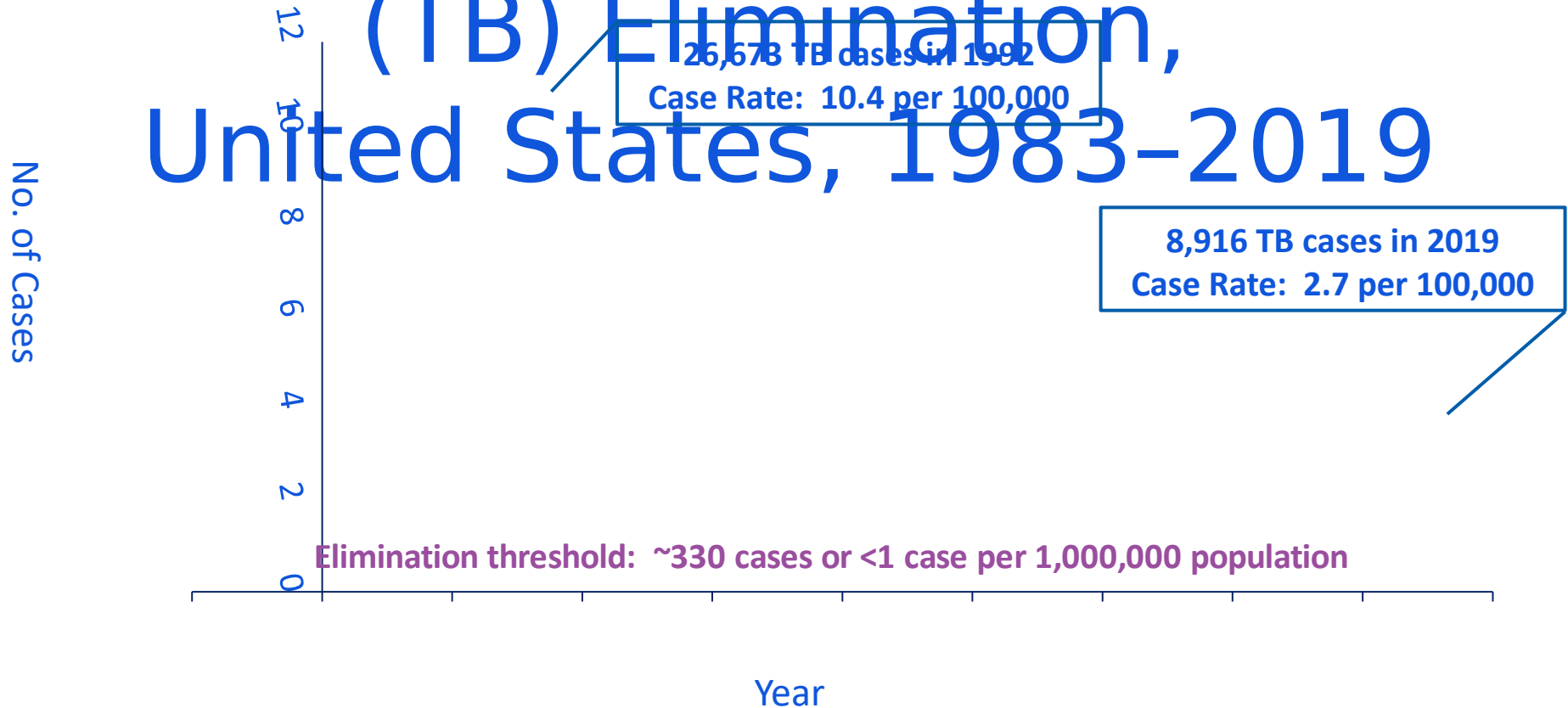


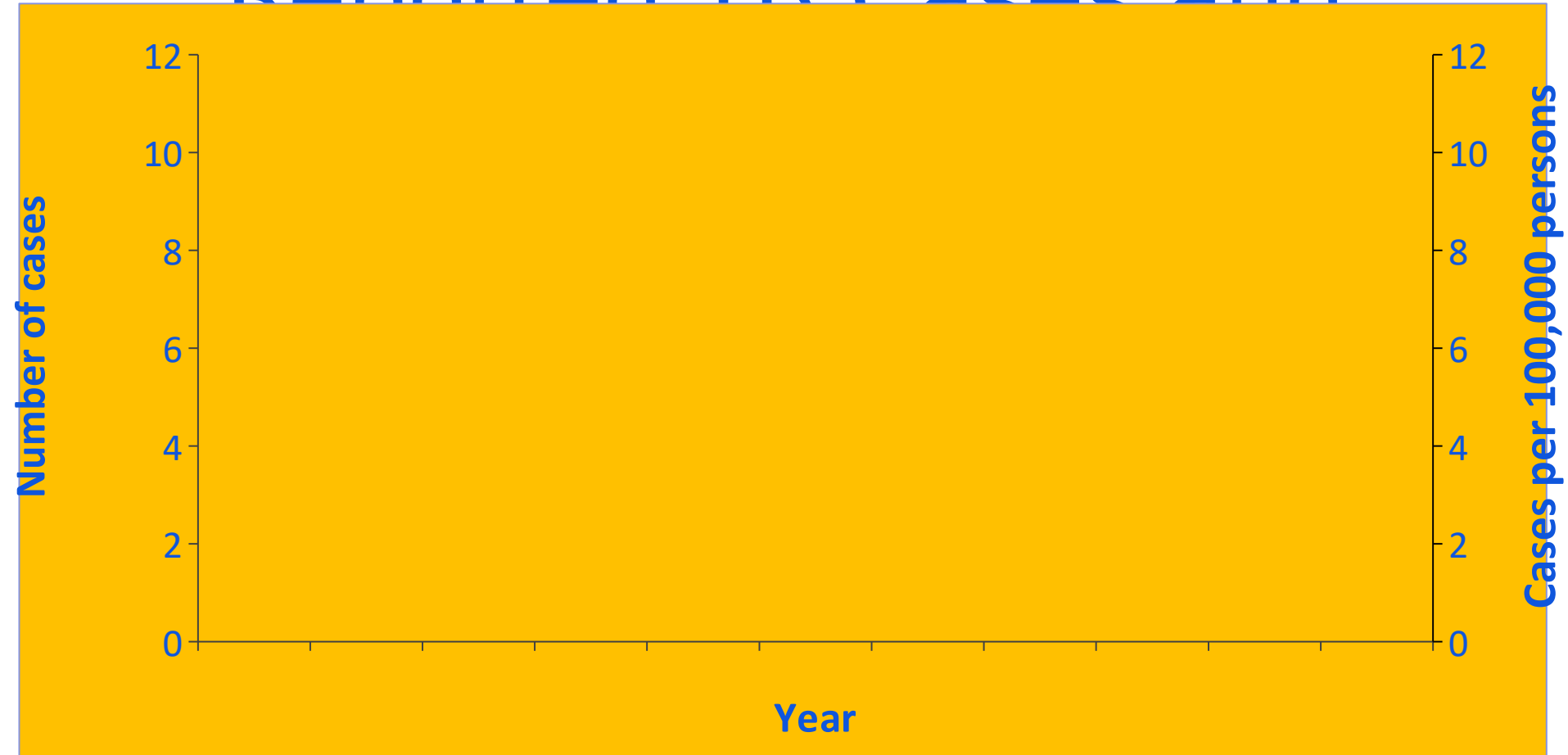
Tuberculosis in the United States 1993–2019*

