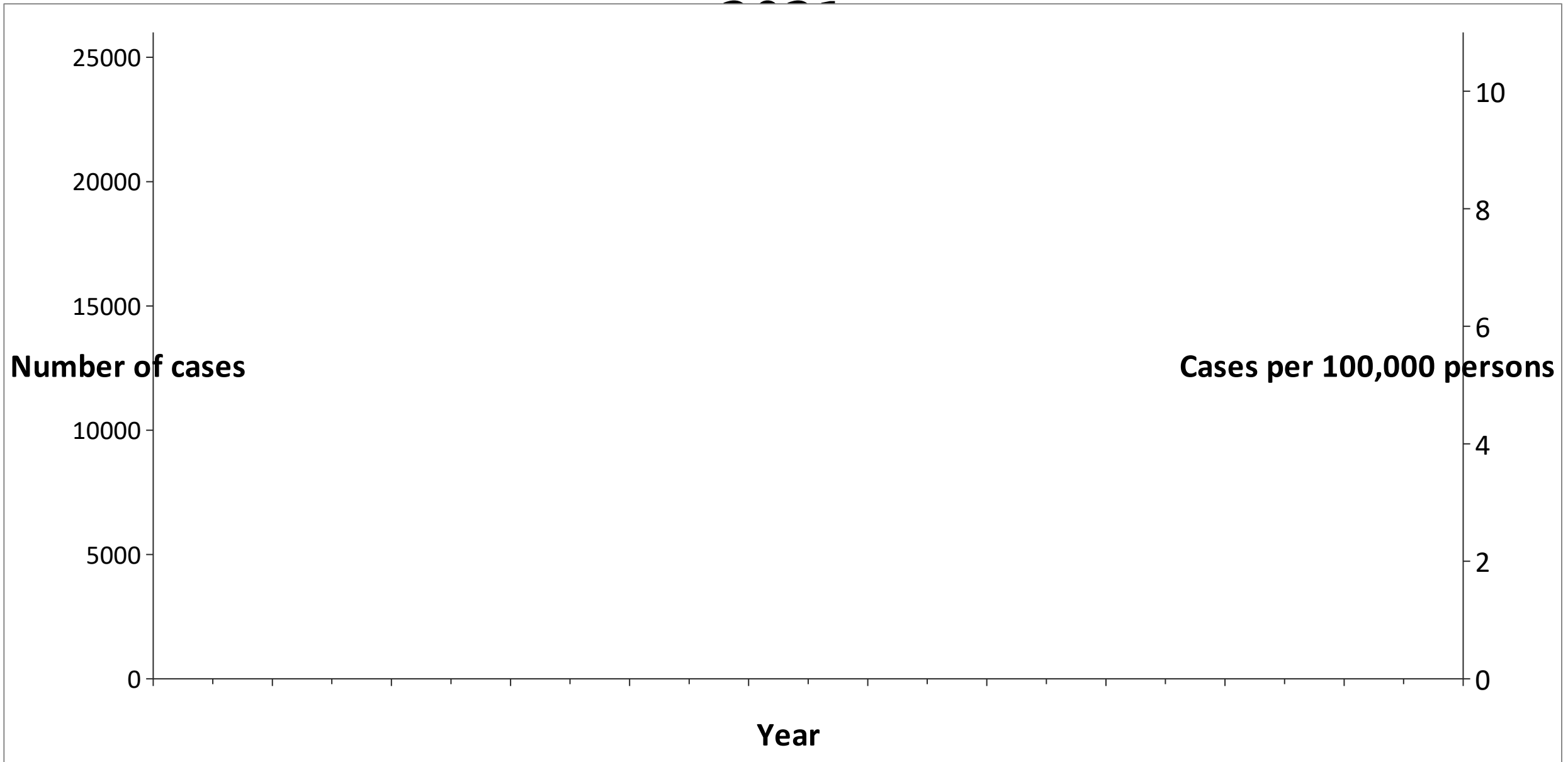
# **Tuberculosis (TB) in the United States 1993–2021\***

Division of Tuberculosis Elimination  
National Tuberculosis Surveillance System

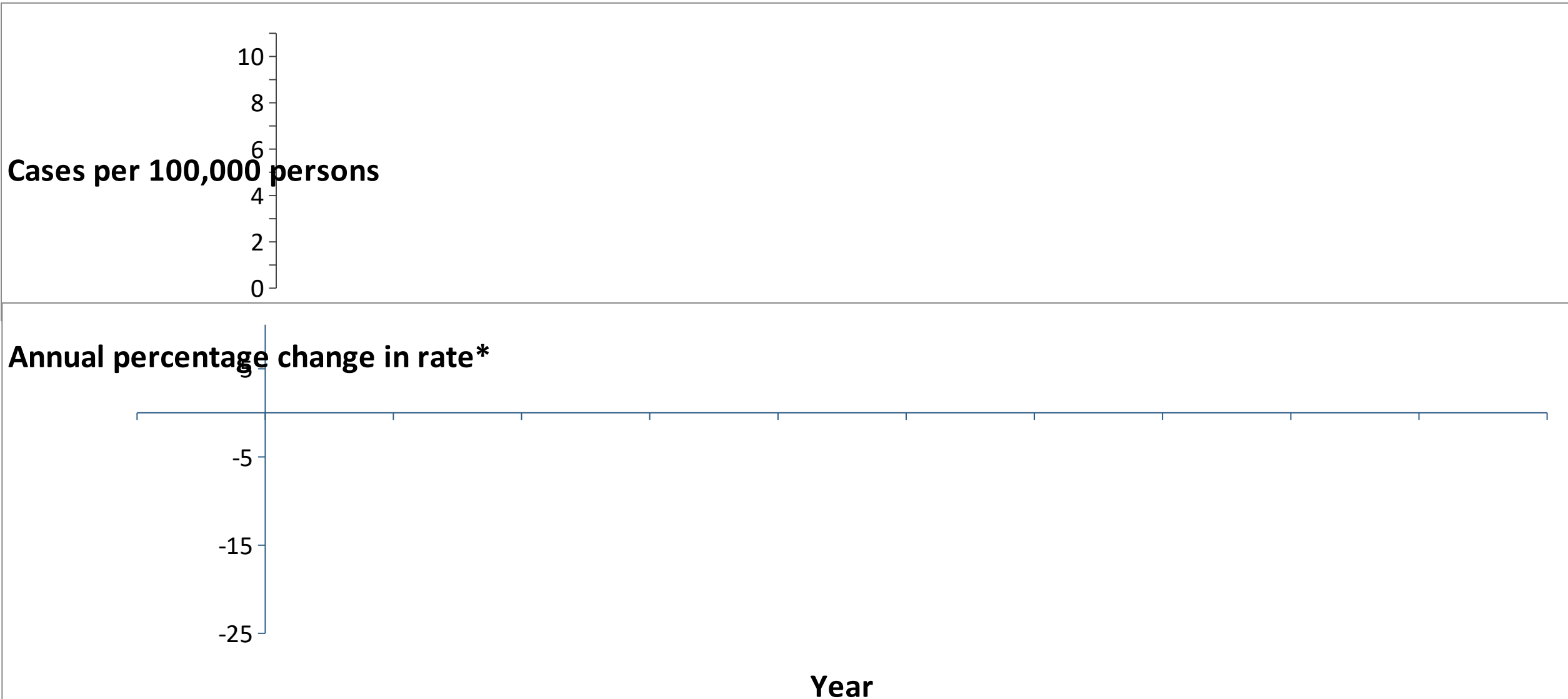
# Progress Towards TB Elimination, United States, 1982–2021



# TB Cases and Incidence Rates, United States, 1993-

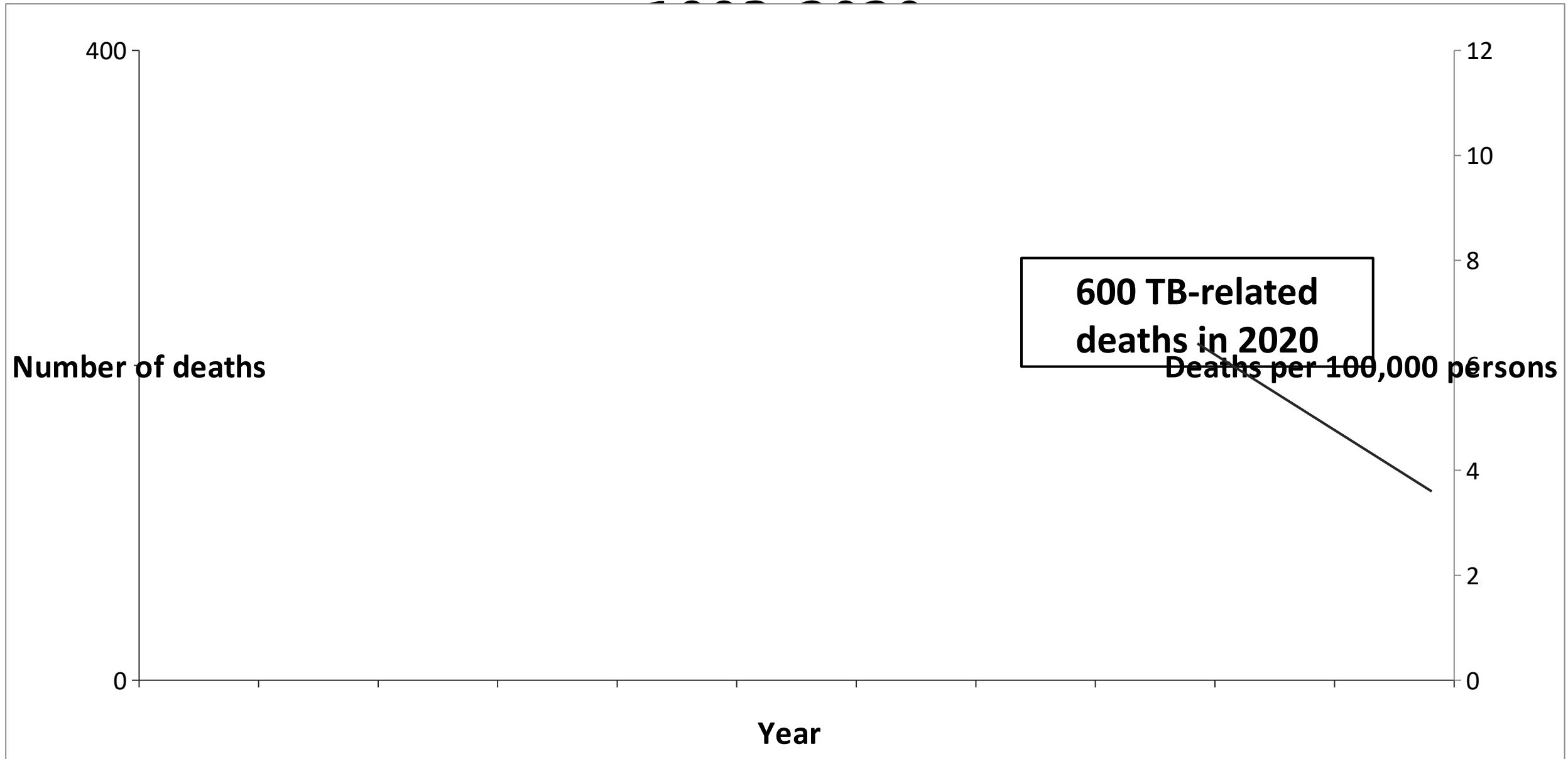


# TB Incidence Rates and Annual Percent Change in Rate, United States, 2010-2021



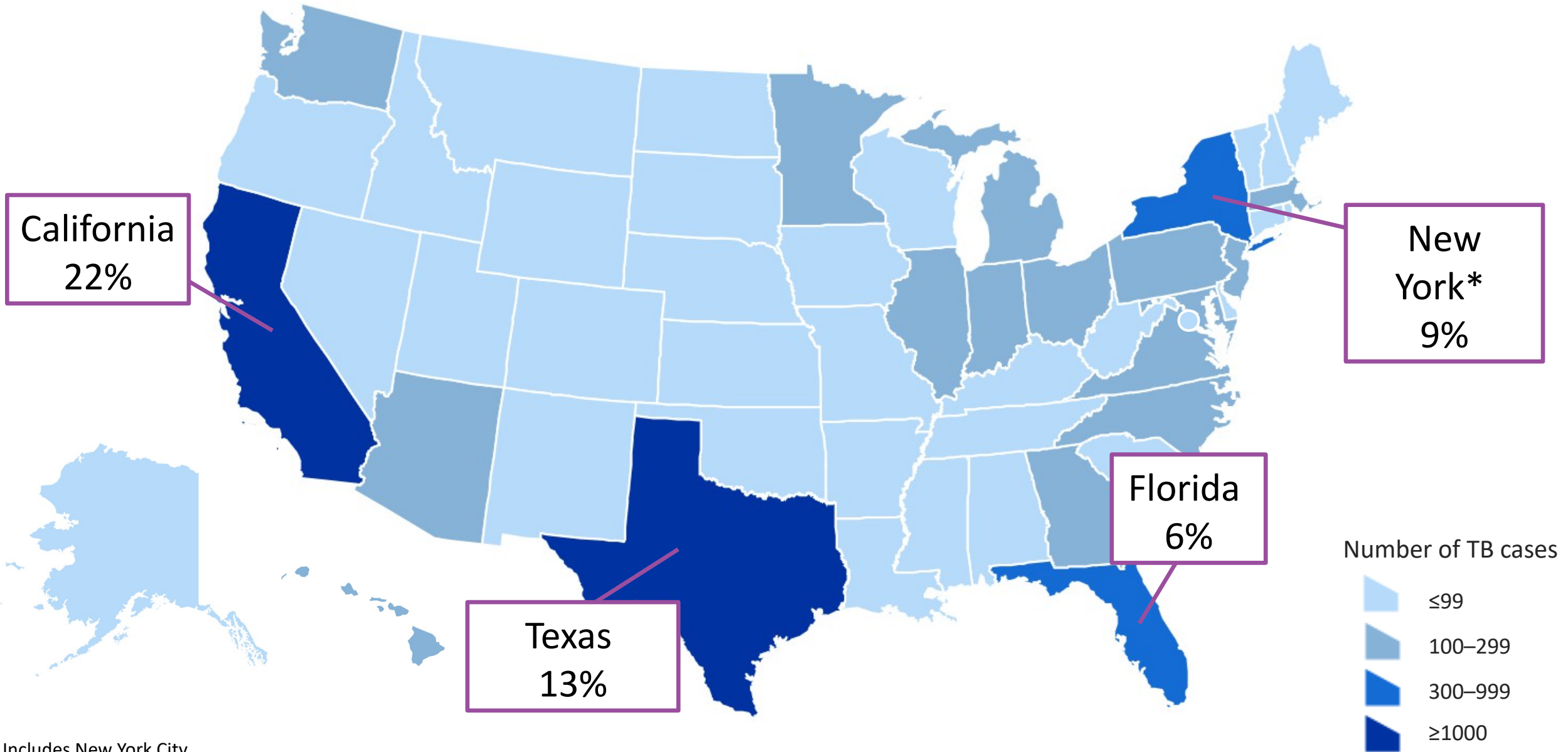
\*Annual percent change in rate based on unrounded data

# TB-Related Deaths\* and Mortality Rates, United States,



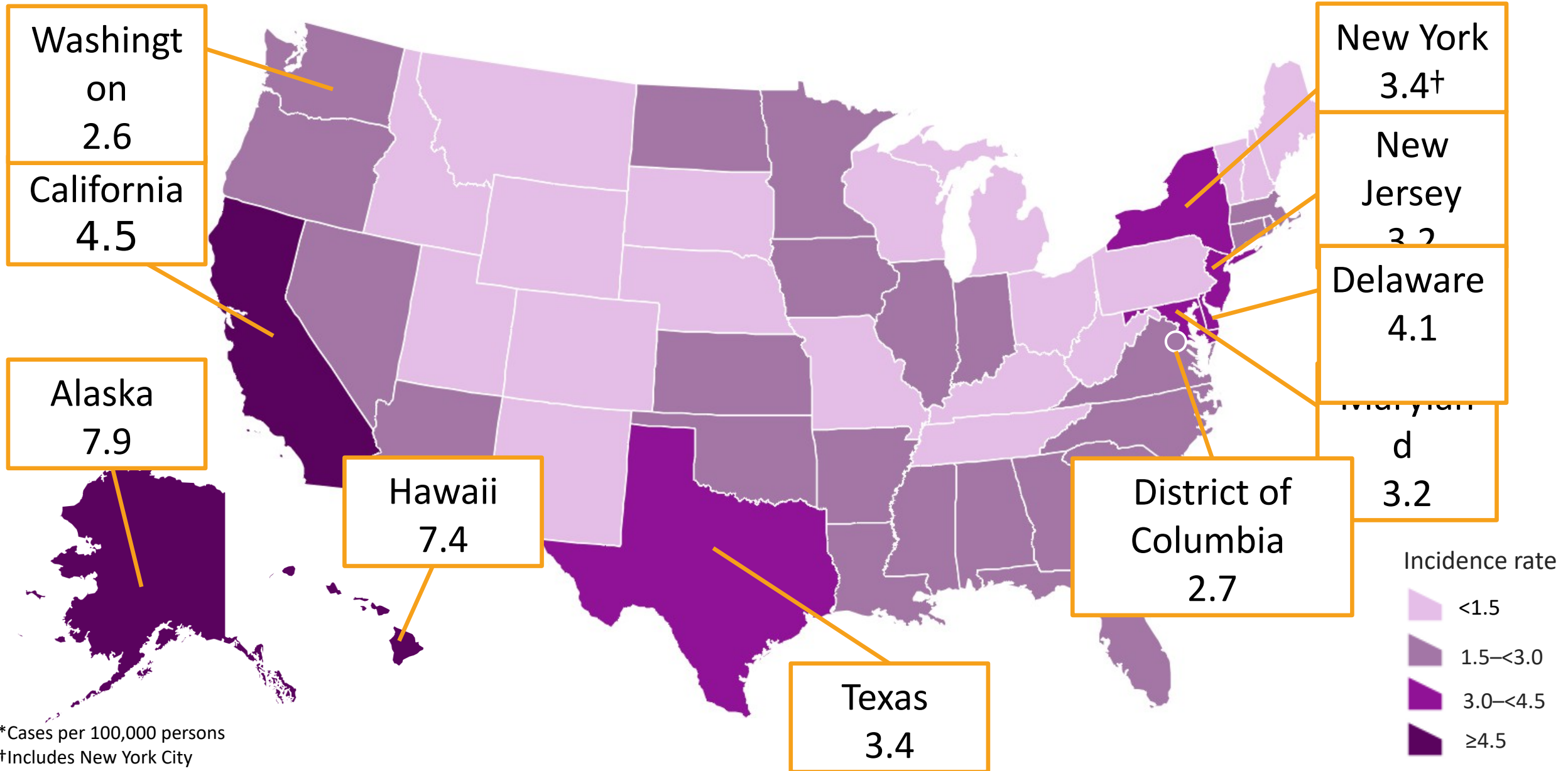
\*National Vital Statistics System Underlying Cause of Death (based on deaths reported through 2020)