- National Tuberculosis Surveillance System

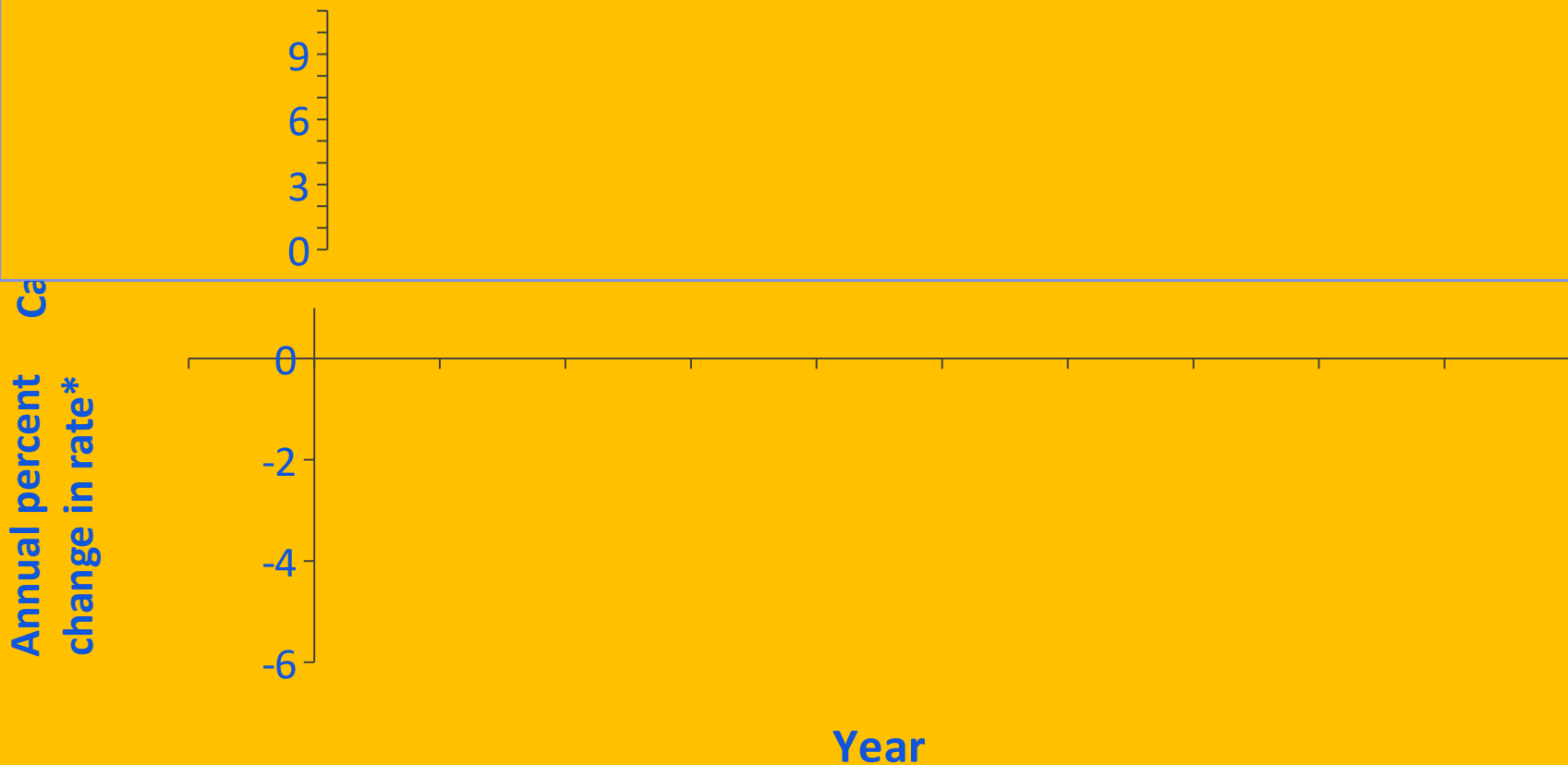
Progress Towards Tuberculosis (TB) Elimination, United States, 1983–2019



Reported TB Cases and

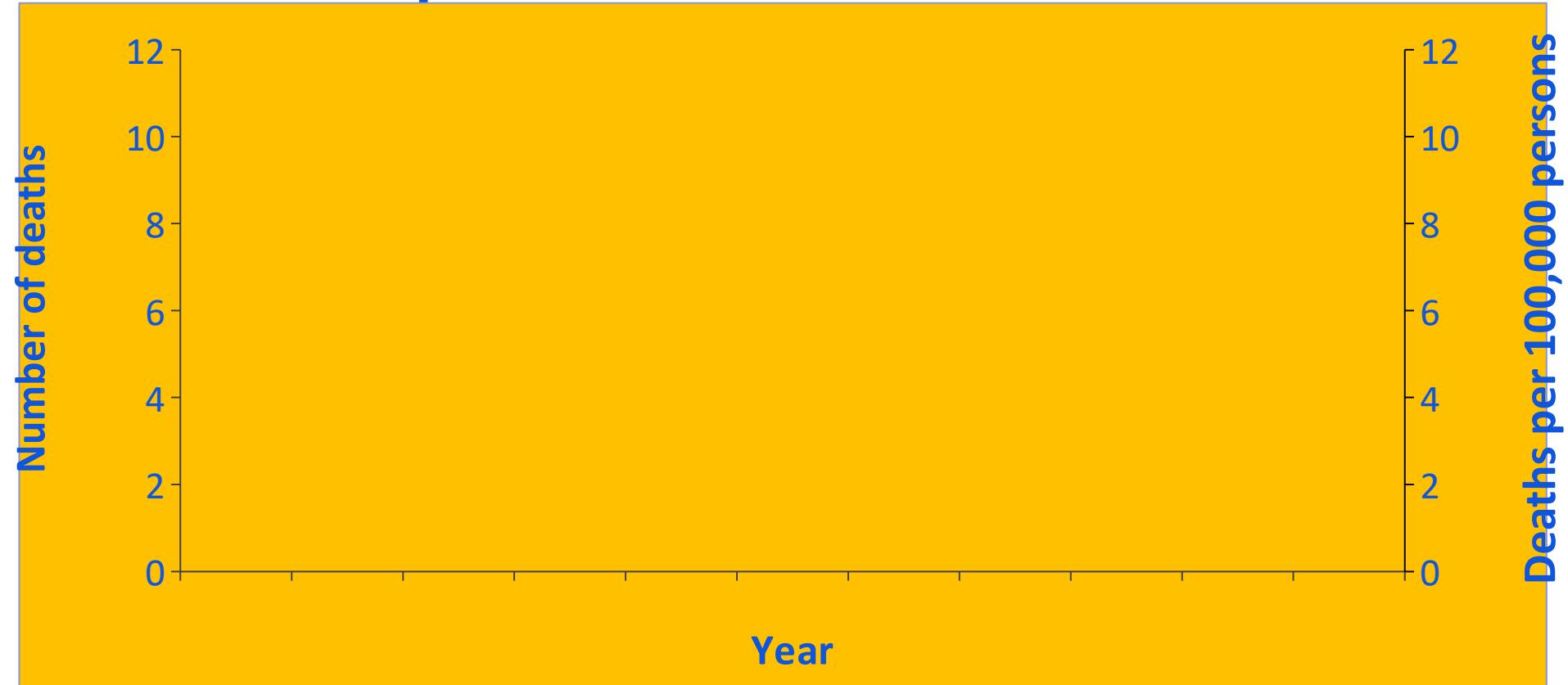


Total TB Case Rates and



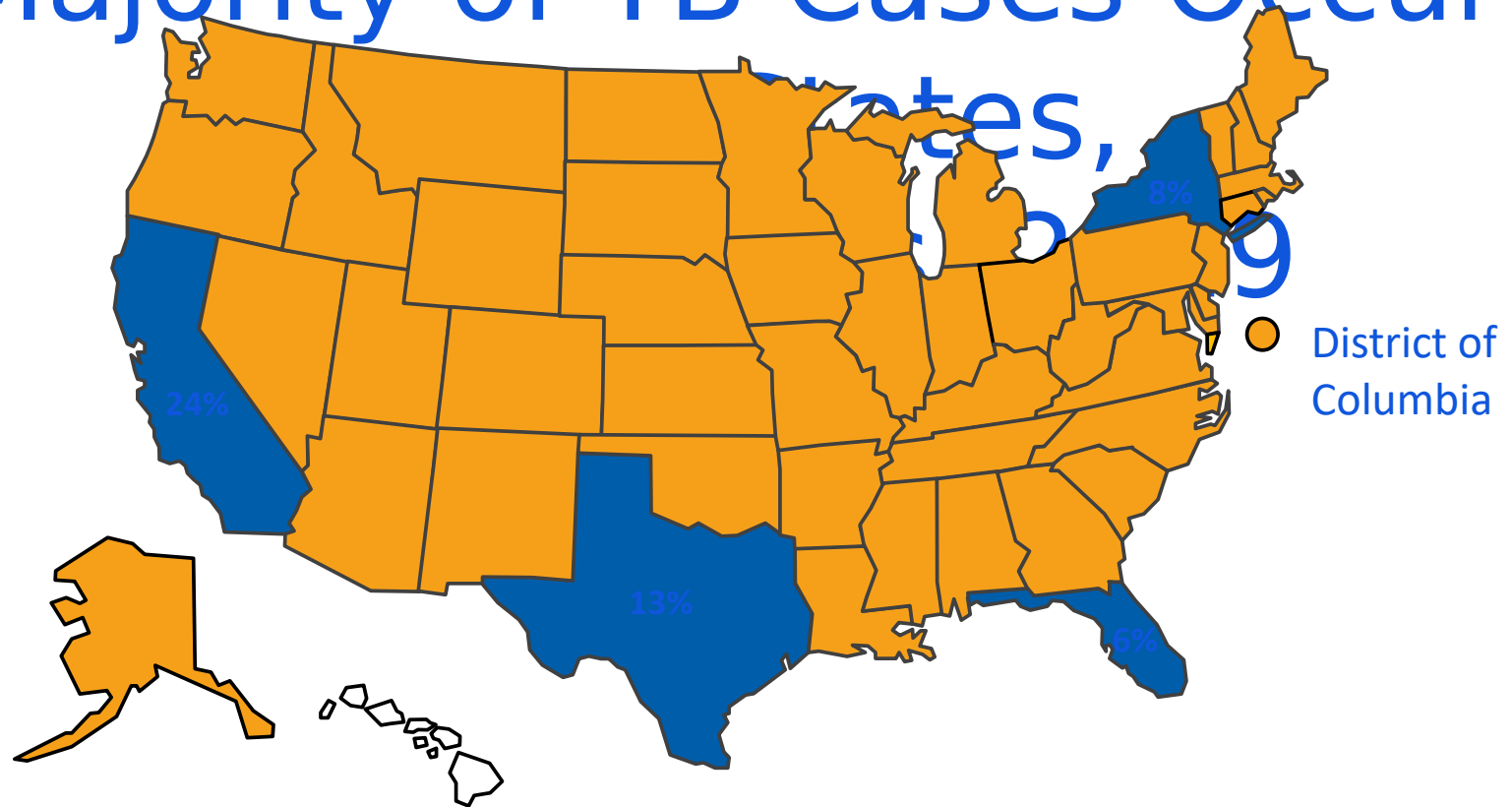
*Annual percent change in rate based on unrounded data