# TB Cases by Reporting Area, United States, 2021



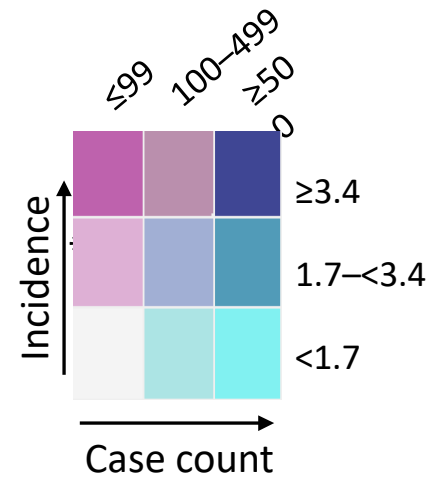
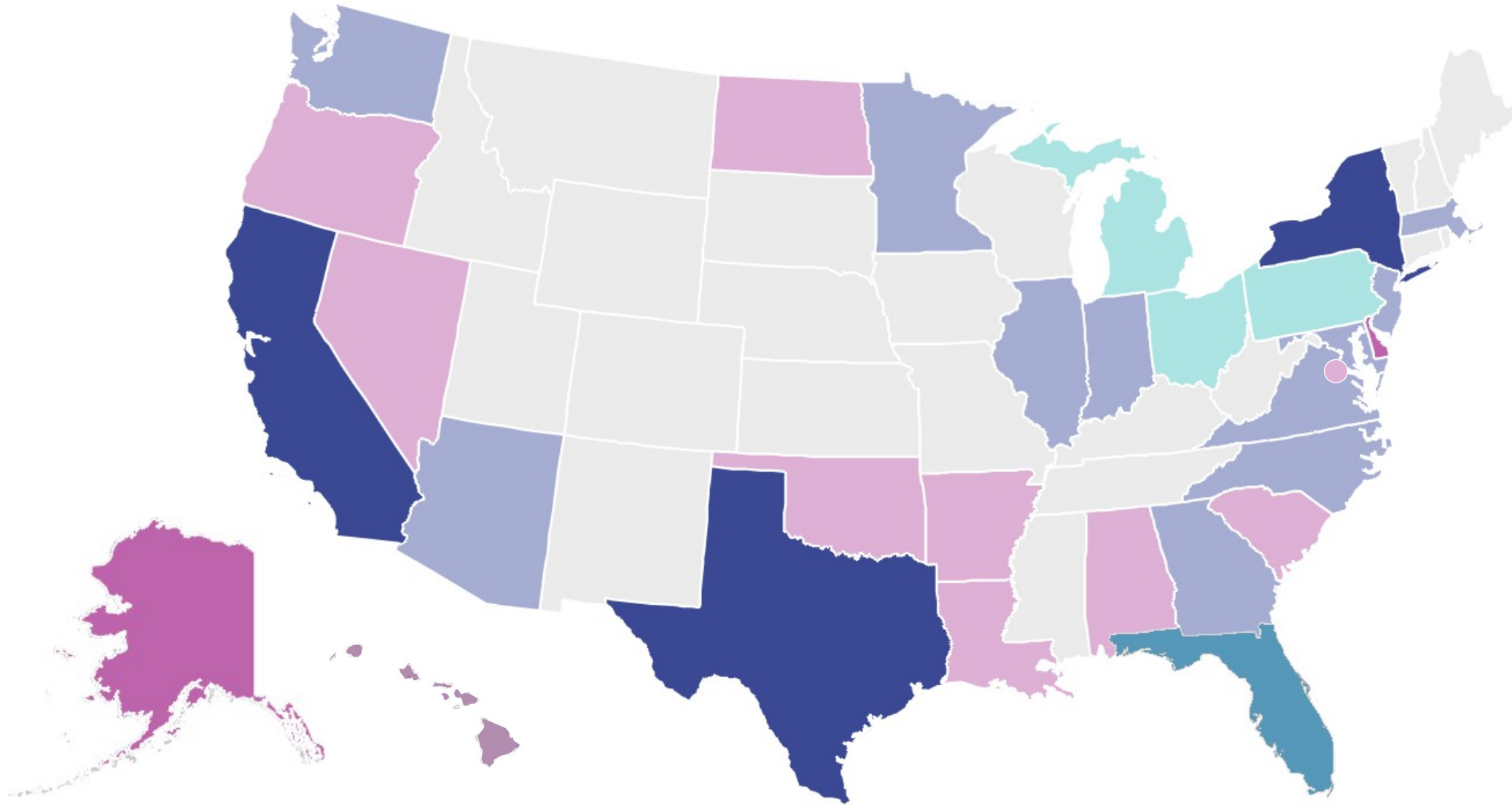
\* Includes New York City

# TB Incidence Rates\* by Reporting Area, United States, 2021



\*Cases per 100,000 persons  
†Includes New York City

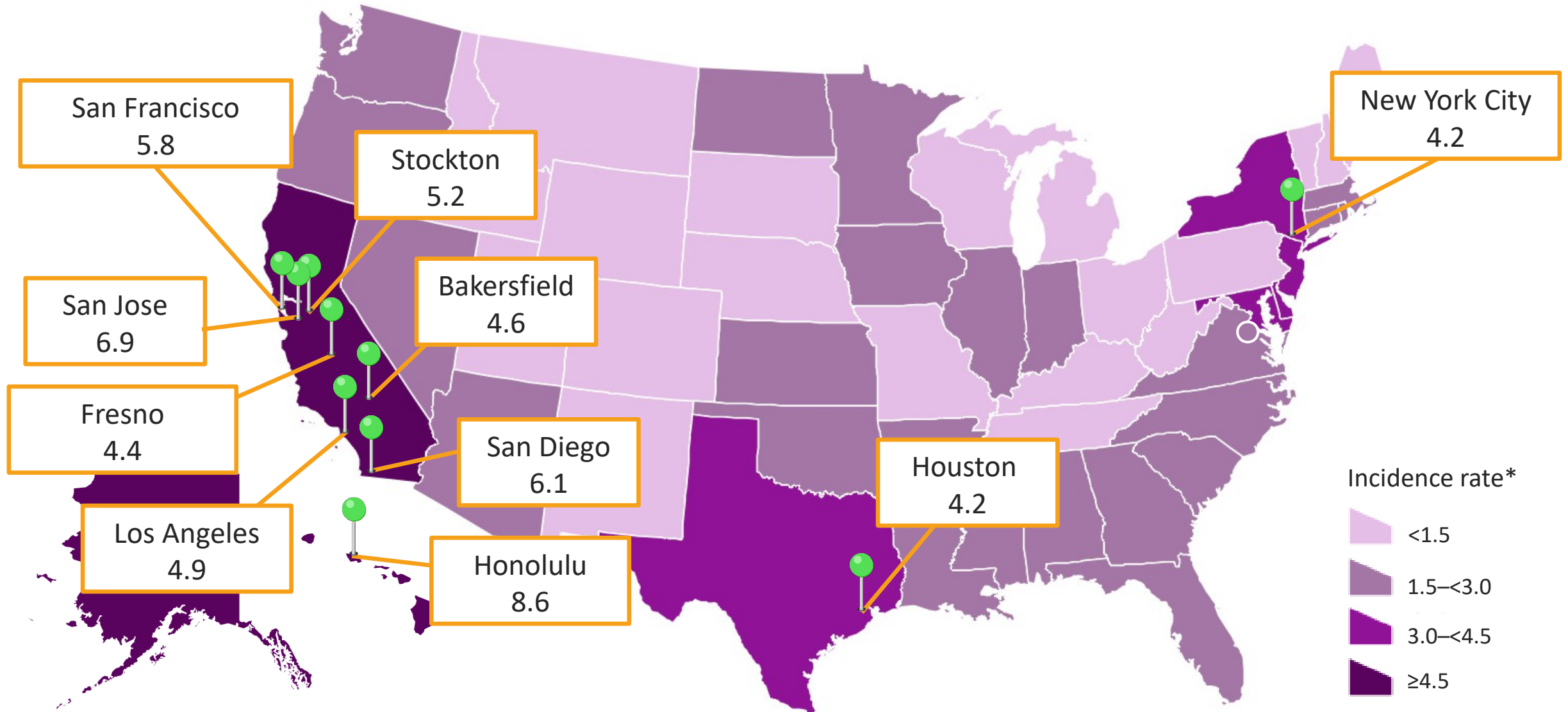
# TB Cases and Incidence Rates\* by Reporting Area, United States, 2021



\*Cases per 100,000 persons  
0 states with low incidence and high case count

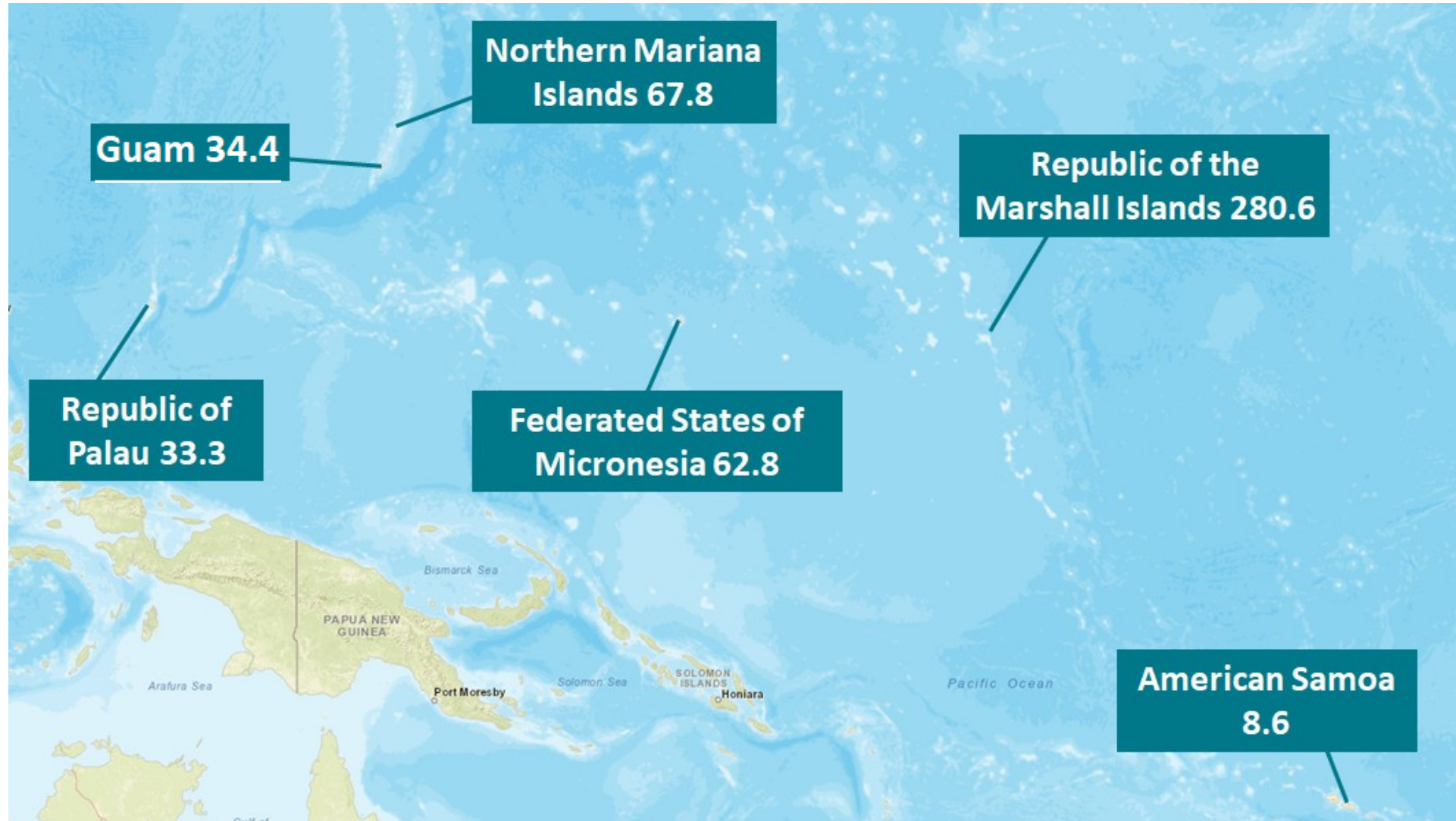


# Top 10 TB Incidence Rates\* by Metropolitan Statistical Areas (MSAs). United States. 2021



\*Cases per 100,000 persons

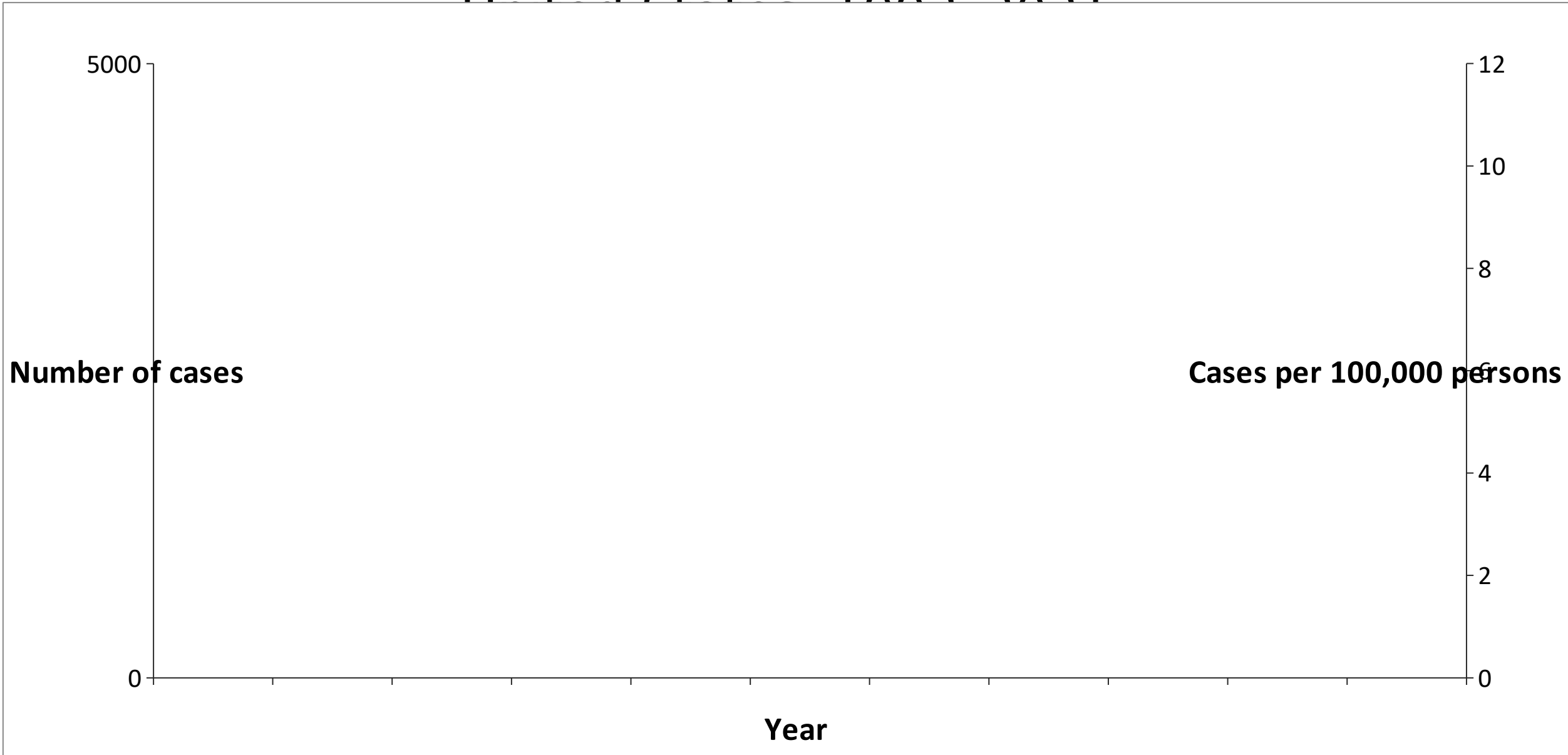
# TB Incidence Rates\* by U.S.-Affiliated Pacific Islands, 2021



\*Cases per 100,000 persons

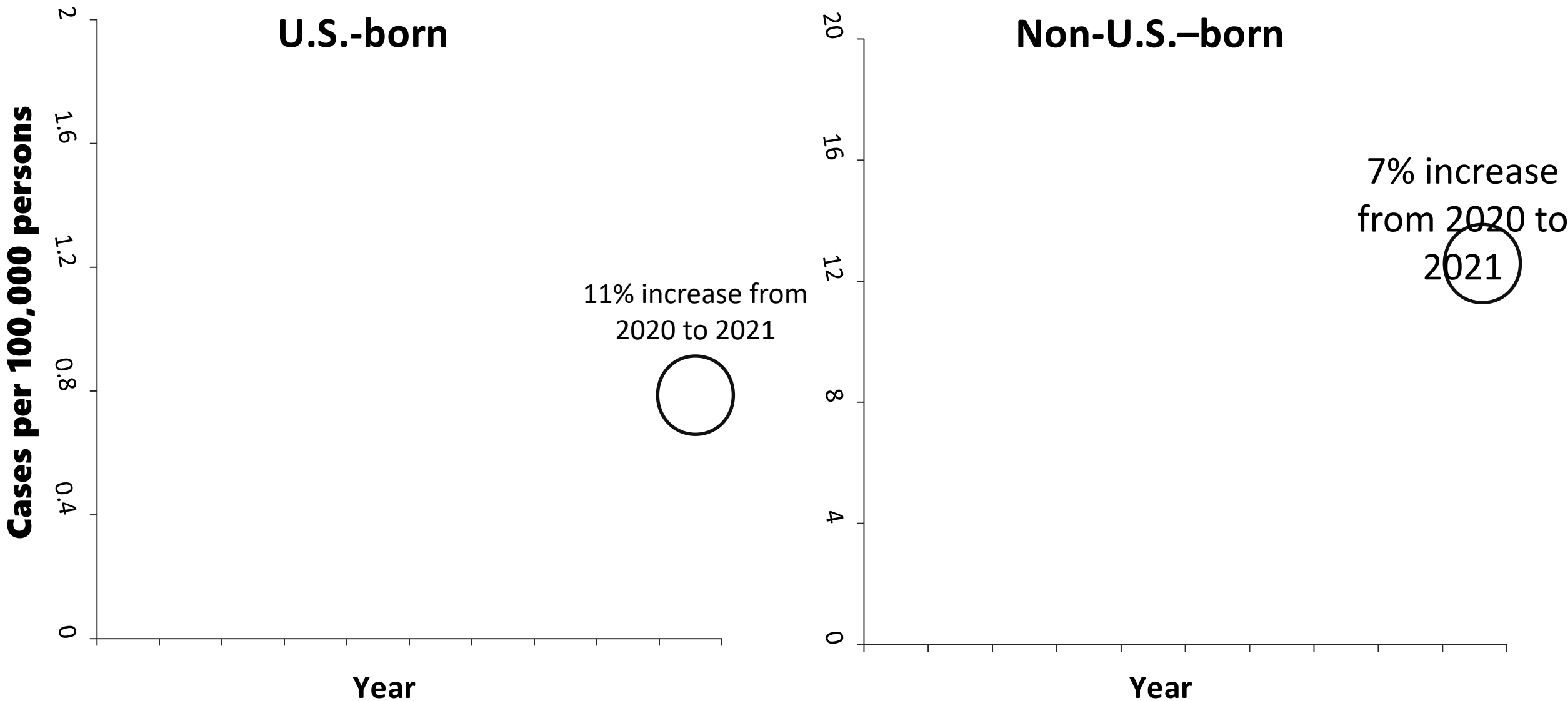
# TB Cases and Incidence Rates by Origin of Birth,\*

United States, 1992-2021



\*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.

# TB Incidence Rates by Origin of Birth,\* United States, 2011-2021



\*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.

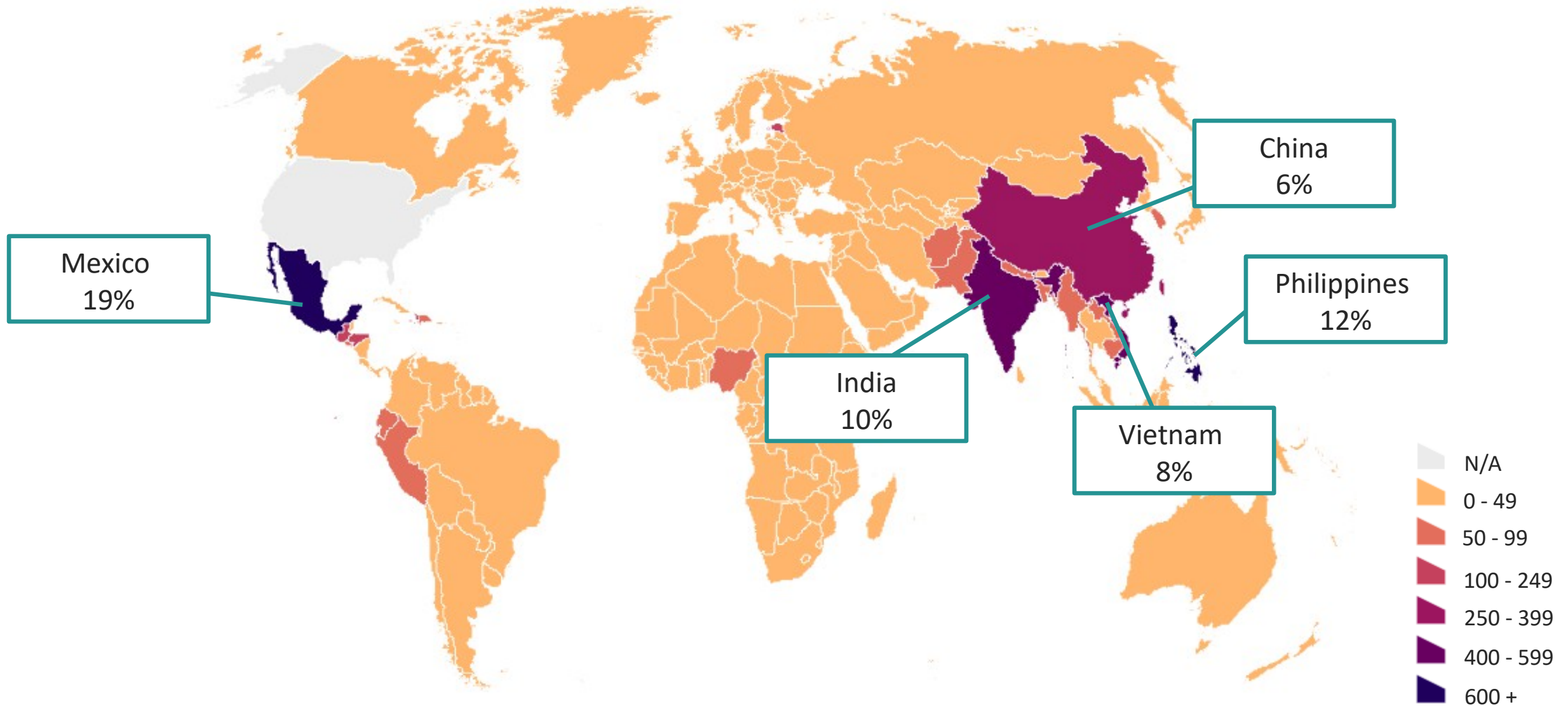
# TB Incidence Rates and Percentages by Origin of Birth,\* United States, 2021 (N=7,849)