Reported TB-Related



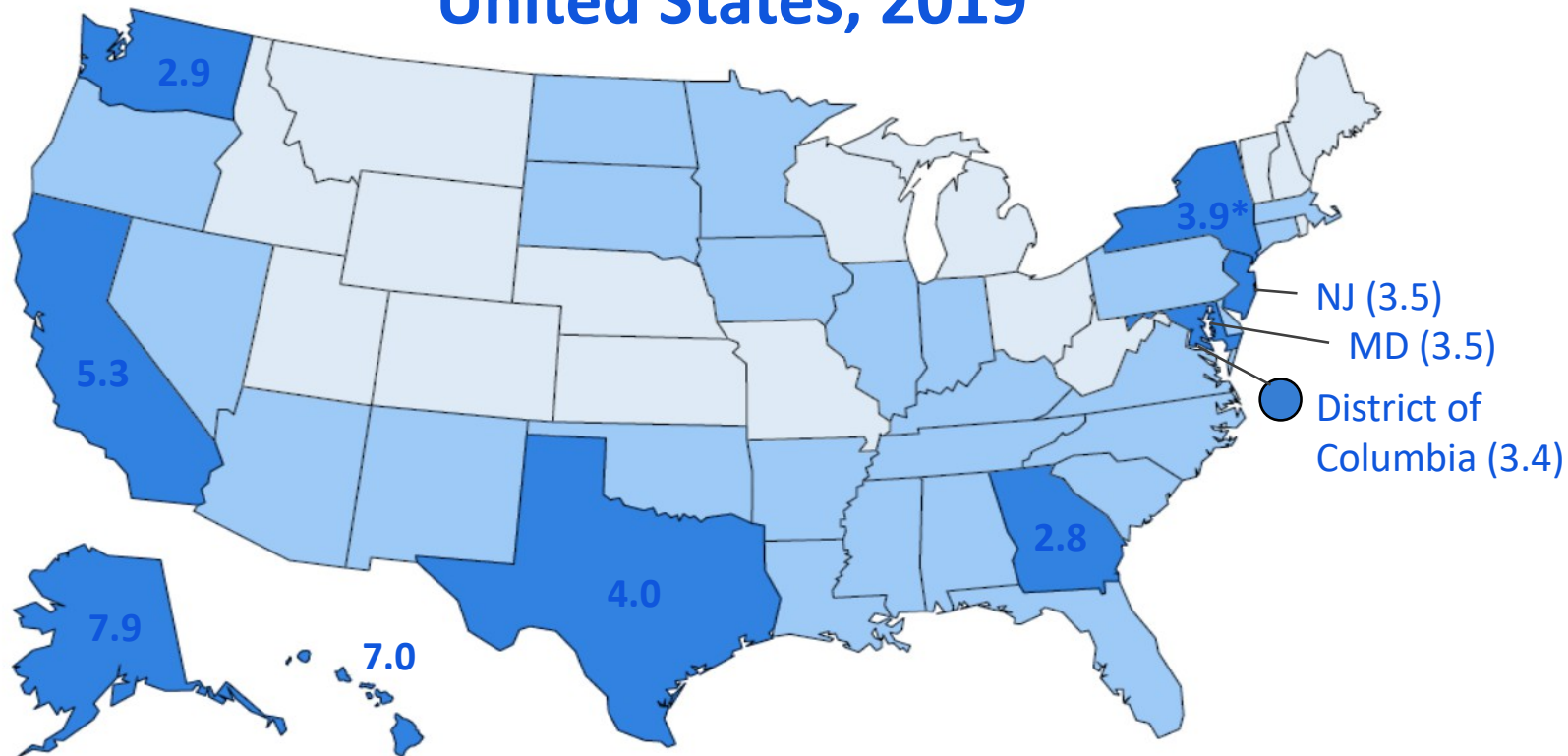
*National Vital Statistics System Underlying Cause of Death (based on deaths reported through 2018)

Majority of TB Cases Occur



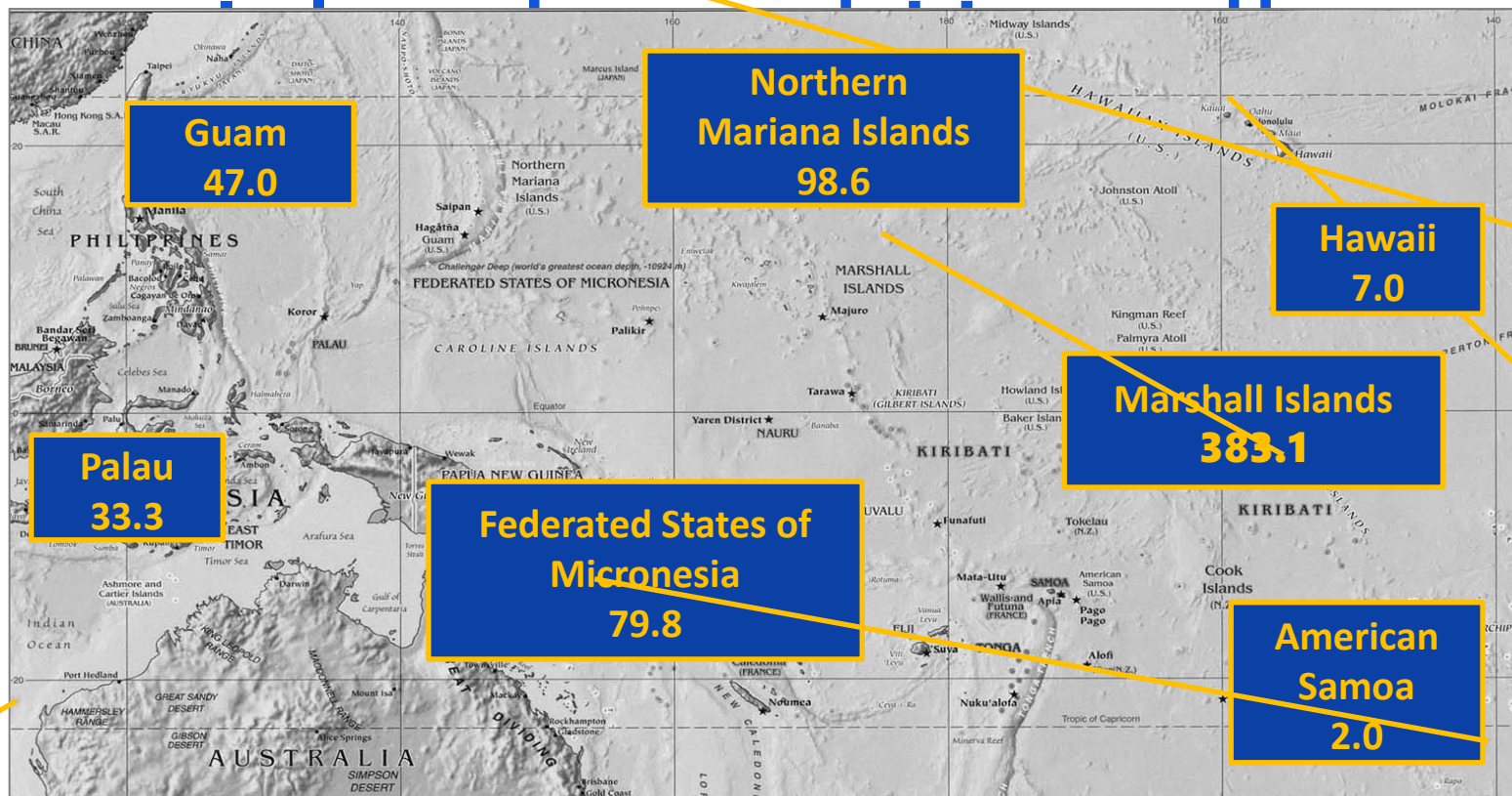
TB Case Rates by Reporting Area

United States, 2019



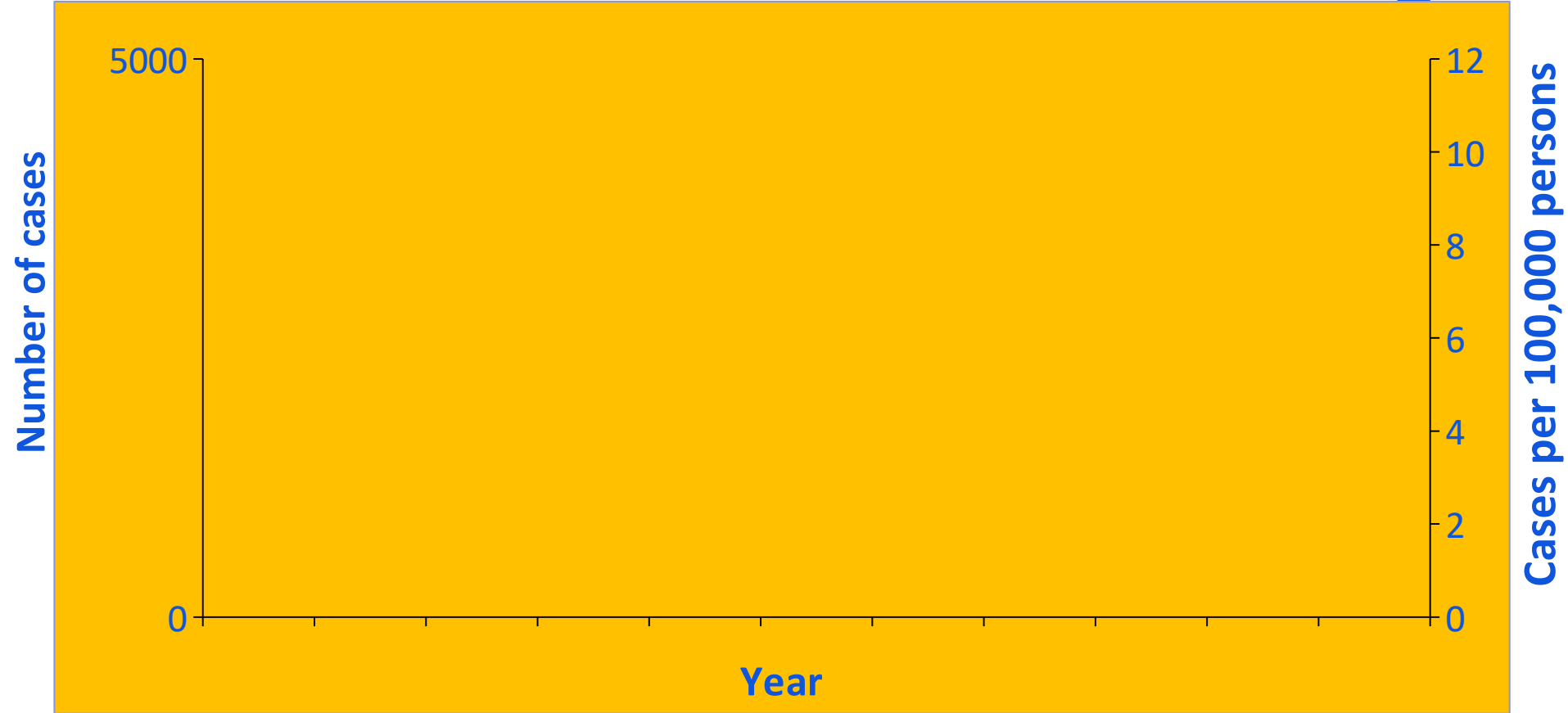
*Includes NYC

Map of U.S.-Affiliated Pacific



*Cases per 100,000 persons

TB Cases and Rates Among



TB Cases by Origin of Birth, 2019

(N=8,905)

Non-U.S.-born
(Rate: 14.2 per 100,000)

U.S.-born
(Rate: 0.9 per 100,000)

Countries of Birth Among Non-U.S.-born Persons Reported with TB, United States, 2019 (N=6,364)

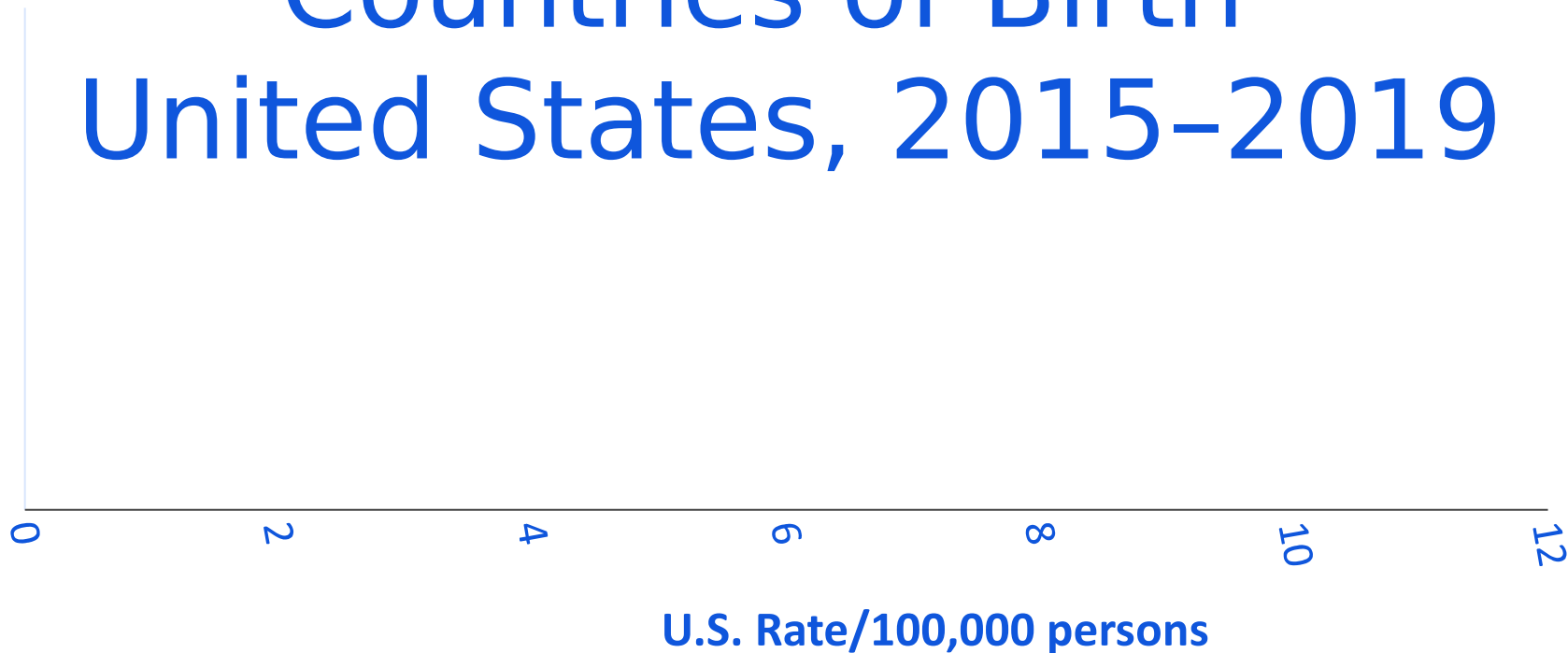
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persons
reported
with
TB

Countries of Birth Among Non-U.S.-born Persons Reported with TB, United States, 2019 (N=6,364)



TB Case Rates for Top 10 Countries of Birth*

United States, 2015–2019



*The top 10 countries were selected based on their ranked 5-year rate of TB cases by country of birth in the United States. This list of top countries also includes the region of Other Africa.