Origin of birth unknown, <1%

U.S.-born, 28%  
(Rate: 0.8 per 100,000)

Non-U.S.-born 71%  
(Rate: 12.5 per 100,000)

# 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.

# Top 10 TB Incidence Rates\* by Country of Birth, United States, 2017-2021



\* Cases per 100,000 persons

# Percentage of TB Cases Among Non-U.S.-Born\* Persons by Years Since Initial Arrival in the United States at Diagnosis,† 2021 (N=5,626)

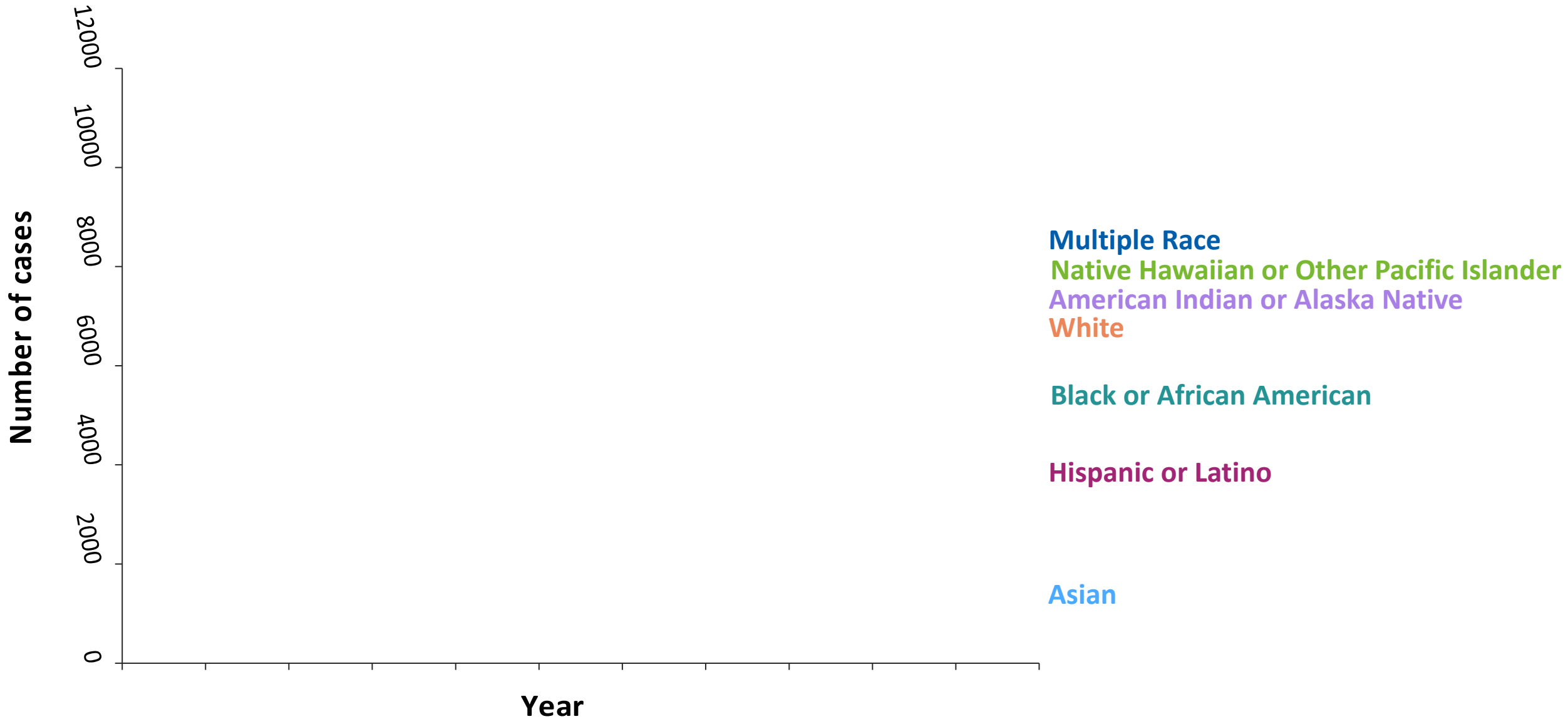


\*Persons born in the United States, certain U.S. territories, or elsewhere to at least one U.S. citizen parent are categorized as U.S.-born. All other persons are categorized as non-U.S.-born.

†The number of years since initial arrival in the United States at diagnosis was unknown or missing for 11% of non-U.S.-born persons. These persons were included in the denominator when calculating percentages.

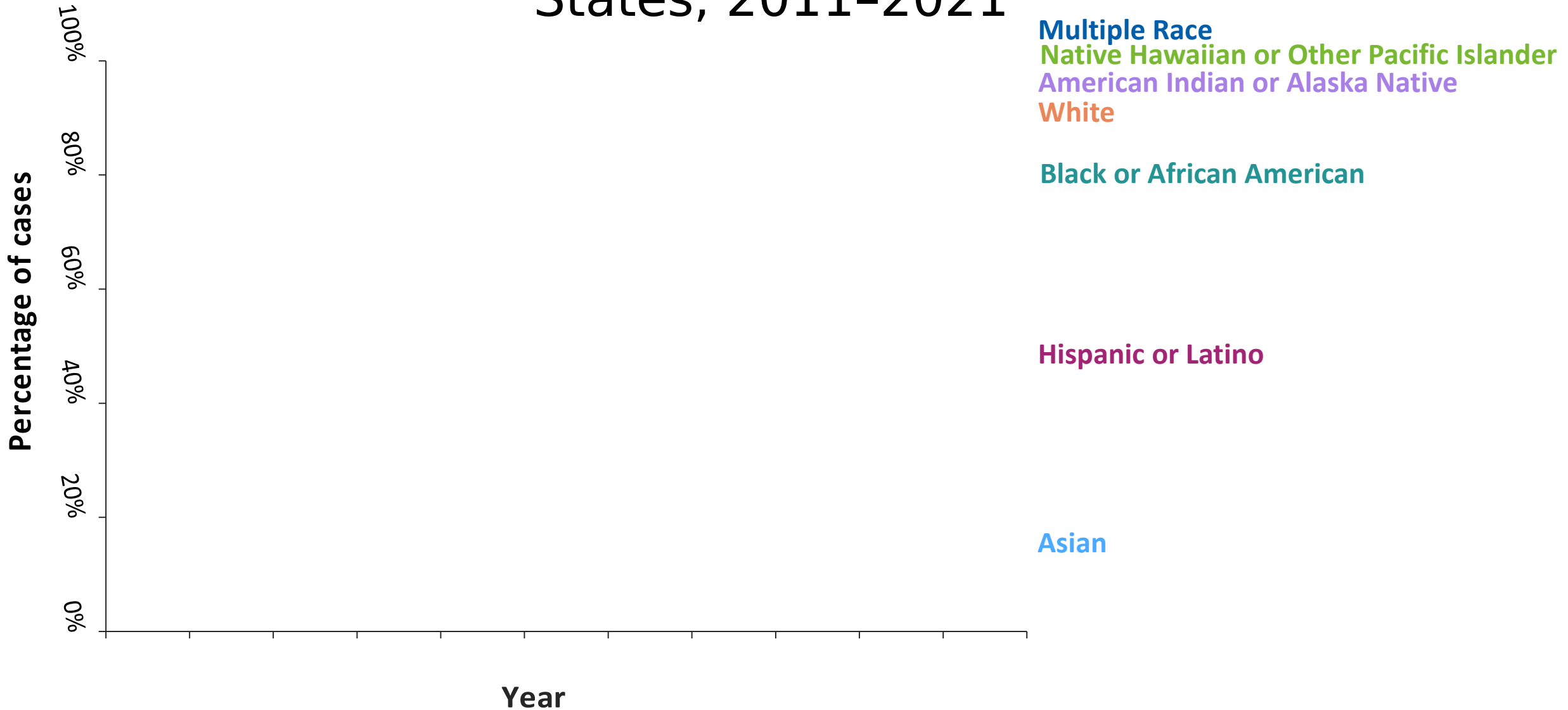


# TB Cases by Race/Ethnicity,\* United States, 2011-2021



\*Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," 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."

# Percentage of TB Cases by Race/Ethnicity,\* United States, 2011-2021



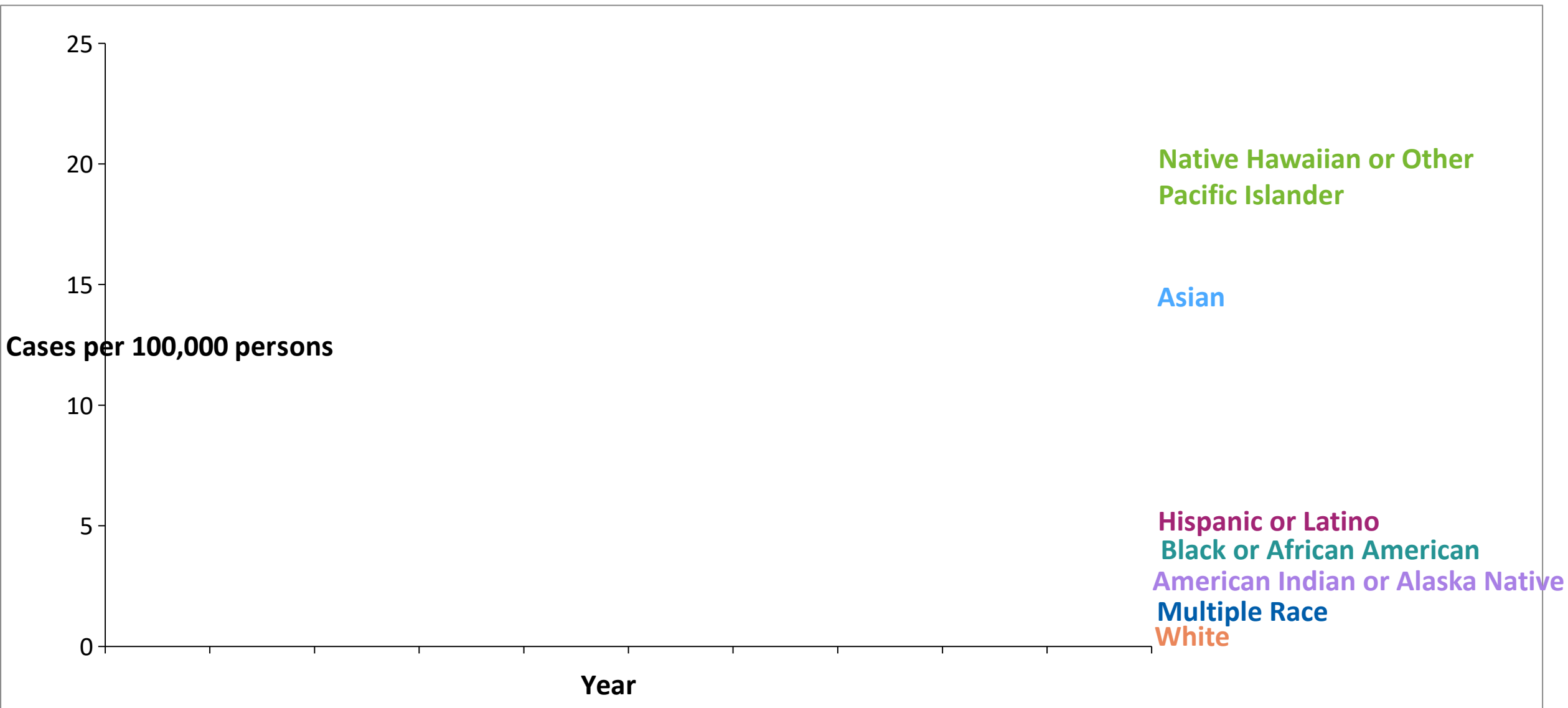
\*Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," regardless of self-reported race. Persons who did not identify as Hispanic or Latino were categorized by self-reported race; if more than one race was reported, the person was categorized as "Multiple race."

# Percentage of TB Cases by Race/Ethnicity,\* United States, 2021 (N=7,882)



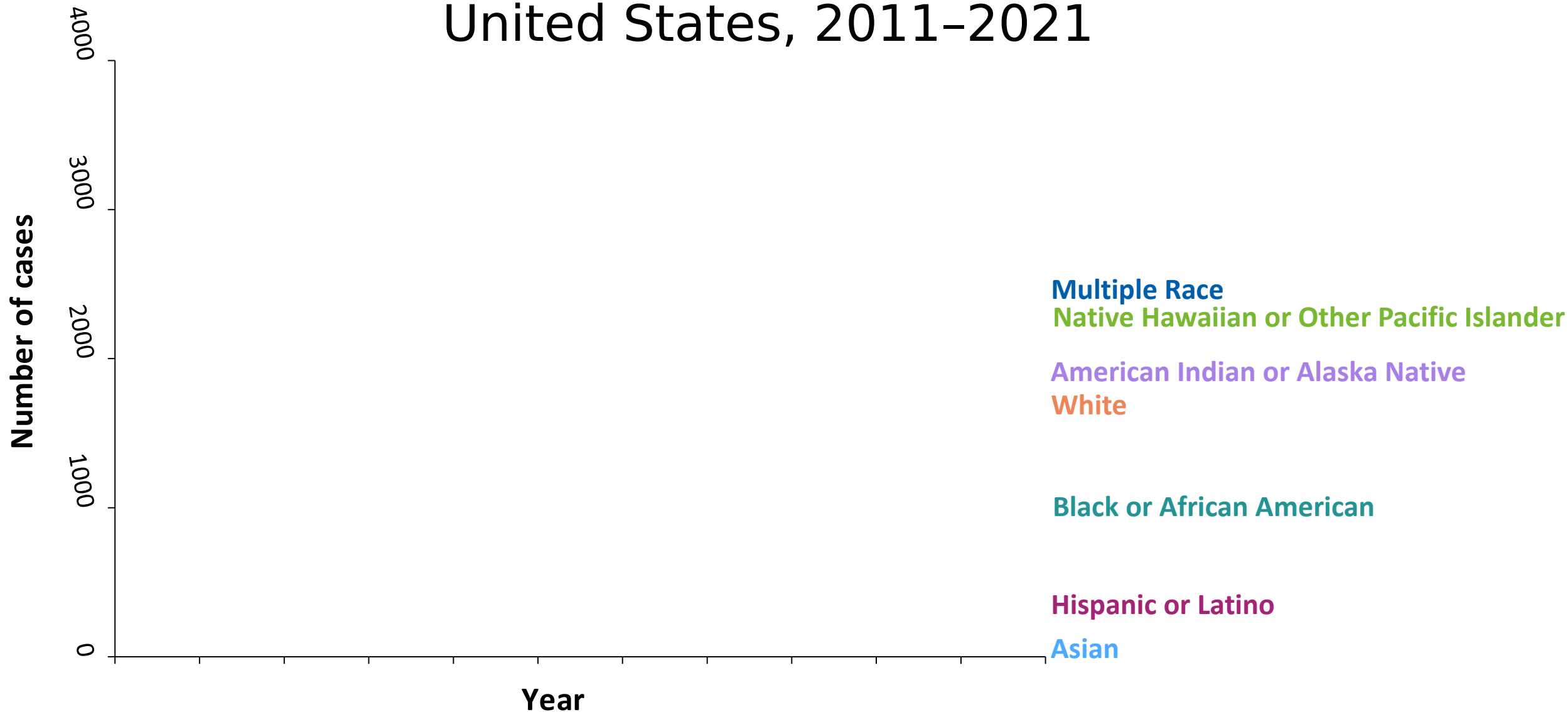
\*Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," regardless of self-reported race. Persons who did not identify as Hispanic or Latino were categorized by self-reported race; if more than one race was reported, the person was categorized as "Multiple race."

# TB Incidence Rates by Race/Ethnicity,\* United States, 2011–2021



\*Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," 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."

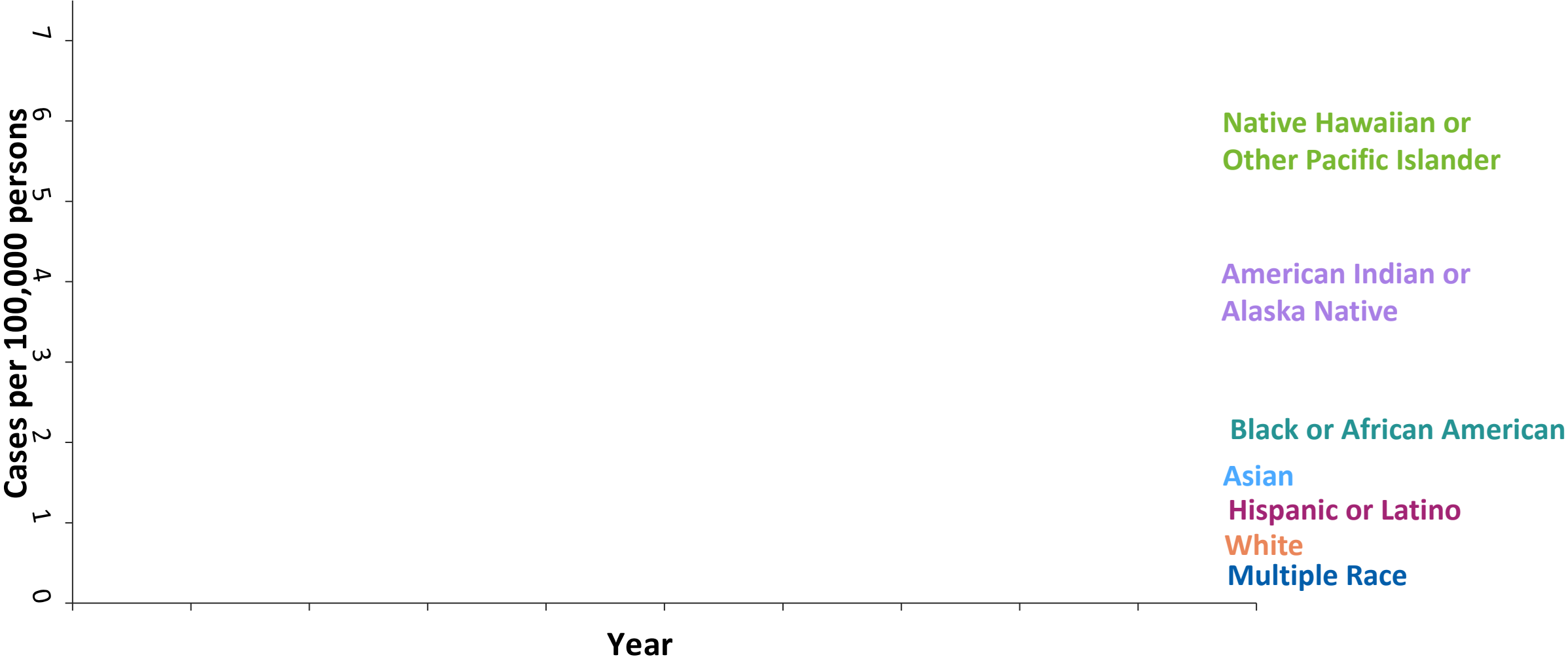
# TB Cases Among U.S.-Born\* Persons by Race/Ethnicity,† United States, 2011–2021



\*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.

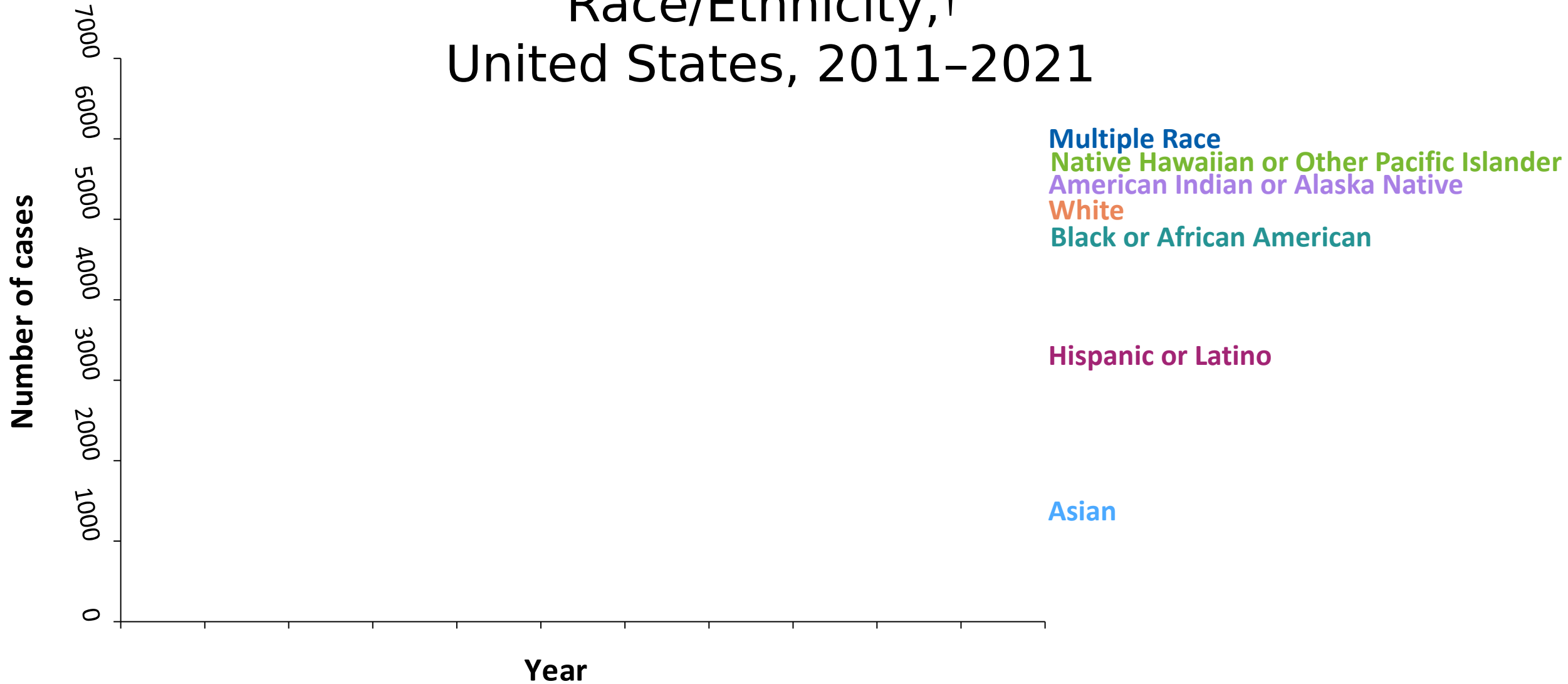
†Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," regardless of self-reported race. Persons who did not identify as Hispanic or Latino were categorized by self-reported race; if more than one race was reported, the person was categorized as "Multiple race."