†The Other Africa region consists of Angola, Botswana, Central African Republic, Chad, Equatorial Guinea, Gabon, Lesotho, Namibia, Sao Tome & Principe, and Swaziland.

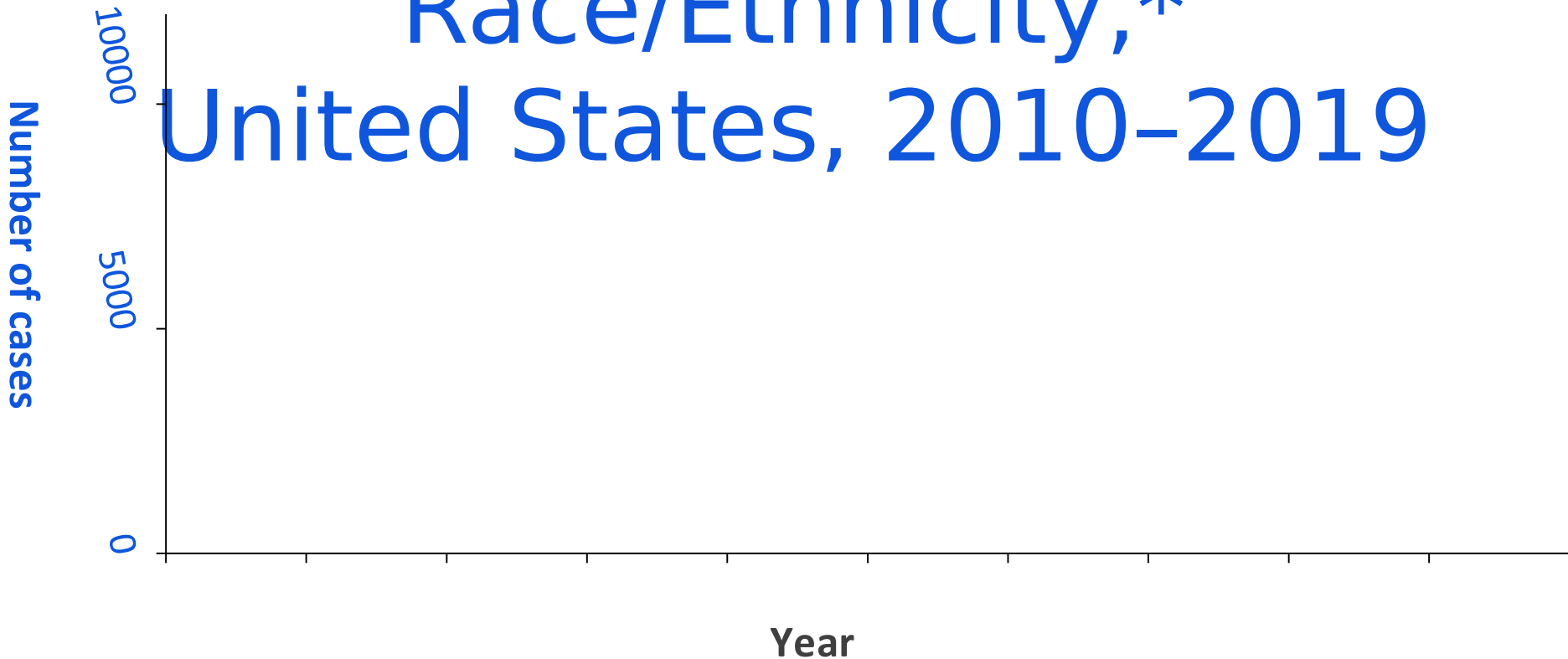
Percentage of TB Cases
Among Non-U.S.-born
Persons by Years Since
Initial Arrival in the United
States at Diagnosis, 2019
(N=6,364)

Years in the United States

Percentage of TB cases

Reported TB Cases by Race/Ethnicity,*

United States, 2010–2019



* All races are non-Hispanic; multiple race indicates two or more races reported for a person but does not include persons of Hispanic/Latino origin.

Reported TB Cases by Race/Ethnicity,* United States, 2019 (N=8,868)†

American Indian/Alaska Native, 1%

Native Hawaiian/Pacific Islander, 1%

Multiple race, 1%

* All races are non-Hispanic; multiple race indicates two or more races reported for a person but does not include persons of Hispanic/Latino origin.

† Excludes unknown/missing values

Reported TB Cases Among U.S.-born Persons by Race/Ethnicity,* United States, 2010–2019



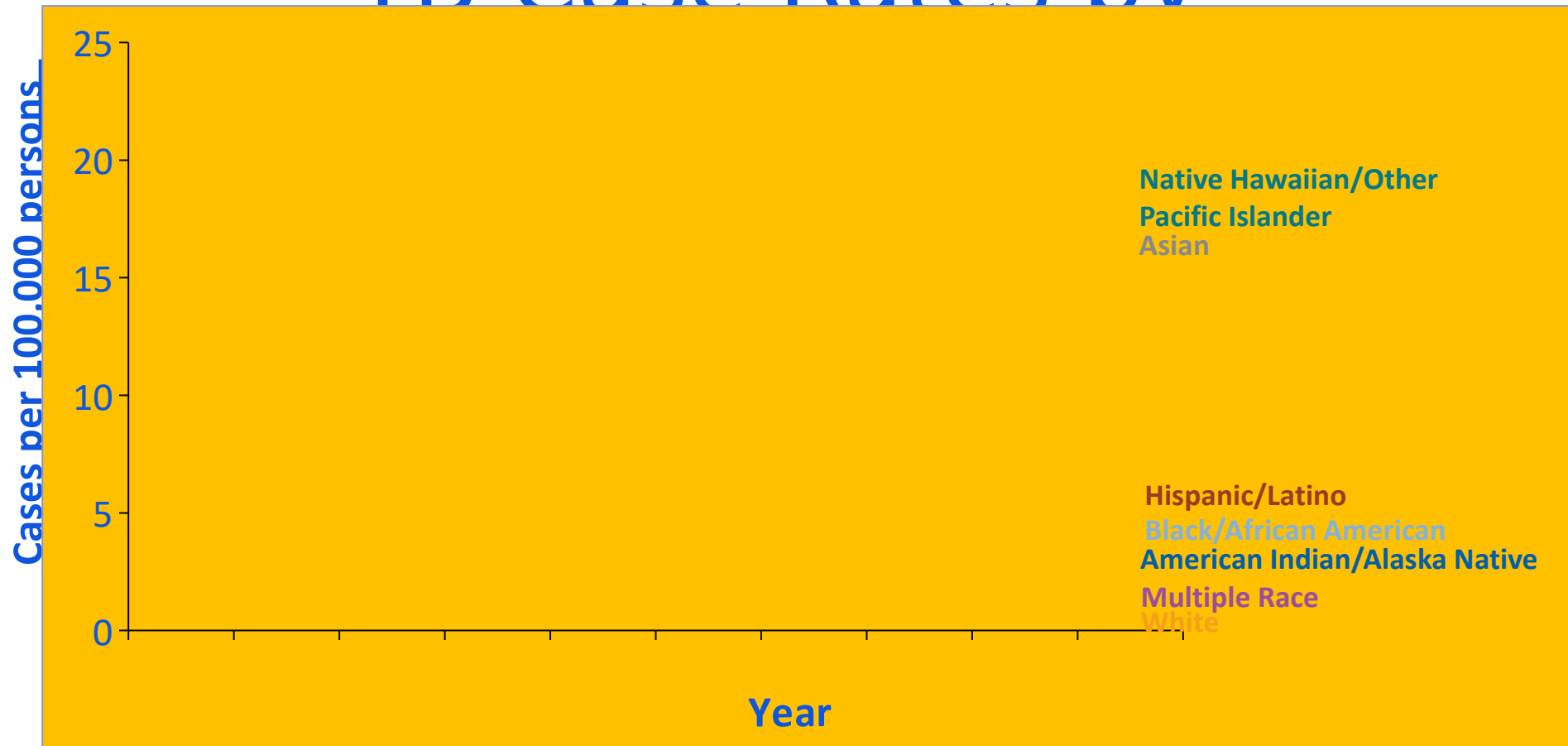
* All races are non-Hispanic; multiple race indicates two or more races reported for a person but does not include persons of Hispanic/Latino origin.

Reported TB Cases Among Non-U.S.-born Persons by Race/Ethnicity,* United States, 2010–2019



* All races are non-Hispanic; multiple race indicates two or more races reported for a person but does not include persons of Hispanic/Latino origin.

TB Case Rates by

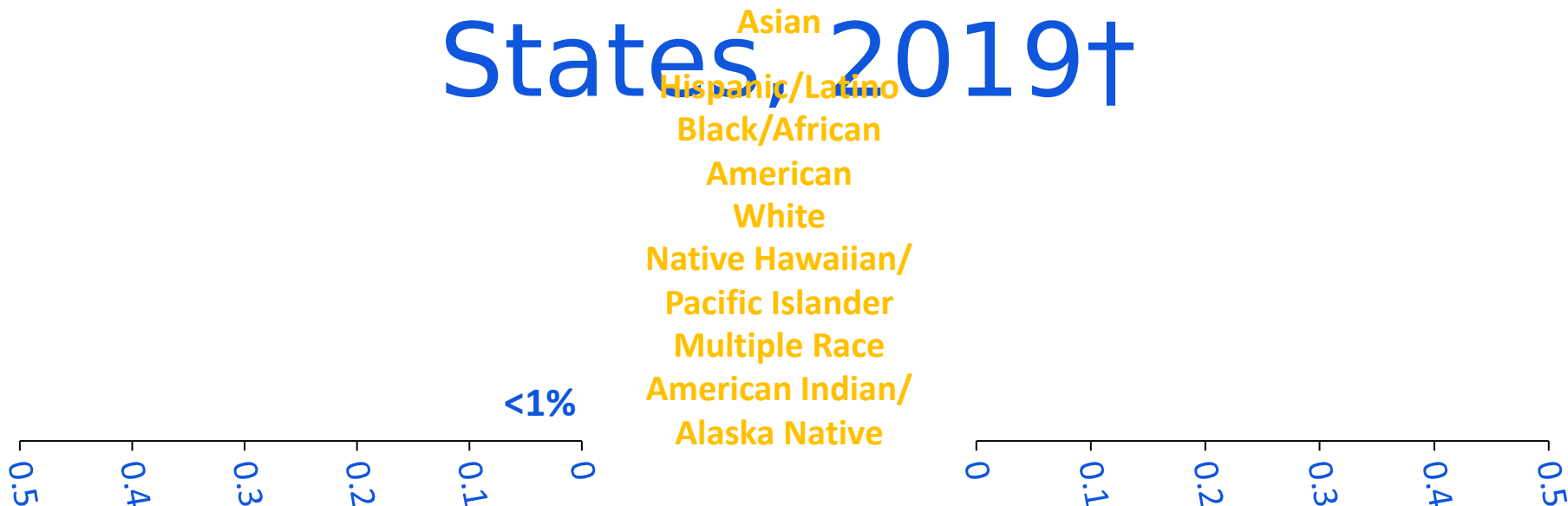


*All races are non-Hispanic; multiple race indicates two or more races reported for a person but does not include persons of Hispanic/Latino origin.

Reported TB Cases by Origin and Race/Ethnicity*, United States, 2019†

Non-U.S.-born persons§
(N=6,335)

*U.S.-born persons
(N=2,541)



*

All races are non-Hispanic; multiple race indicates two or more races reported for a person but does not include persons of Hispanic/Latino origin.

†

Percentages are rounded.

§

American Indian/Alaska Native accounted for <1% of cases among non-U.S.-born persons (not shown).

Reported TB Cases by Origin and Race/Ethnicity*, United States, 2019†

Non-U.S.-born persons§
(N=6,335)

*U.S.-born persons
(N=2,541)

Asian
Hispanic/Latino
Black/ African
American
White
Native Hawaiian/
Pacific Islander
Multiple Race
American Indian/
Alaska Native§

*

All races are non-Hispanic; multiple race indicates two or more races reported for a person but does not include persons of Hispanic/Latino origin.

†

Percentages are rounded.

§

American Indian/Alaska Native accounted for <1% of cases among non-U.S.-born persons (not visible).

Reported TB Cases by Age Group, United States, 1993–2019

Number of cases

25000
20000
15000
10000
5000
0

Year



TB Case Rates by Age Group, United States, 1993–2019

Cases per 100,000 persons

Year

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Distribution of Sex by Age

Males (N=5,361) **Group,** Females (N=3,555)
Age Group

United States, 2019

0–4 years (N=215)

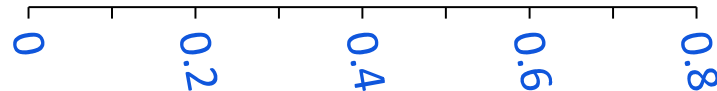
5–14 years (N=152)

15–24 years (N=850)

25–44 years (N=2,612)

45–64 years (N=2,665)