# TB Incidence Rates Among U.S.-Born\* Persons by Race/Ethnicity,† United States, 2011–2021



\*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.  
 †Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," 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."

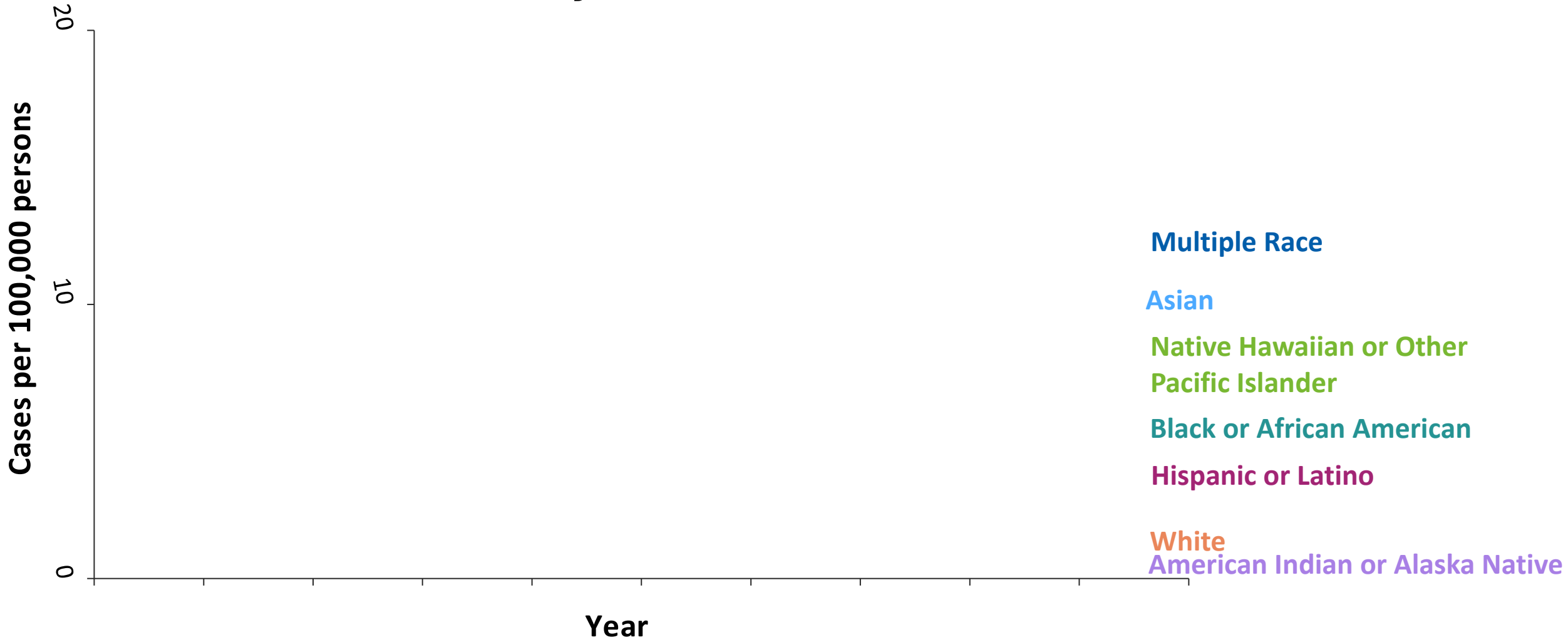
# TB Cases Among Non-U.S.-Born\* Persons by Race/Ethnicity,† United States, 2011–2021



\*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.

†Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," 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."

# TB Incidence Rates Among Non-U.S.-Born\* Persons by Race/Ethnicity,† United States, 2011–2021

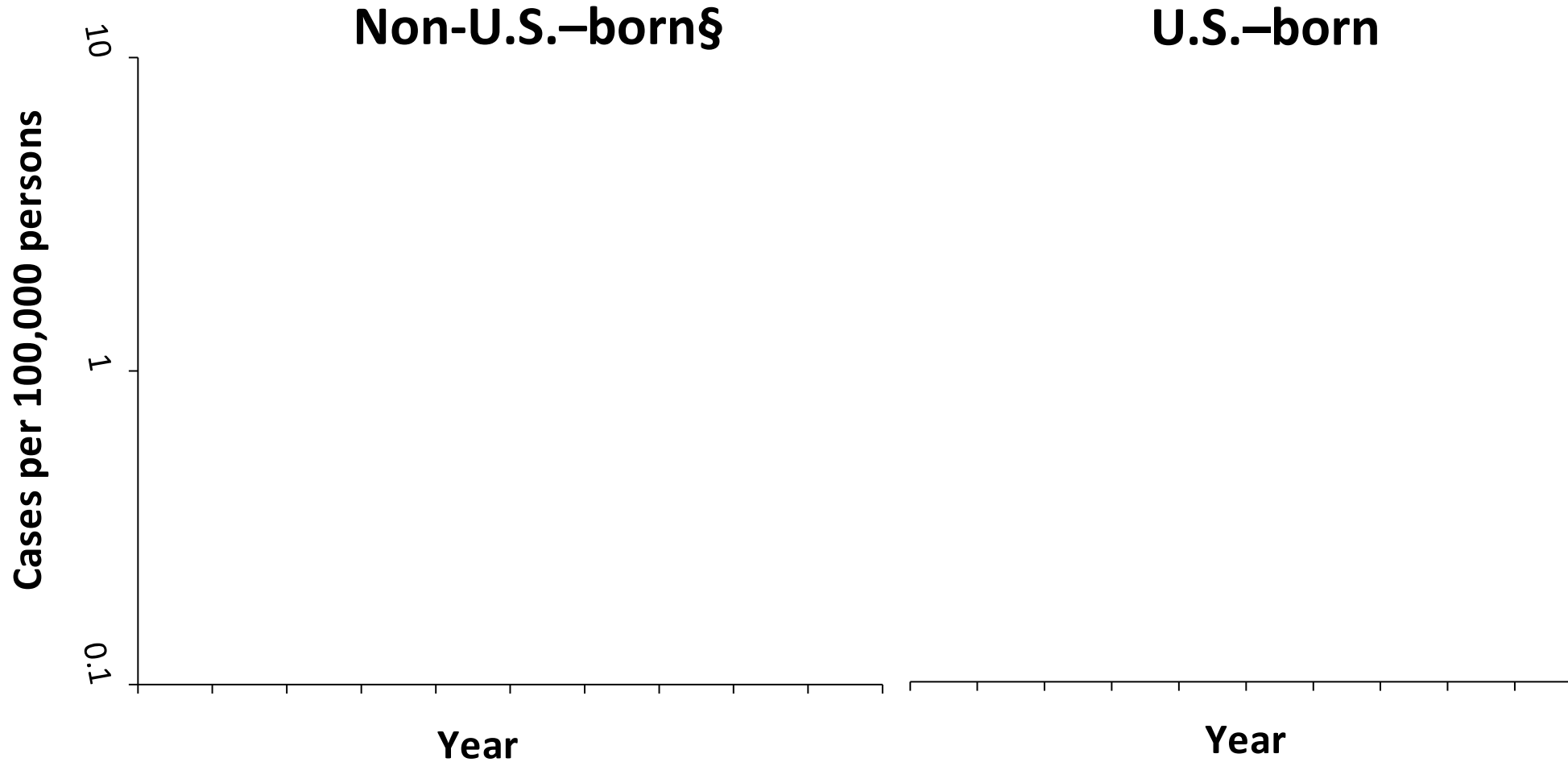


\*Persons born in the United States, certain U.S. territories, or elsewhere to at least one U.S. citizen parent are categorized as U.S.-born. All other persons are categorized as non-U.S.-born.

†Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," 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."



# TB Incidence Rates Among Non-U.S.-Born and U.S.-Born\* Persons by Race/Ethnicity,† United States, 2011–2021



\*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.

†Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," 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."

§Non-U.S.-born American Indian/Alaska Native are not displayed because some years have zero cases, which cannot be displayed in a log-scale graph.

# Percentage\* of TB Cases by Origin† and Race/Ethnicity,§ United States, 2021

**Non-U.S.–born persons**  
(N=5,626)

**U.S.-born persons**  
(N=2,223)

**0%**

\*Percentages are rounded. Percentages of unknowns/missing are <1% and are not displayed in graphs.

†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.

§Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," 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."

# TB Incidence Rates\* by Origin† and Race/Ethnicity,§ United States, 2021

**Non-U.S.–born persons**  
(N=5,626)

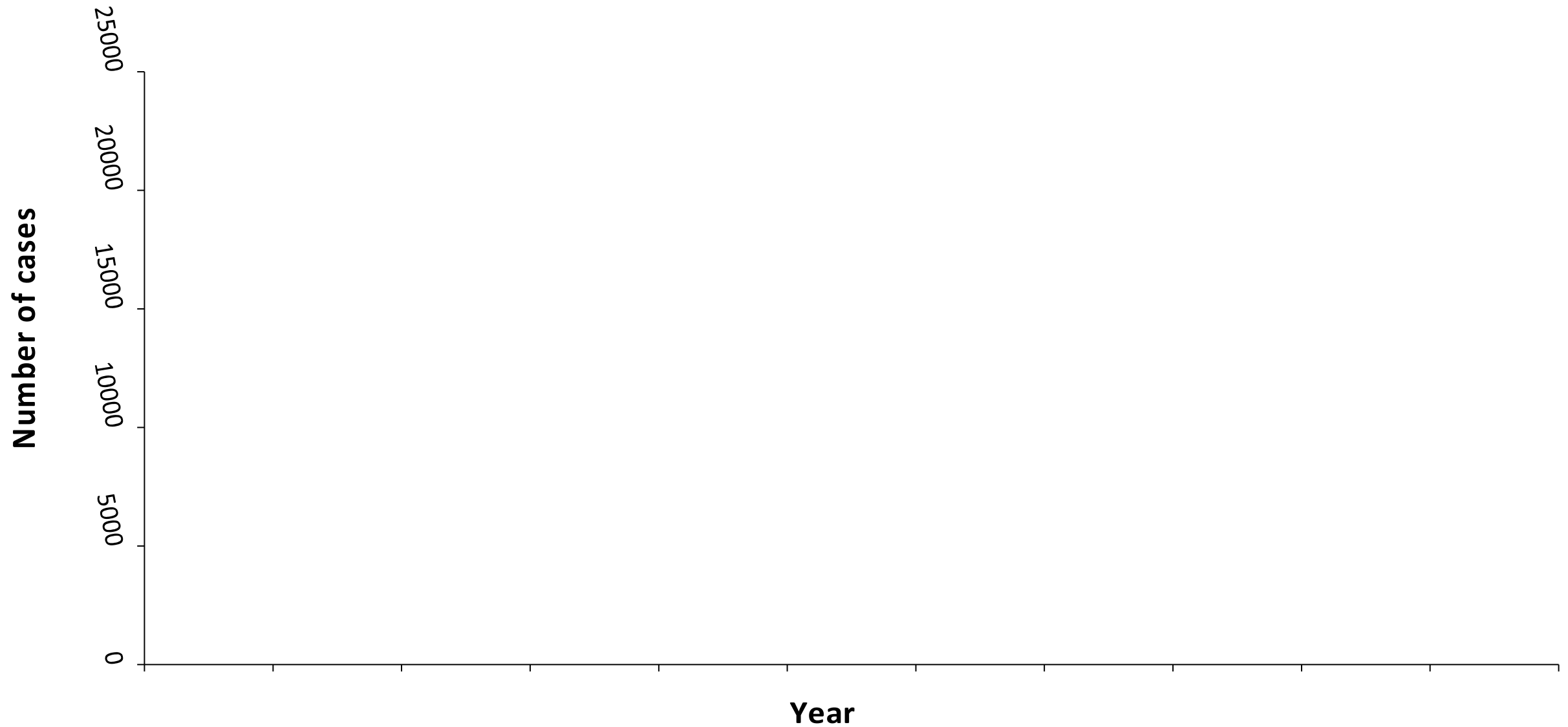
**U.S.-born persons**  
(N=2,223)

\*Cases per 100,000 persons

†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.

§Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," 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."

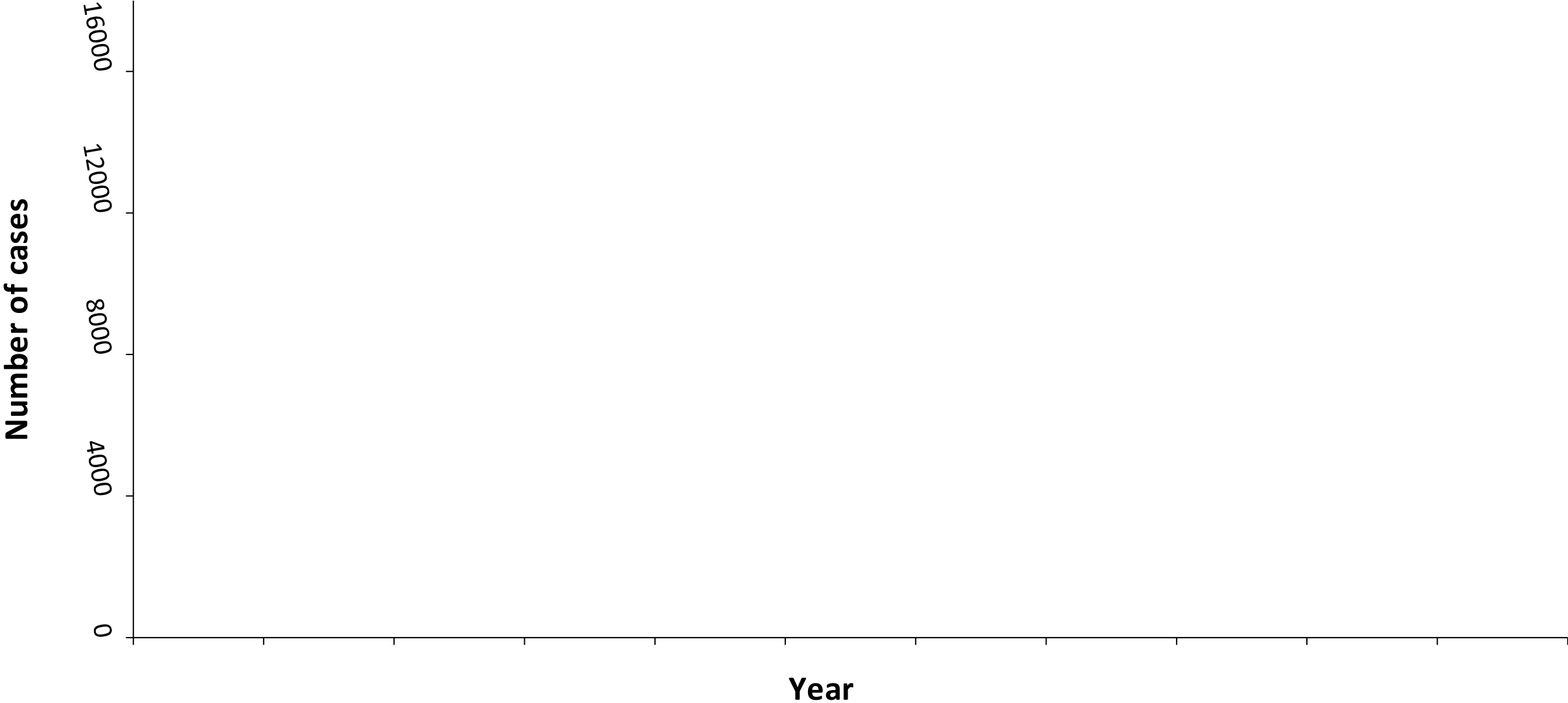
# TB Cases by Age Group, United States, 1993-2021



# TB Incidence Rates by Age Group, United States, 1993–2021

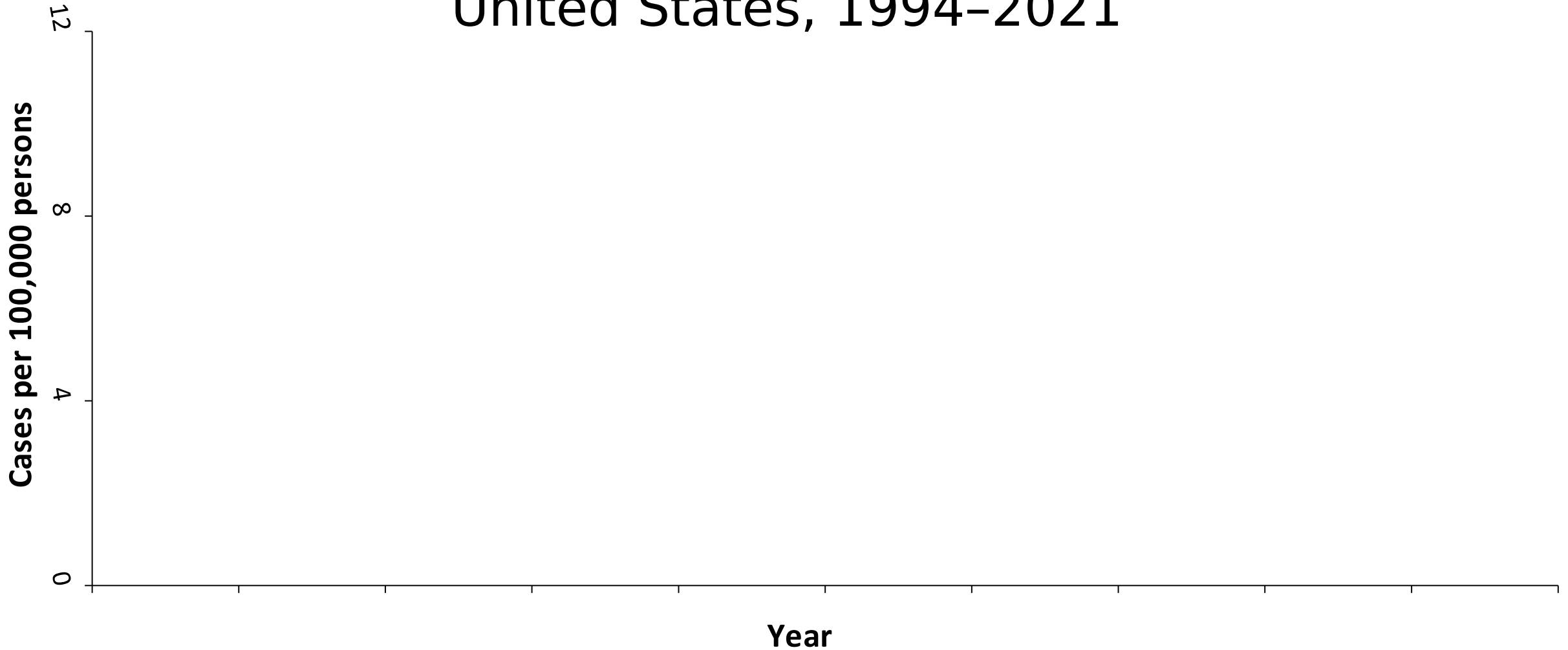


# TB Cases Among U.S.-Born\* Persons by Age Group, United States, 1994-2021



\*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.

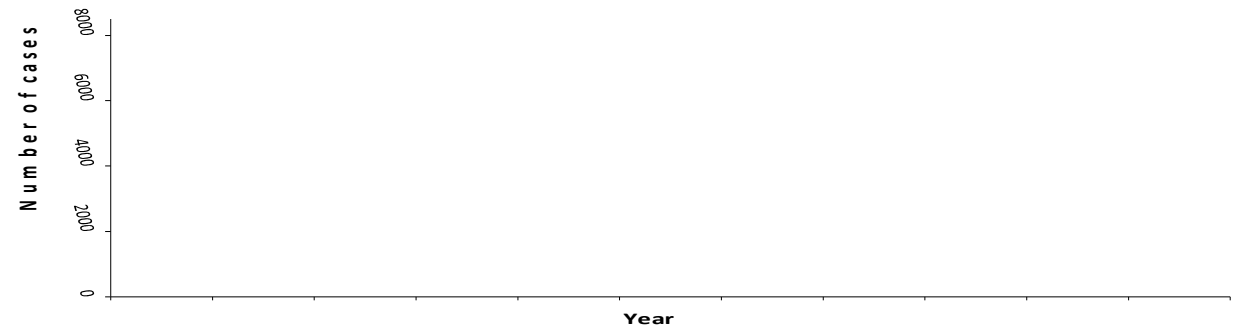
# TB Incidence Rates\* Among U.S.-Born† Persons by Age Group, United States, 1994–2021



\*Population Source: U.S. Census Bureau, Current Population Survey Basic Monthly: <https://data.census.gov/mdat/>

†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.

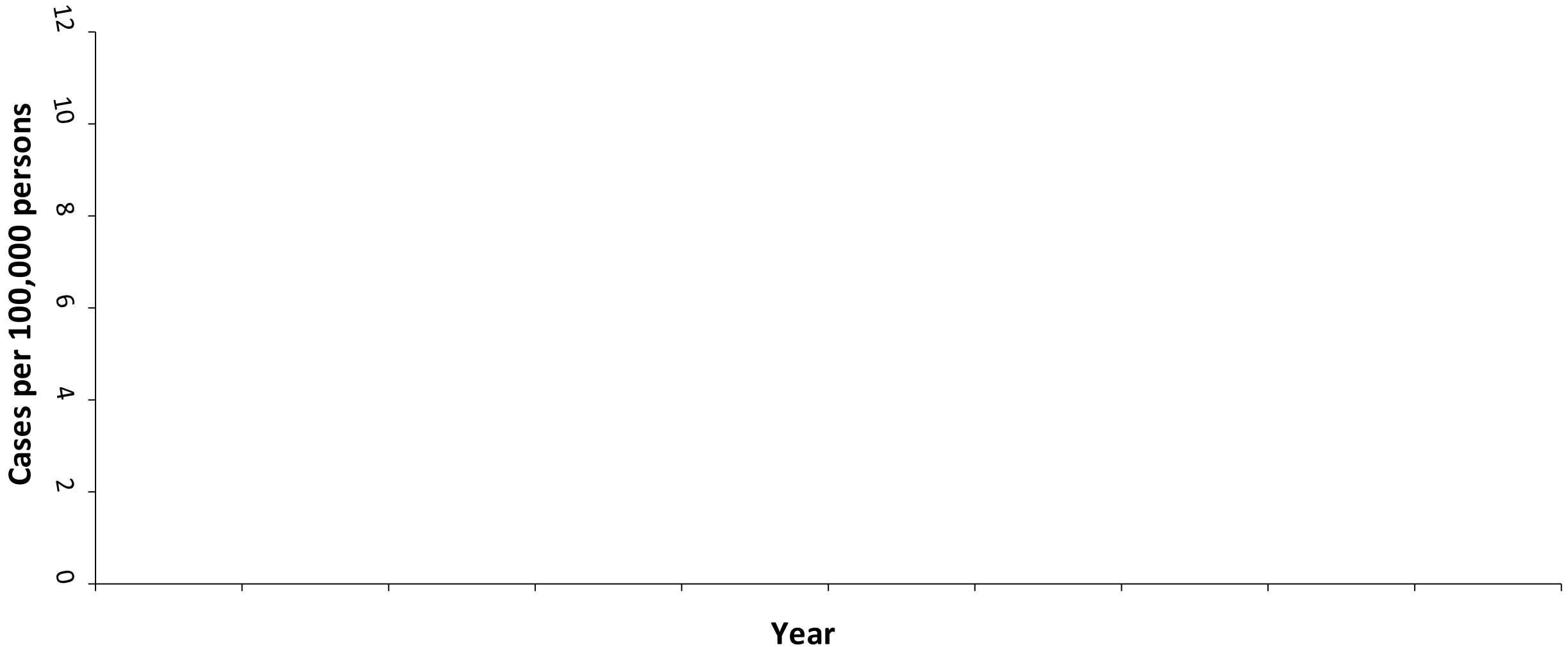
# TB Cases Among Non-U.S.-Born\* Persons by Age Group, United States, 1994–2021



\*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.



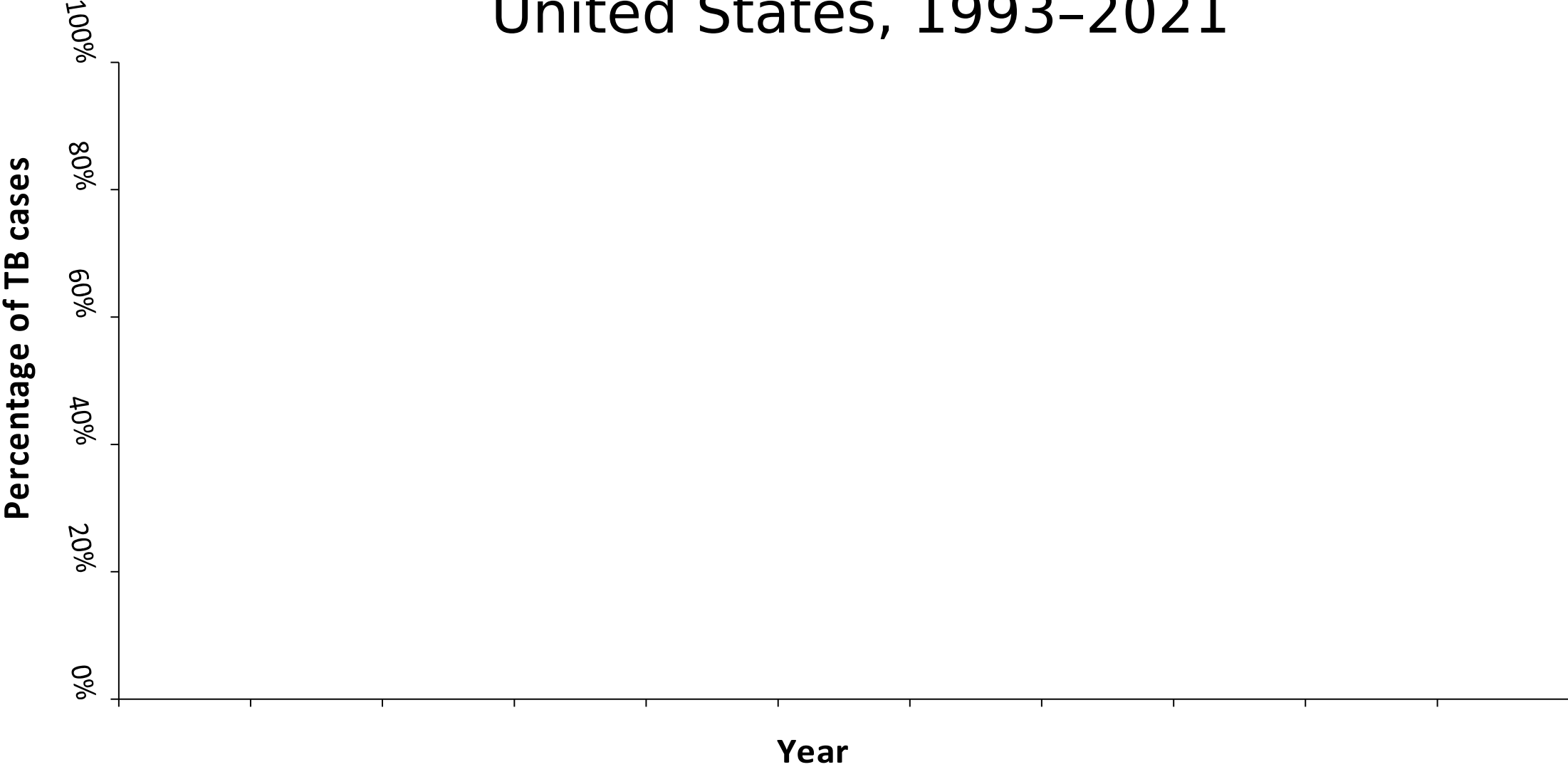
# TB Incidence Rates\* Among Non-U.S.-Born† Persons by Age Group, United States, 1994–2021



\*Population Source: U.S. Census Bureau, Current Population Survey Basic Monthly: <https://data.census.gov/mdat/>

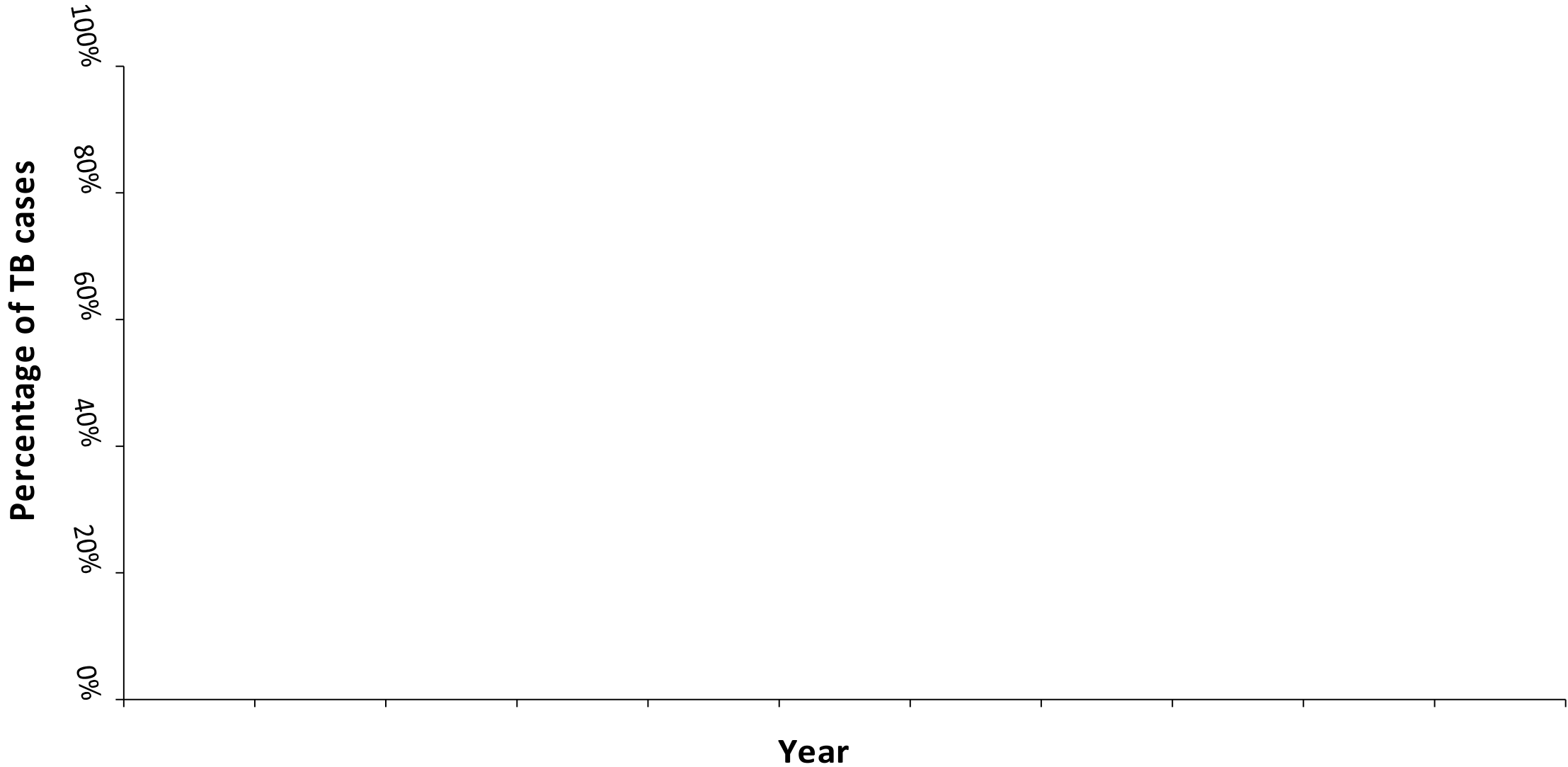
†Persons born in the United States, certain U.S. territories, or elsewhere to at least one U.S. citizen parent are categorized as U.S.-born. All other persons are categorized as non-U.S.-born.

# Percentage of TB Cases by Birth Decade Among U.S.-Born\* Persons, United States, 1993-2021



\*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.

# Percentage of TB Cases by Birth Decade Among Non-U.S.-Born\* Persons, United States, 1993–2021



\*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.

# Percentage of TB Cases by Sex and Age Group, United States, 2021

**Males (N=4,827)**

**Age group**

**Females (N=3,052)**

0–4 years (N=160)

5–14 years (N=157)

15–24 years (N=675)

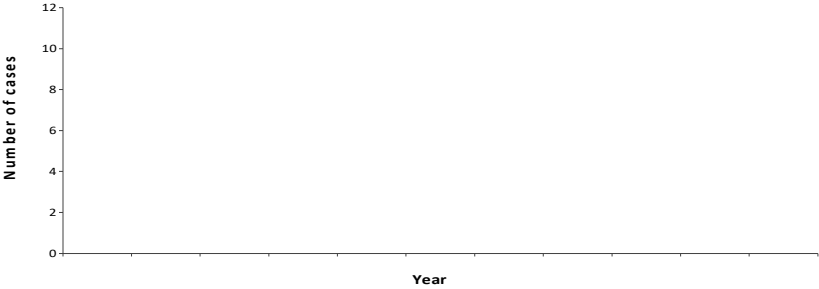
25–44 years (N=2,266)

45–64 years (N=2,409)

≥65 years (N=2,215)

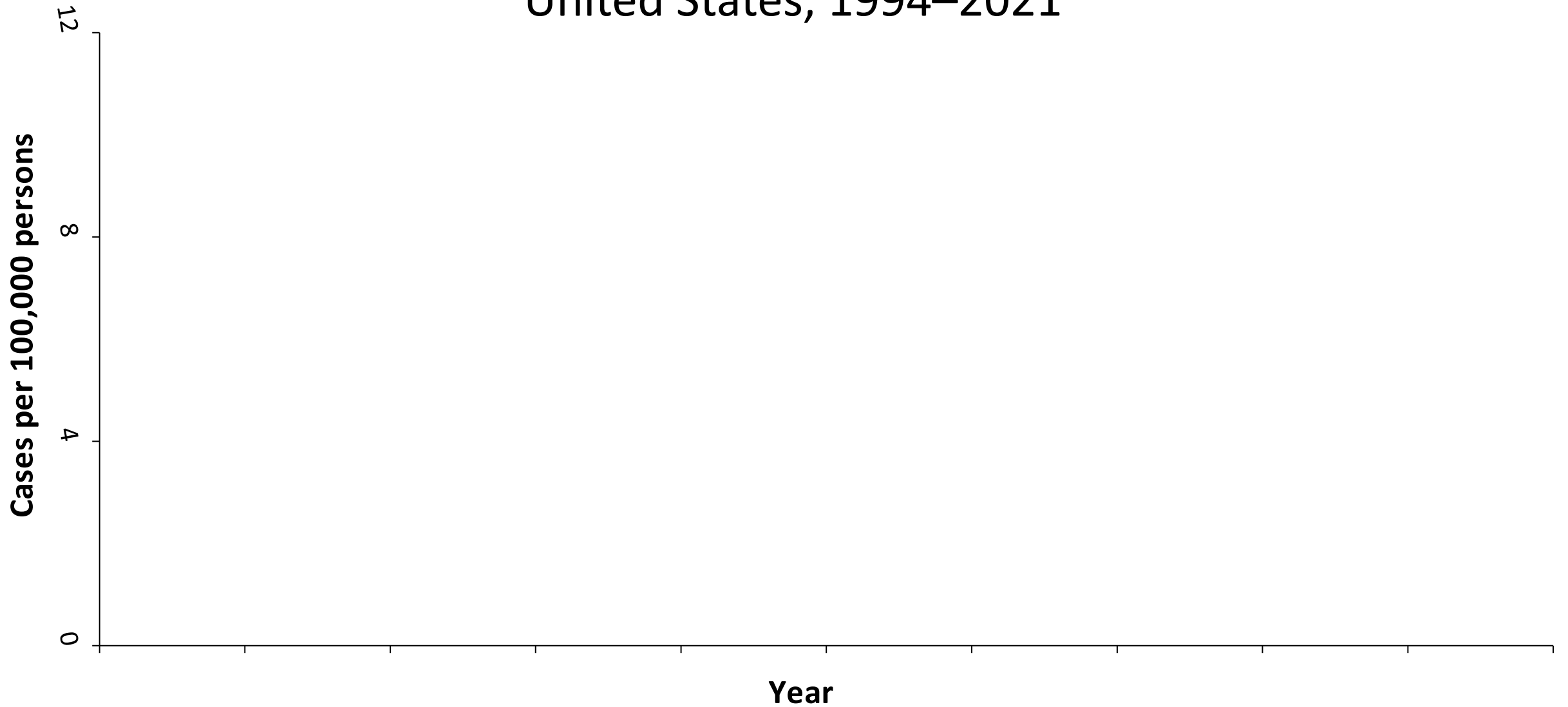


# Pediatric TB Cases by Origin of Birth,\* United States, 1993–2021



\*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.

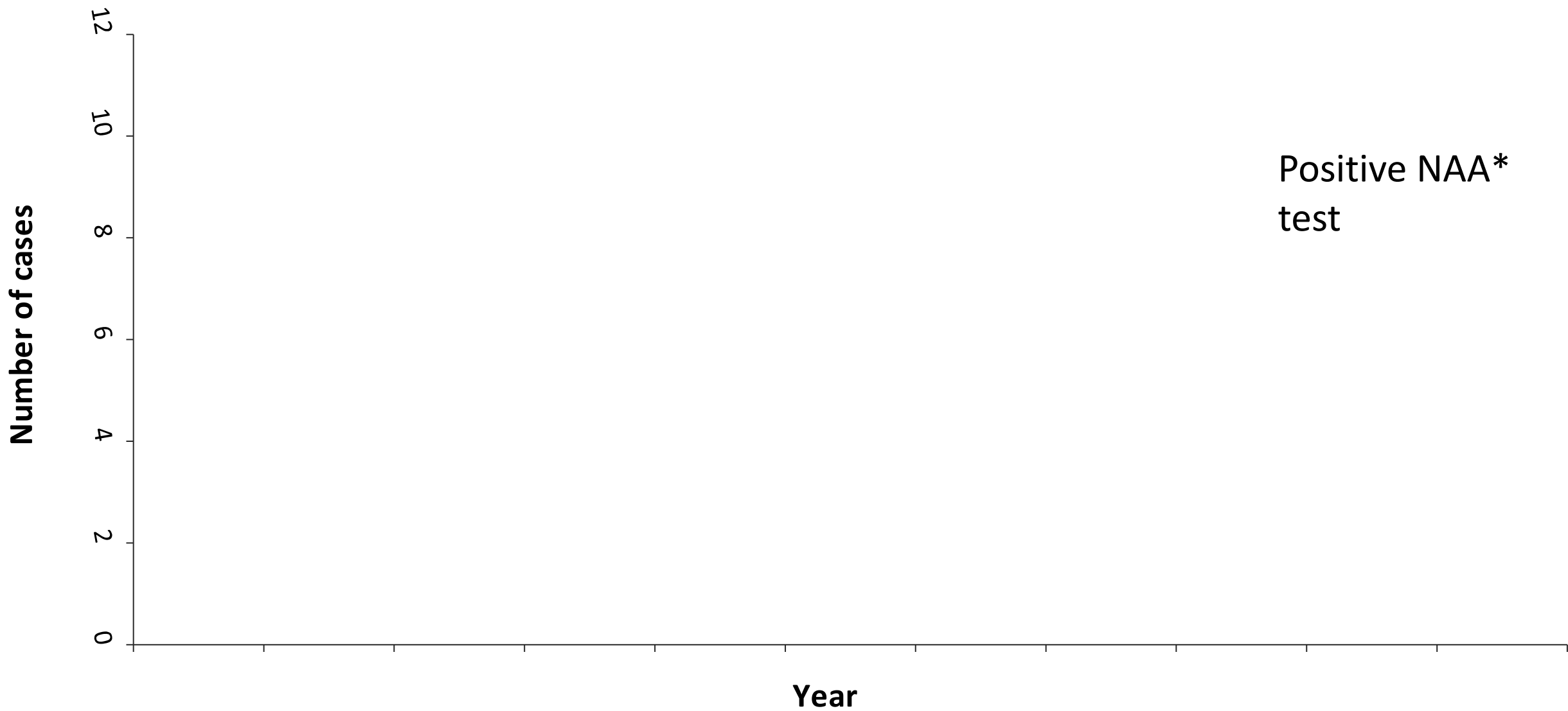
# Pediatric TB Incidence Rates\* by Origin of Birth,† United States, 1994–2021



\*Population Source: U.S. Census Bureau, Current Population Survey Basic Monthly: <https://data.census.gov/mdat/>

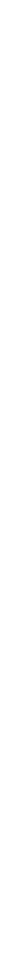
†Persons born in the United States, certain U.S. territories, or elsewhere to at least one U.S. citizen parent are categorized as U.S.-born. All other persons are categorized as non-U.S.-born.

# TB Cases by Case Verification Criteria, United States, 1993–2021



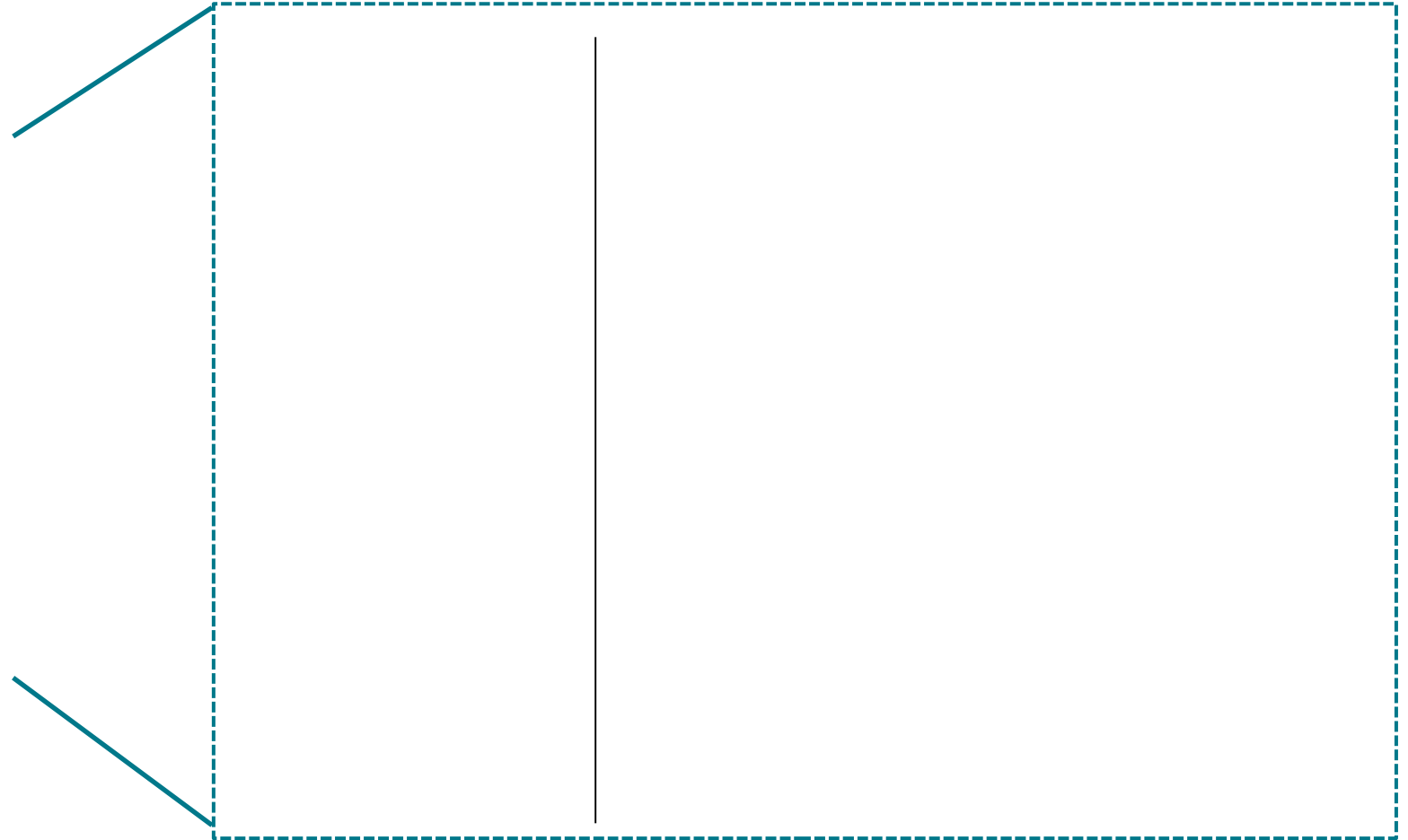
\*NAA=nucleic acid amplification

# Percentage TB Cases by Case Verification Criteria, United States, 2021 (N=7,882)





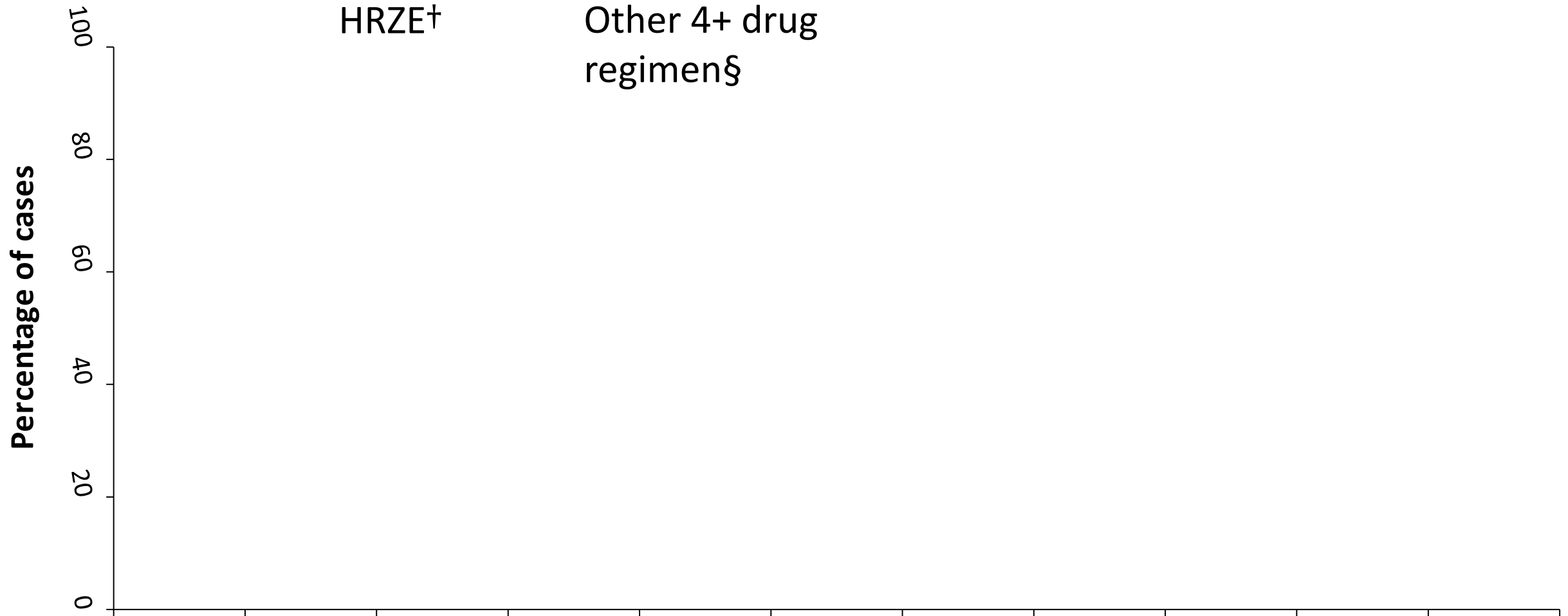
# Percentage of TB Cases by Site of Disease,\* United States, 2021



\*Patients may have more than one disease site but are counted in mutually exclusive categories for surveillance purposes.

†Any pulmonary involvement which includes cases that are pulmonary only and both pulmonary and extrapulmonary.

# Percentage of TB Cases\* by Initial Drug Regimen, United States, 1993–2021



\*Persons alive at diagnosis with initial drug regimen information.

†H, isoniazid; R, rifampin; Z, pyrazinamide; E, ethambutol.

§A drug regimen with at least four drugs, other than HRZE.

Year

# Percentage\* of TB Cases† by Initial Drug Regimen, United States, 2021 (N=7,604)

Other 4+ drug regimen§,  
10%

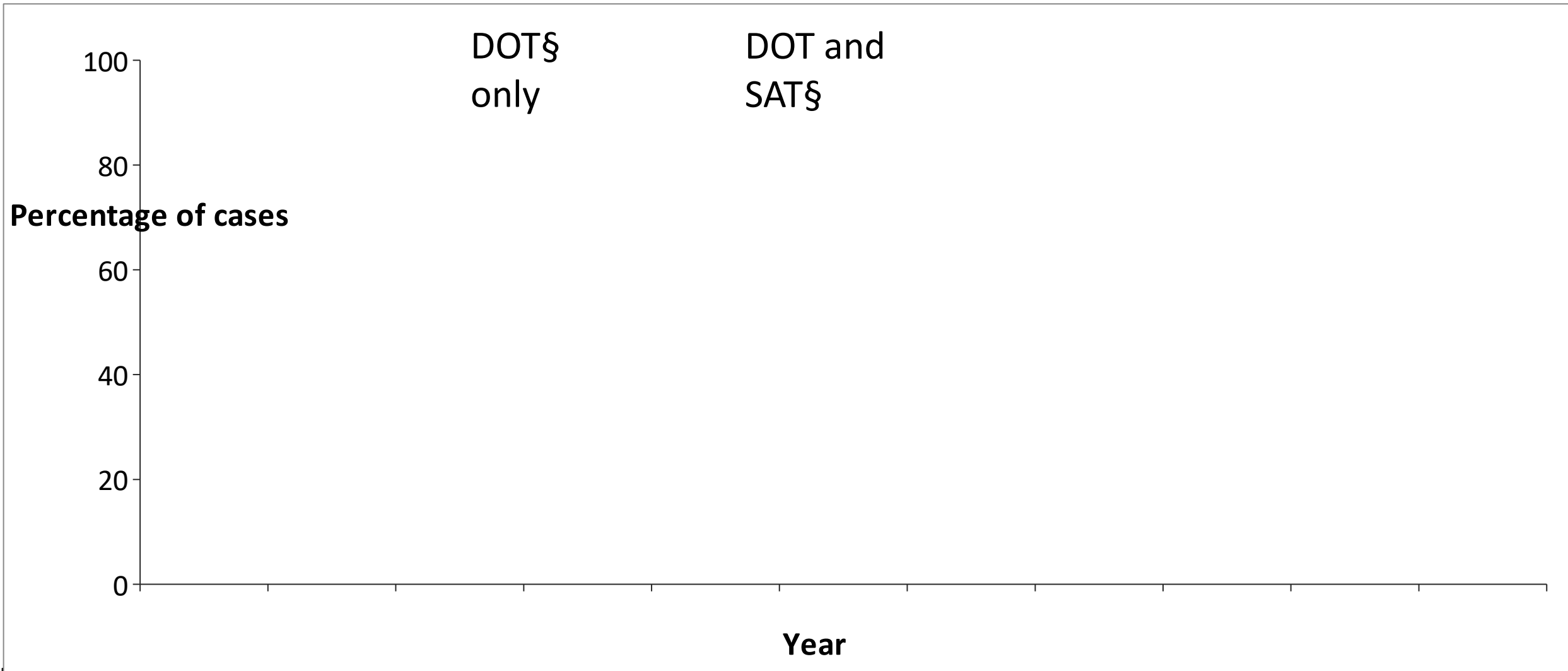
\*Percentages do not total to 100% due to rounding.

†Persons alive at diagnosis with initial drug regimen information.

§A drug regimen with at least four drugs, other than HRZE.

¶H, isoniazid; R, rifampin; Z, pyrazinamide; E, ethambutol.

# Percentage of TB Cases by Mode of Treatment Administration,\* United States, 1993-2019†



\*Persons on an initial drug therapy with at least one drug.

†Most recent year for which data are complete.

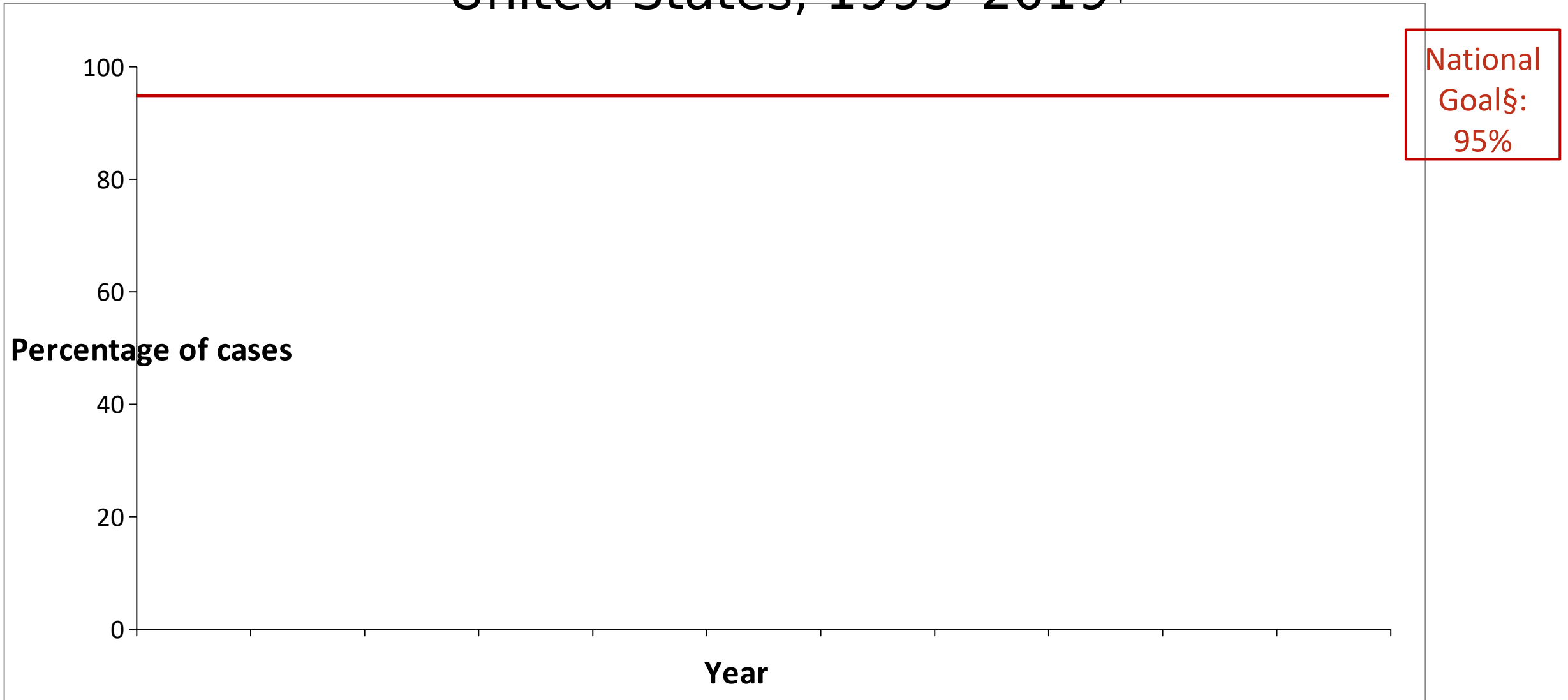
§DOT=directly observed therapy; SAT=self-administered therapy.

# Percentage of TB Cases\* by Mode of Treatment Administration, United States, 2019† (N=8,632)

\*Persons alive at diagnosis with initial drug regimen information

†Most recent year for which data are complete.

# Percentage of TB Cases\* by Completion of TB Therapy, United States, 1993-2019†

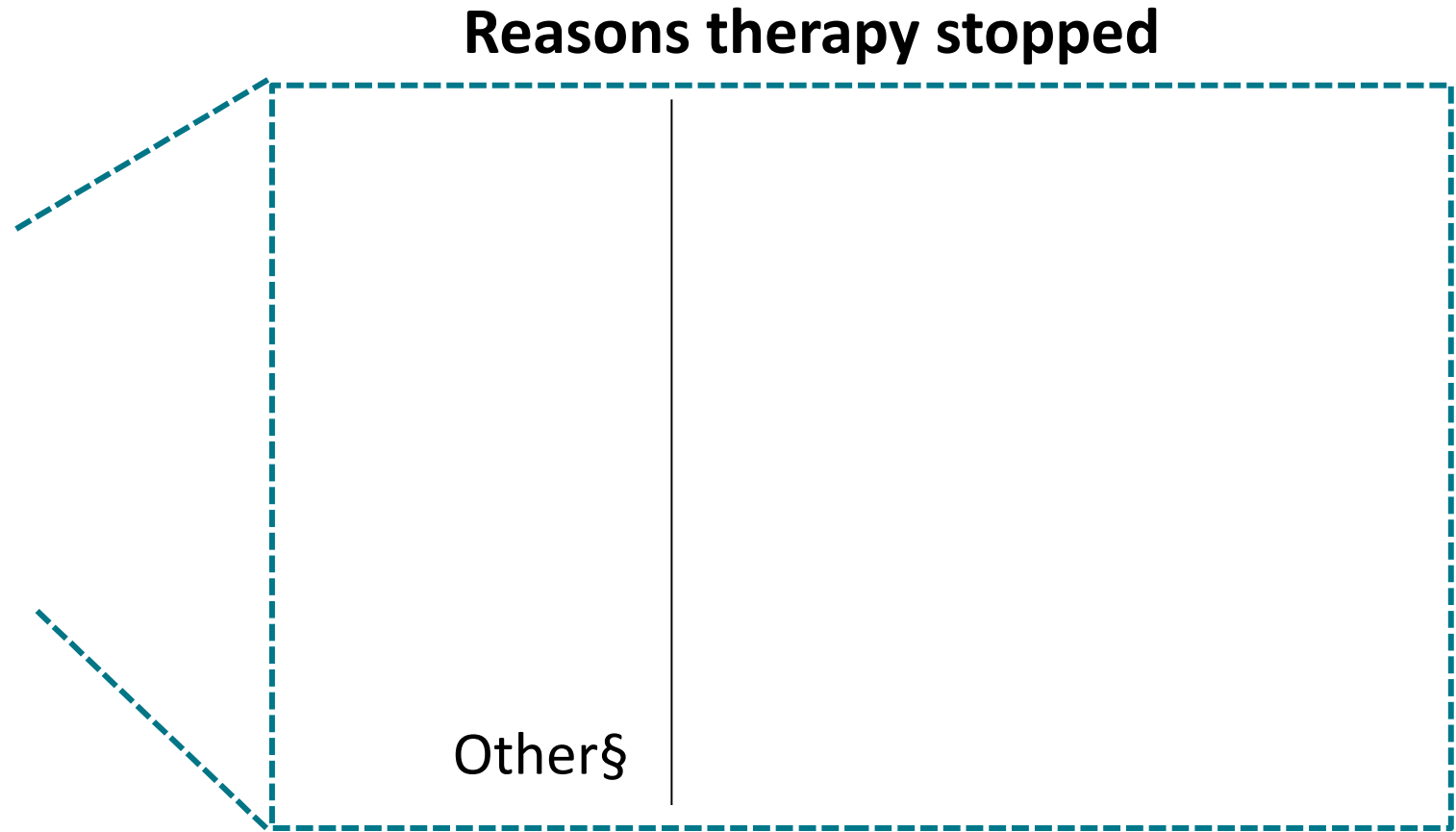


\*Persons alive at diagnosis who started TB therapy and for whom therapy  $\leq 1$  year was indicated.

†Most recent year for which data are complete.

§National goal: for 95% of patients with newly diagnosed TB disease for whom  $\leq 12$  months of treatment is indicated to complete treatment within 12 months.

# Percentage of TB Cases\* by Reason Therapy Stopped, United States, 2019† (N=8,632)

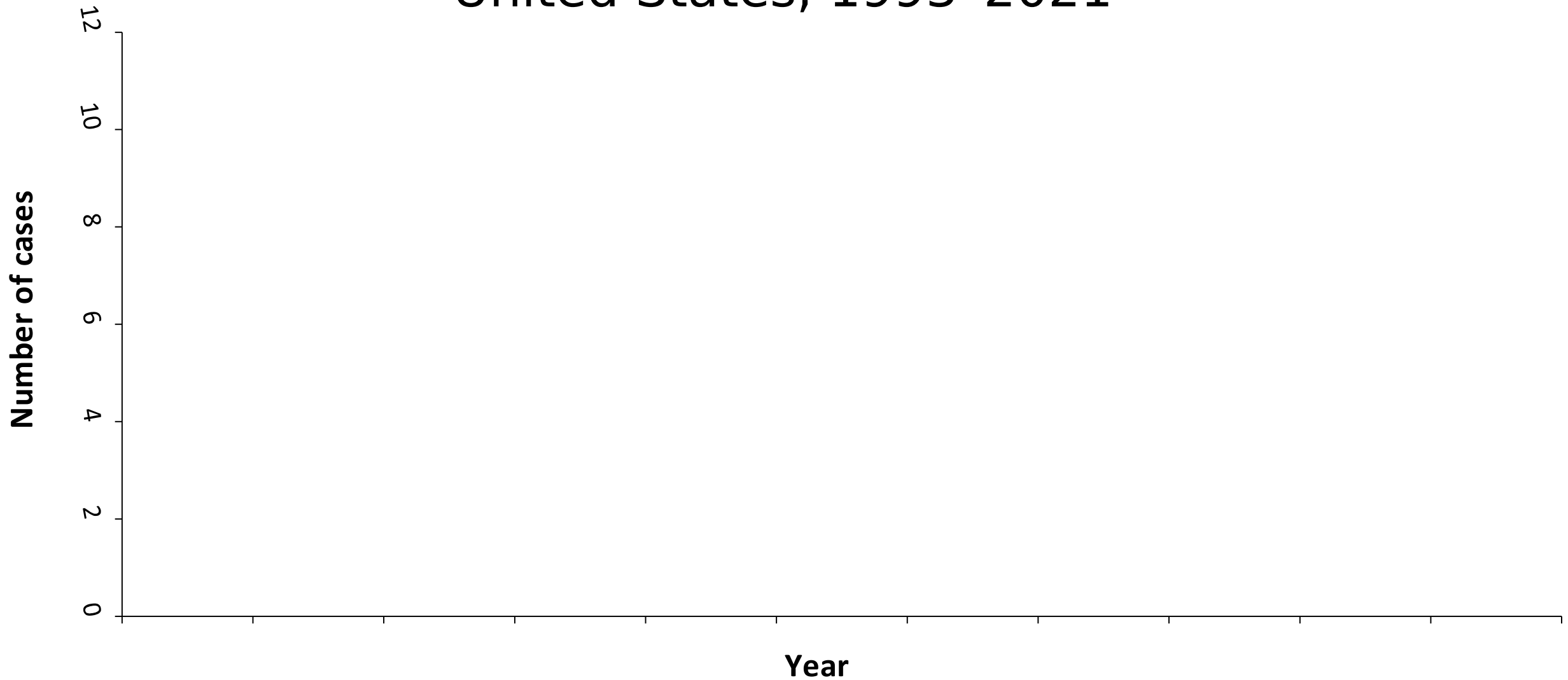


\*Persons alive at diagnosis taking one or more TB drugs.

†Most recent year for which data are complete

§Reason therapy stopped reported as other, unknown, or missing.

# TB Cases Resistant to Isoniazid\* by Origin of Birth,† United States, 1993–2021

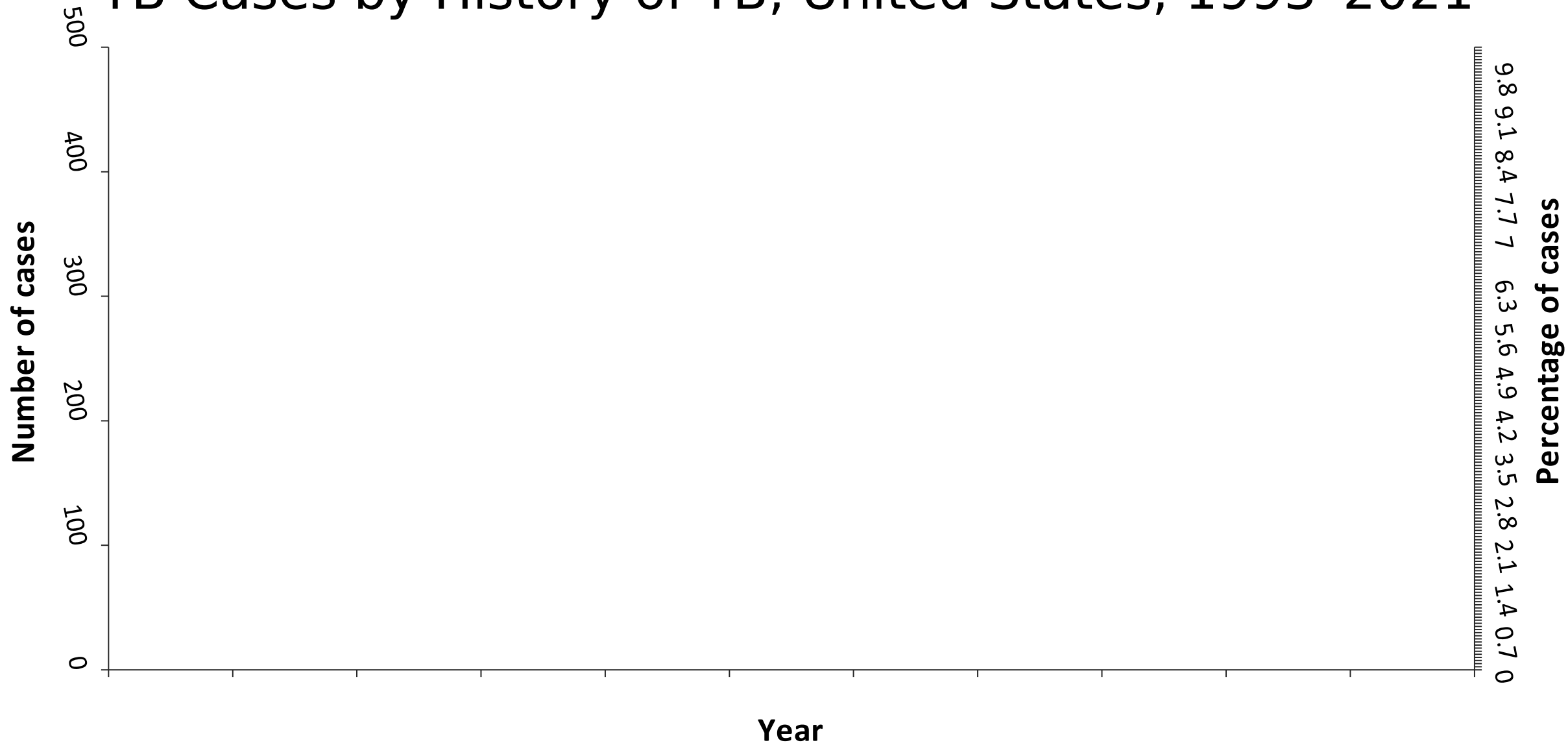


\*Persons with isolates resistant to at least isoniazid among persons with isolates tested with at least isoniazid and rifampin.

†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.

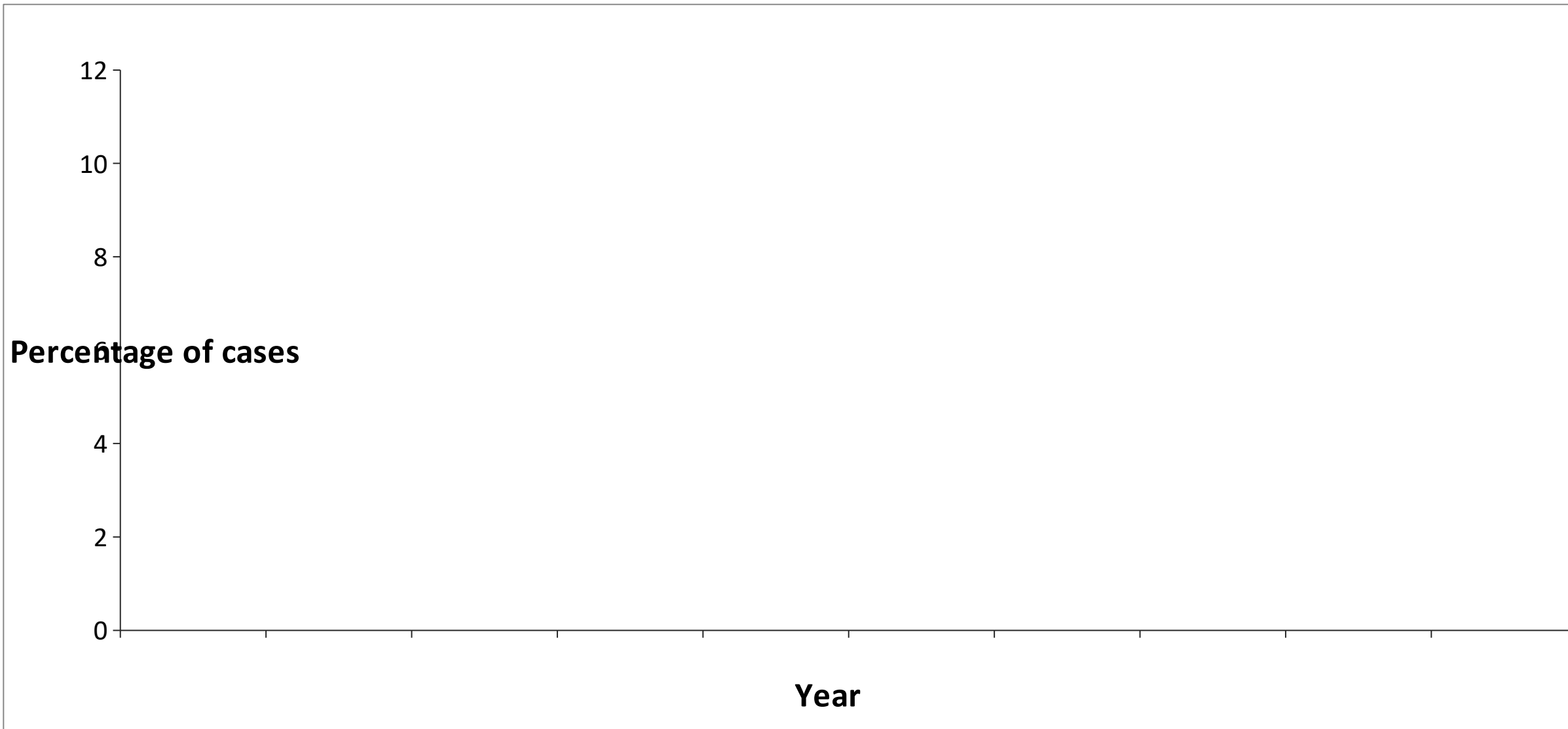


# Number and Percentage of Multidrug-Resistant (MDR)\* TB Cases by History of TB, United States, 1993–2021



\*Resistant to at least isoniazid and rifampin.

# Percentage of HIV Coinfection by Age Among Persons with TB,\* United States, 2011-2021



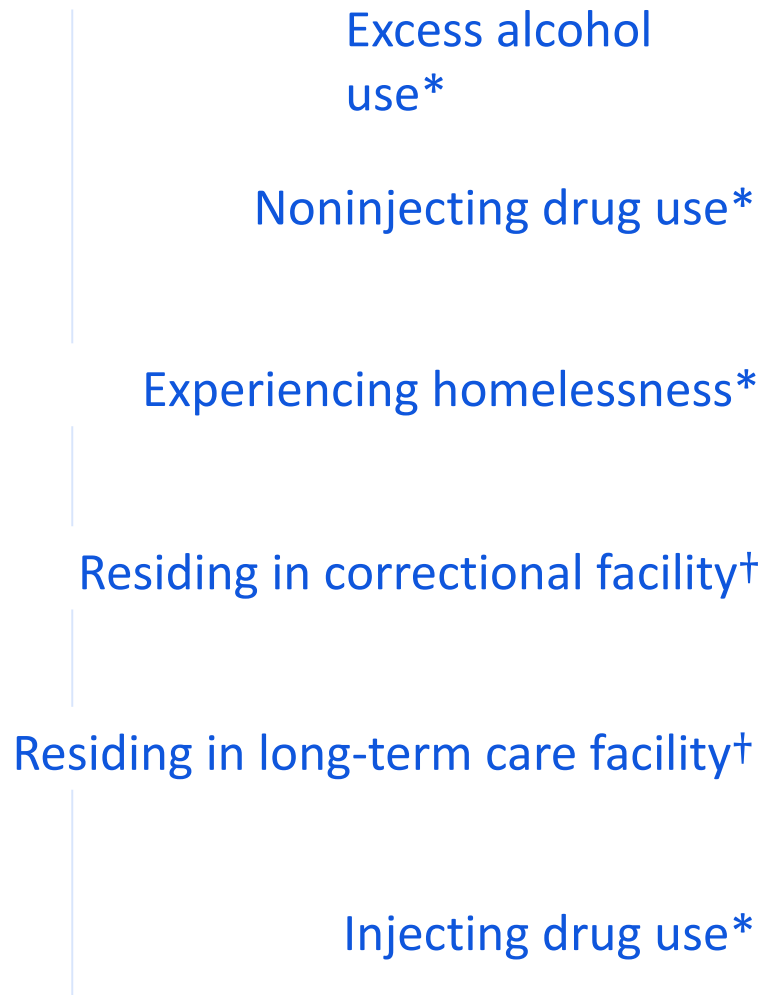
\*Persons alive at diagnosis with HIV test results

# Percentage of Selected Risk Factors Among Persons with TB by Origin of Birth,\* United States, 2021



\*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.

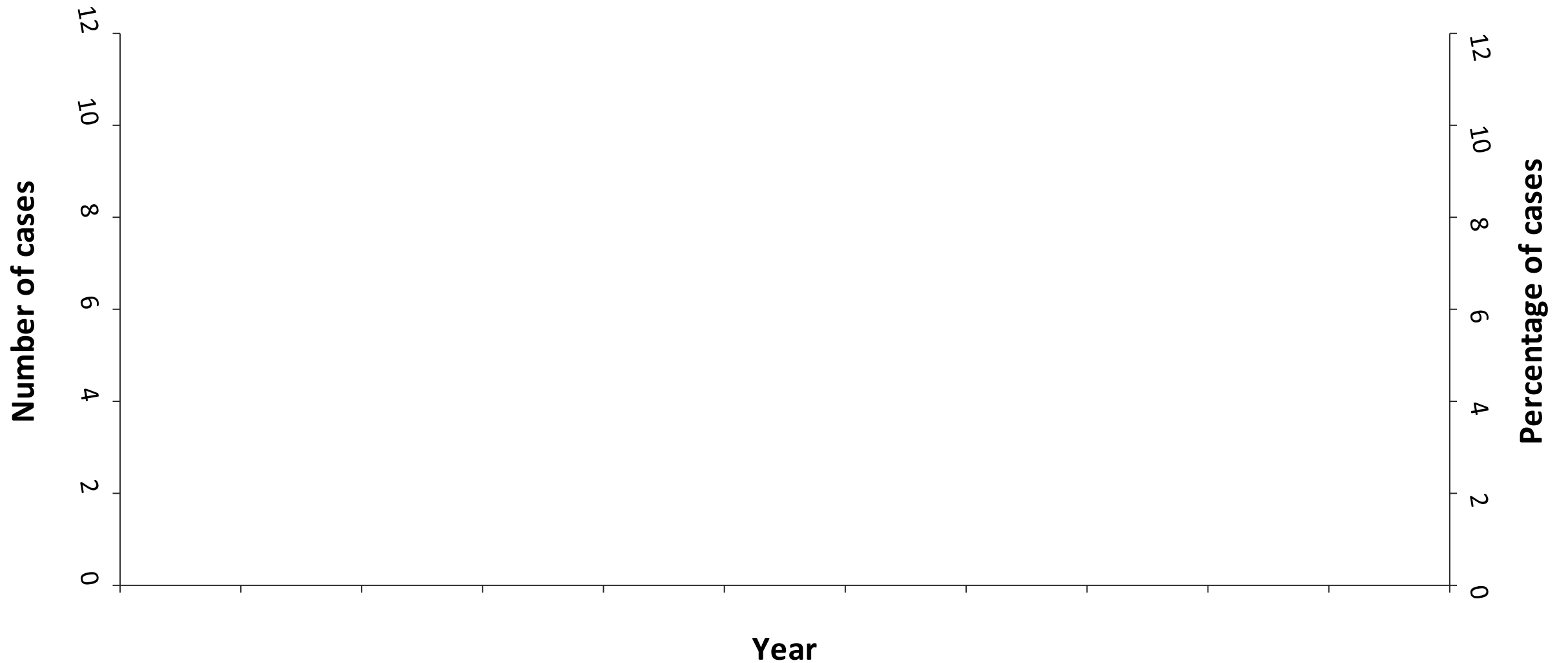
# Percentage of Social and Behavioral Risk Factors Among Persons Aged $\geq 15$ Years with TB, United States, 2021



\*Within past 12 months prior to TB diagnosis

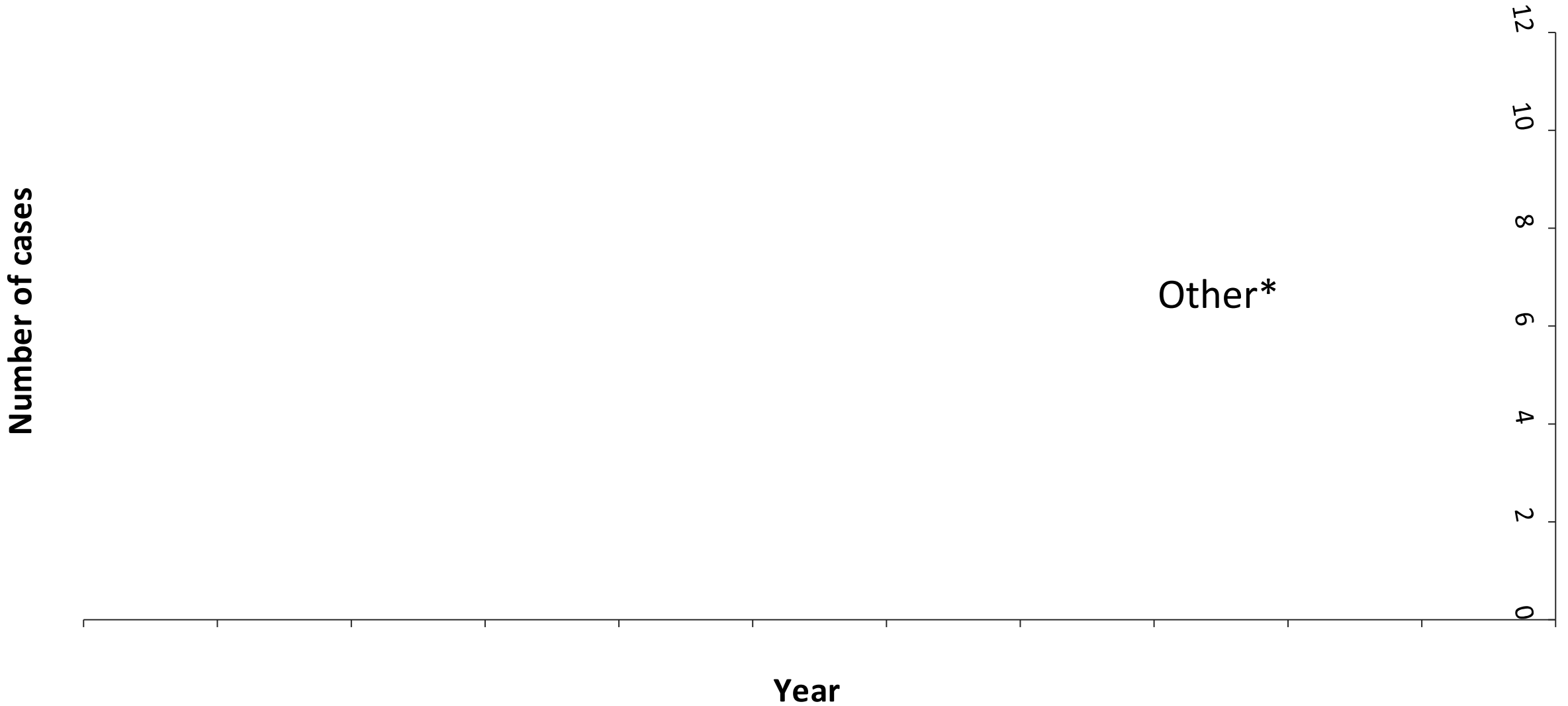
†At the time of TB diagnosis

# Number and Percentage of Correctional Facility Residents Among Persons Aged $\geq 15$ Years with TB, United States, 1993-2021



\*Correctional facilities include federal prisons, state prisons, local jails, juvenile correctional facilities, other correctional facilities, and unknown or missing types of correctional facility.

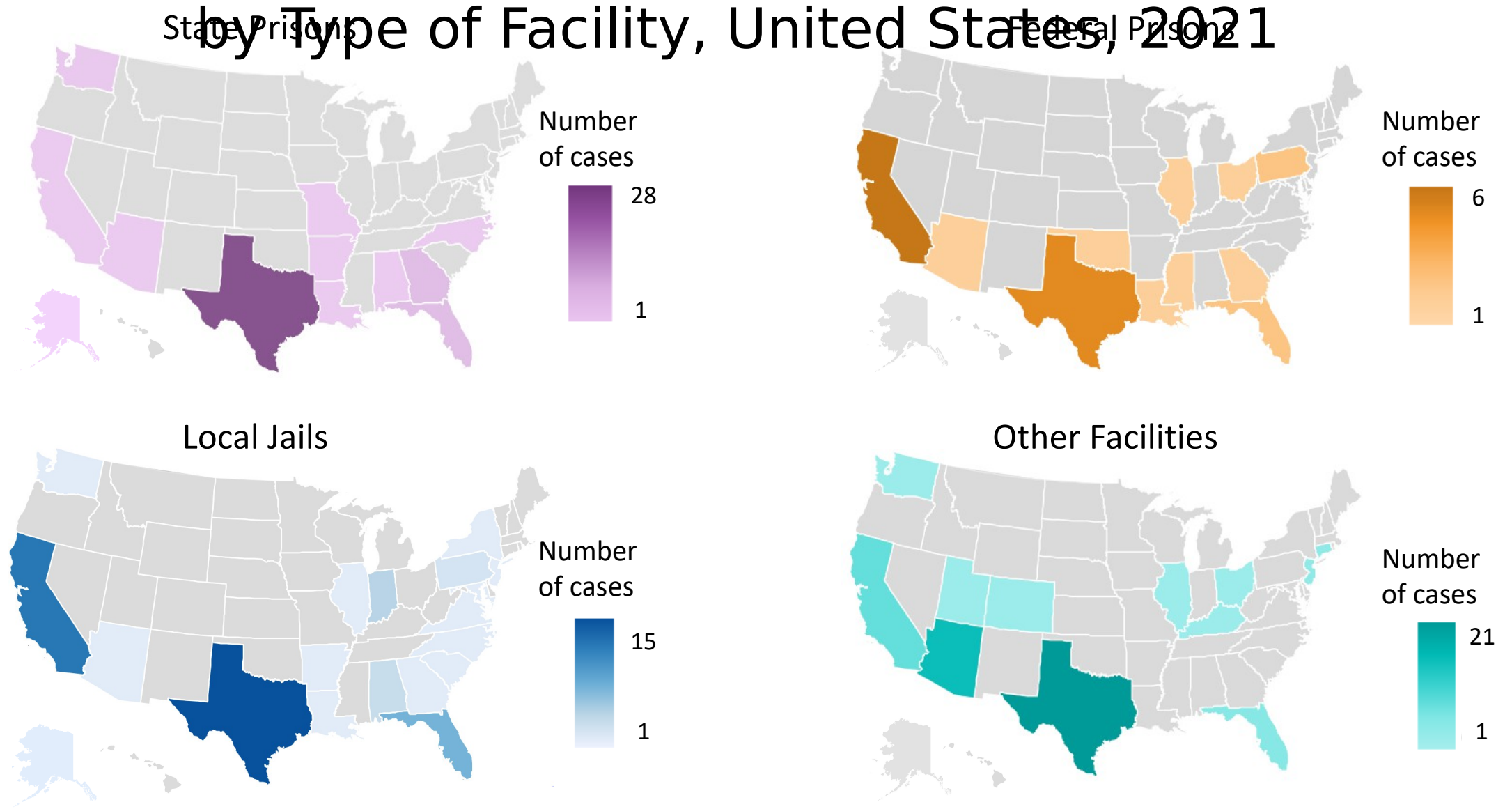
# TB Cases Among Correctional Facility Residents Aged $\geq 15$ Years by Type of Facility, United States, 1993–2021



\*Includes Immigration and Customs Enforcement (ICE) detention centers, Indian reservation facilities (e.g., tribal jails), military stockades and jails, federal park police facilities, police lockups (temporary holding facilities for persons who have not been formally charged in court), or other correctional facilities that are not included in the other specific choices

# TB Cases Among Correctional Facility Residents Aged $\geq 15$ Years

## by Type of Facility, United States, 2021

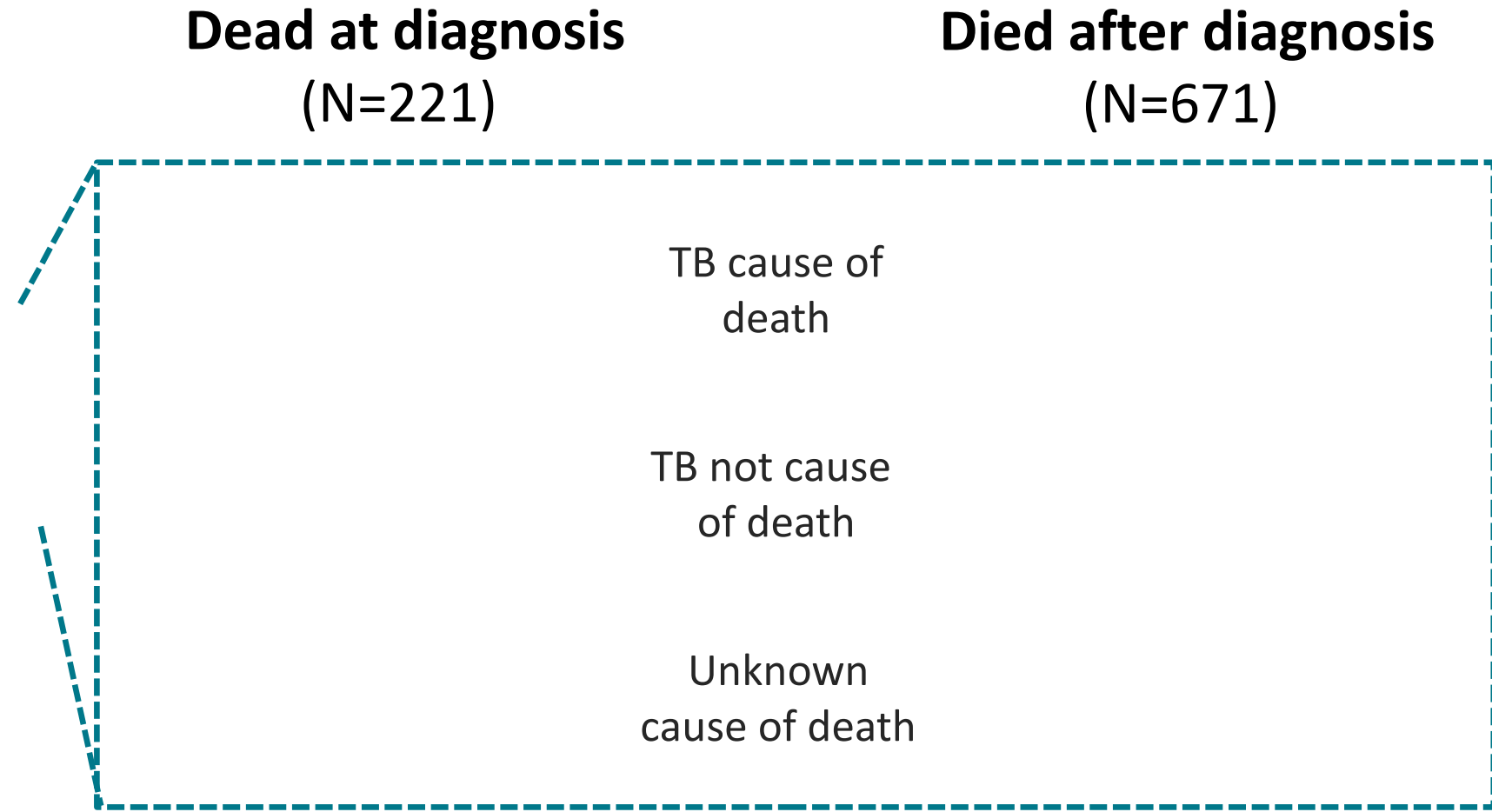


# Percentage of TB Cases by Primary Occupation\* Among Persons Aged $\geq 15$ Years, United States, 2021 (N=5,795)

\*Within past 12 months prior to TB diagnosis.



# Percentage of TB Cases by Status and Cause of Death, United States, 2019\* (N=8,898)



\*Most recent year for which data are complete

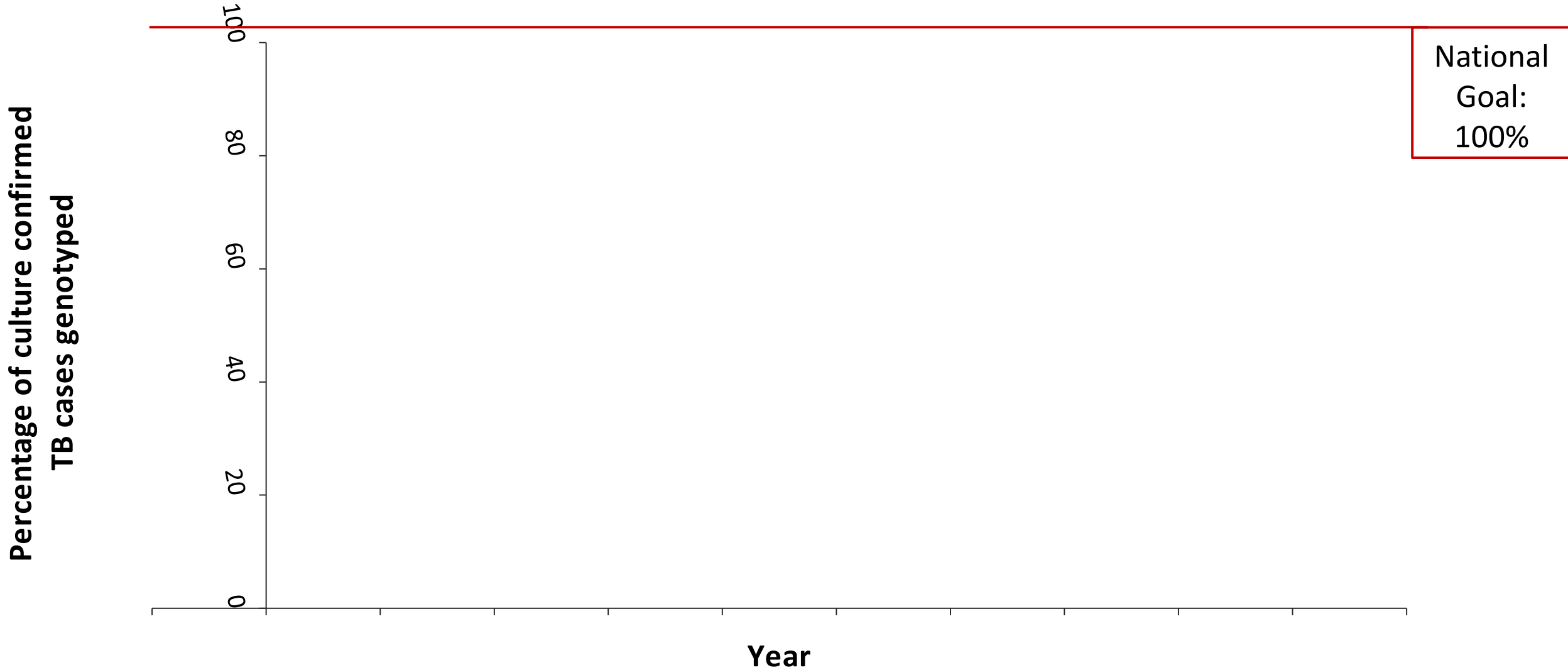
# Sputum Culture Conversions, United States, 2019\* (N=5,047)

**Reasons sputum culture  
conversion not documented**



\*Most recent year for which data are complete

# National TB Genotyping Surveillance Coverage,\* United States, 2004-2021



\*Culture-confirmed TB cases with at least one genotyped isolate.

# Definitions for TB Genotyping in the United States

**Spoligotype:**  
**000000000003771**

**Initial 12-locus MIRU-VNTR:\***  
**223325173533**

Sequentially assigned  
for each unique  
spoligotype and  
initial 12-locus MIRU-  
VNTR combination

**PCRTyping:**  
**PCR00002**

+

**Additional 12-locus MIRU-  
VNTR (MIRU2):†**  
**444534423428**

Sequentially assigned for  
each unique spoligotype  
and 24-locus MIRU-VNTR  
combination

**GENTyping:**  
**G00010**

\* MIRU-VNTR=Mycobacterial interspersed repetitive unit-variable number tandem repeat.

† The complete set of 24 loci is referred to as 24-locus MIRU-VNTR and is used for U.S. GENTyping designations.

# Number of County-based TB Genotype Clusters\* by Cluster Size, United States, 2019–2021



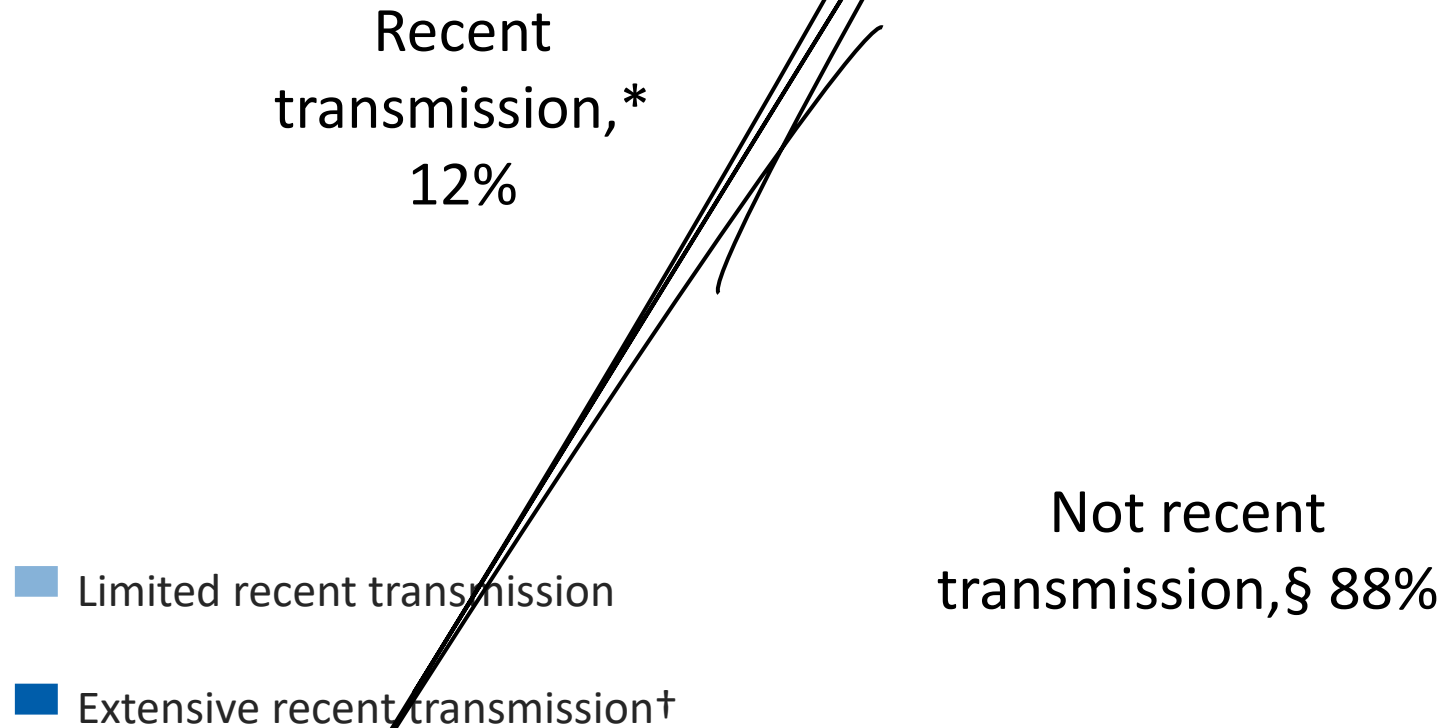
\* Clusters have two or more cases with matching spoligotype and 24-locus locus mycobacterial interspersed repetitive unit-variable number tandem repeat type (GENType) within a county during the specified 3-year time period.

# TB Genotype Clusters by TB GIMS\* Alert Levels,† United States, 2019–2021 (N=1,241)

\* TB GIMS=Tuberculosis Genotyping Information Management System

† Alert levels are based on a log-likelihood ratio, which calculates the geographical concentration of a genotype in a county compared to the rest of the country during a 3-year period. TB GIMS generates alert level notifications based on this statistic: “No alert” is indicated if LLR is between 0–<5, “medium” is for LLR of 5–<10 and “high” alert is for clusters with LLR  $\geq 10$ .

# Genotyped TB Cases Estimated to be Attributed to Recent Transmission, United States, 2020–2021 (N=11,404)

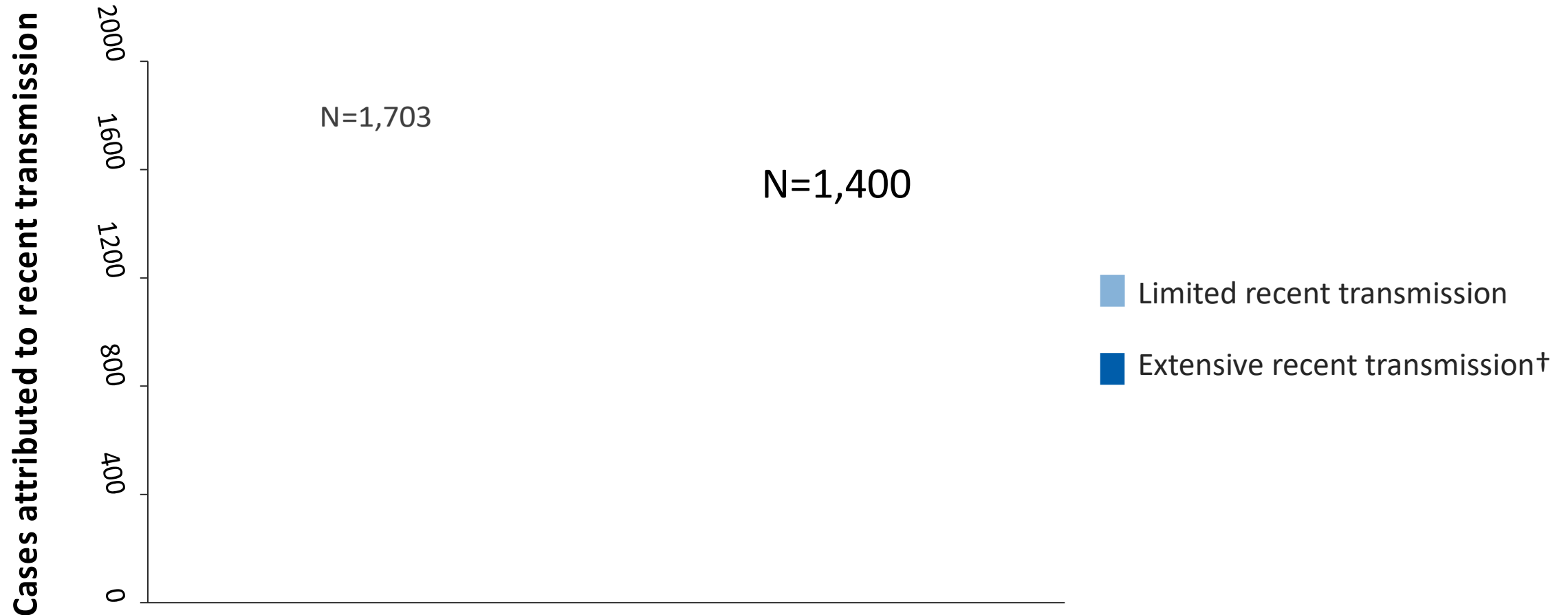


\* A TB case is designated as attributed to recent transmission if a plausible source case can be identified in a person who i) has the same *M. tuberculosis* genotype, ii) has an infectious form of TB disease, iii) resides within 10 miles of the TB case, iv) is 10 years of age or older, and v) was diagnosed within 2 years before the TB case.

† A TB case is designated as attributed to extensive recent transmission when the criteria above for recent transmission are met, and furthermore the case belongs to a plausible transmission chain of six or more cases. Otherwise, the case is designated as attributed to limited recent transmission.

§ Cases not attributed to recent transmission may be misclassified in children <5 years old or indeterminate in persons with a recent U.S. arrival due to limitations of the plausible-source case method.

# Genotyped Cases Estimated to be Attributed to Limited and Extensive Recent Transmission,\* United States, 2018–2021



\* A TB case is designated as attributed to recent transmission if a plausible source case can be identified in a person who i) has the same *M. tuberculosis* genotype, ii) has an infectious form of TB disease, iii) resides within 10 miles of the TB case, iv) is 10 years of age or older, and v) was diagnosed within 2 years before the TB case.

† A TB case is designated as attributed to extensive recent transmission when the criteria above for recent transmission are met, and furthermore the case belongs to a plausible transmission chain of six or more cases. Otherwise, the case is designated as attributed to limited recent transmission.



# Percentages of TB Cases Estimated to be Attributed and Not Attributed to Recent Transmission\* by Origin of Birth,† 2020–2021

**Non-U.S.–born**

**U.S.-born**

Recent transmission

Recent transmission

Not recent transmission,§  
92%

Not recent transmission,§

\* Cases with unknown origin of birth not shown (n=40).

† A TB case is designated as attributed to recent transmission if a plausible source case can be identified in a person who i) has the same *M. tuberculosis* genotype, ii) has an infectious form of TB disease, iii) resides within 10 miles of the TB case, iv) is 10 years of age or older, and v) was diagnosed within 2 years before the TB case.

§ Cases not attributed to recent transmission may be misclassified in children <5 years old or indeterminate in persons with a recent U.S. arrival due to limitations of the plausible-source case method.

# Percentage of TB Cases Estimated to be Attributed to Recent Transmission\* by Race/Ethnicity,† United States, 2018–2021

2018–2019

2020–2021

\*A TB case is designated as attributed to recent transmission if a plausible source case can be identified in a person who i) has the same *M. tuberculosis* genotype, ii) has an infectious form of TB disease, iii) resides within 10 miles of the TB case, iv) is 10 years of age or older, and v) was diagnosed within 2 years before the TB case.

†Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," 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."

# Percentage of TB Cases Estimated to be Attributed to Extensive Recent Transmission\* by Race/Ethnicity,† United States, 2018–2021 2020–2021

\*A TB case is attributed to extensive recent transmission when the criteria for recent transmission are met and furthermore the case belongs to plausible transmission chain of 6 or more cases.  
†Persons who identified as Hispanic or Latino were categorized as "Hispanic or Latino," 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."

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