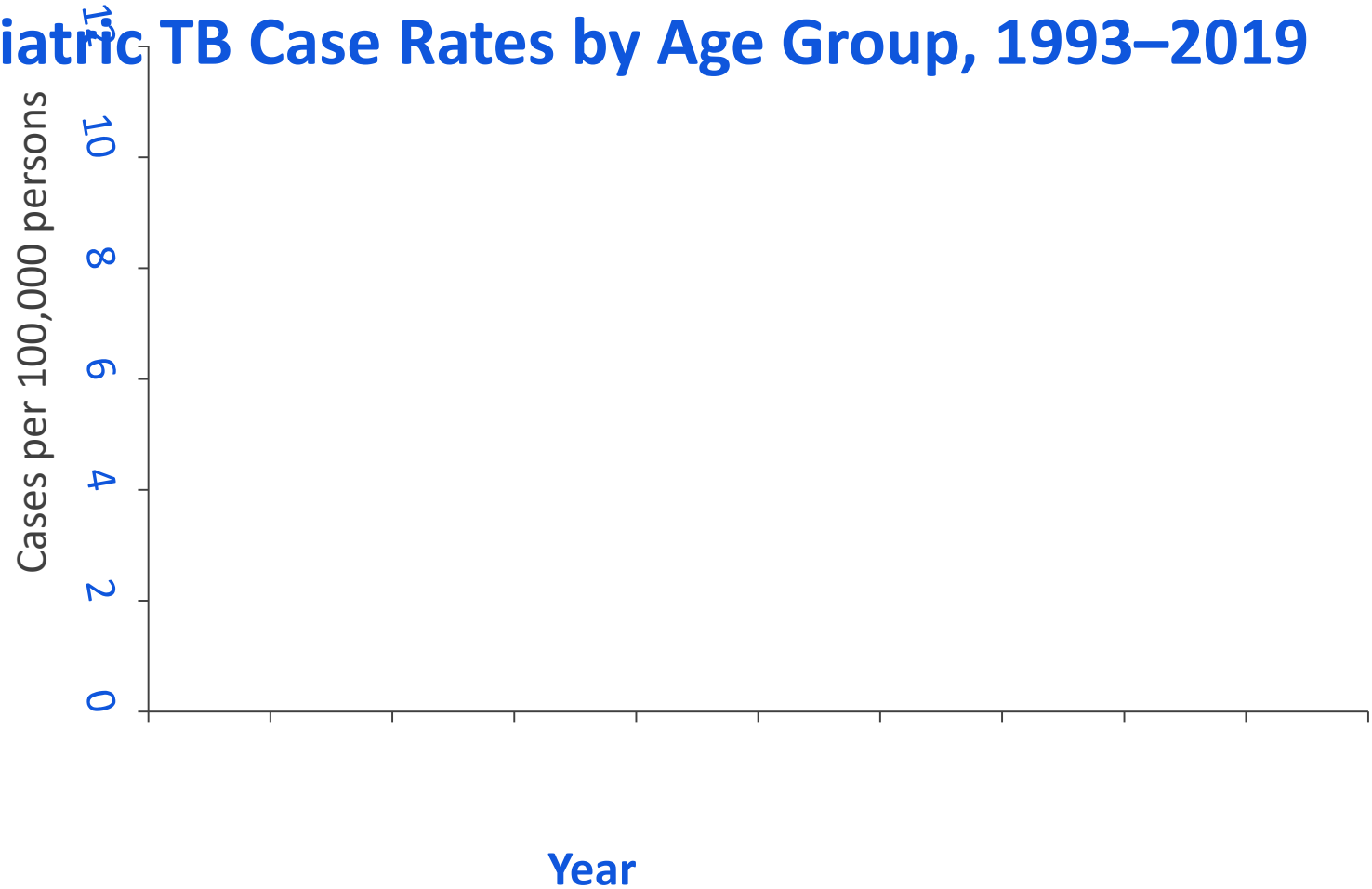
≥65 years (N=2,422)



Pediatric TB Cases by Age Group, 1993–2019



Pediatric TB Case Rates by Age Group, 1993–2019

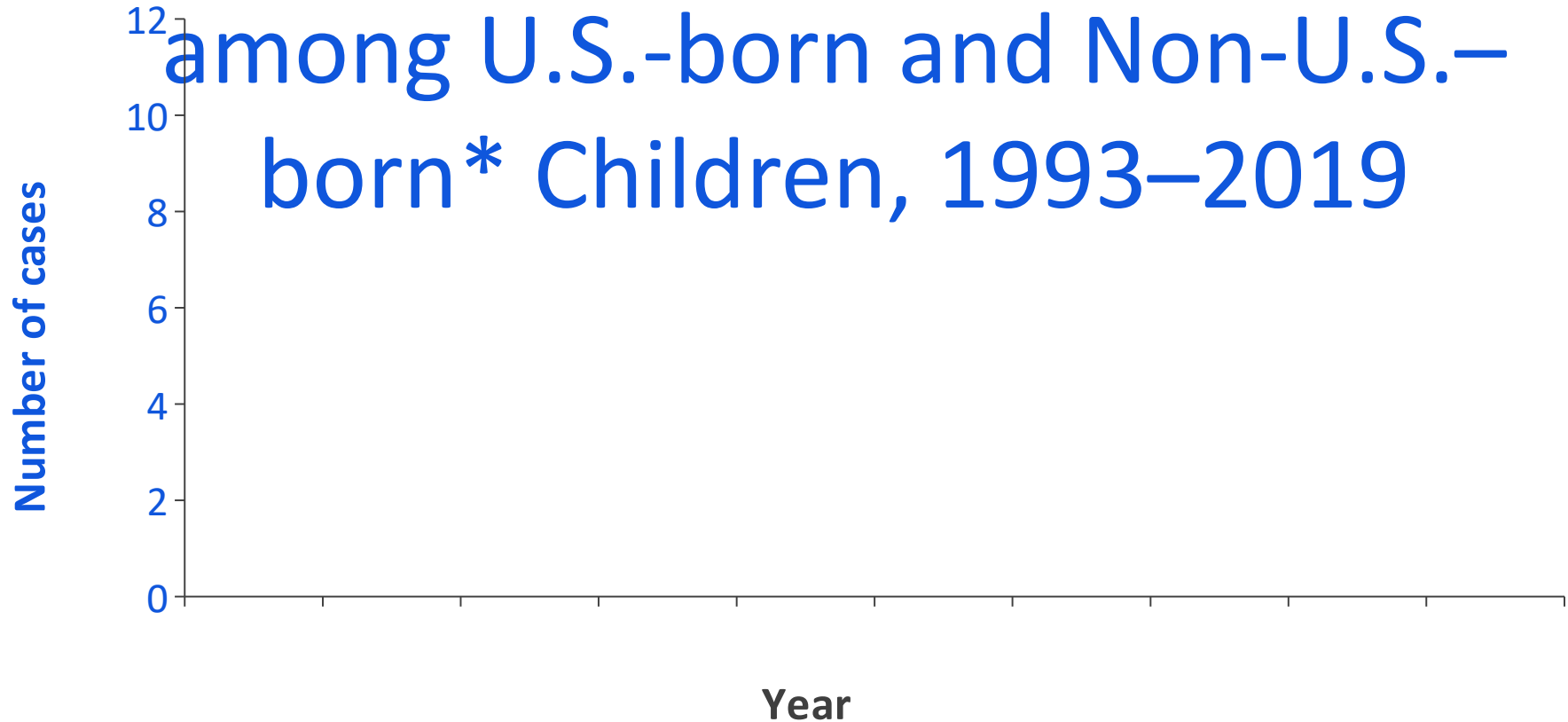


Pediatric TB Cases by Age Group, 2019 (N=367)



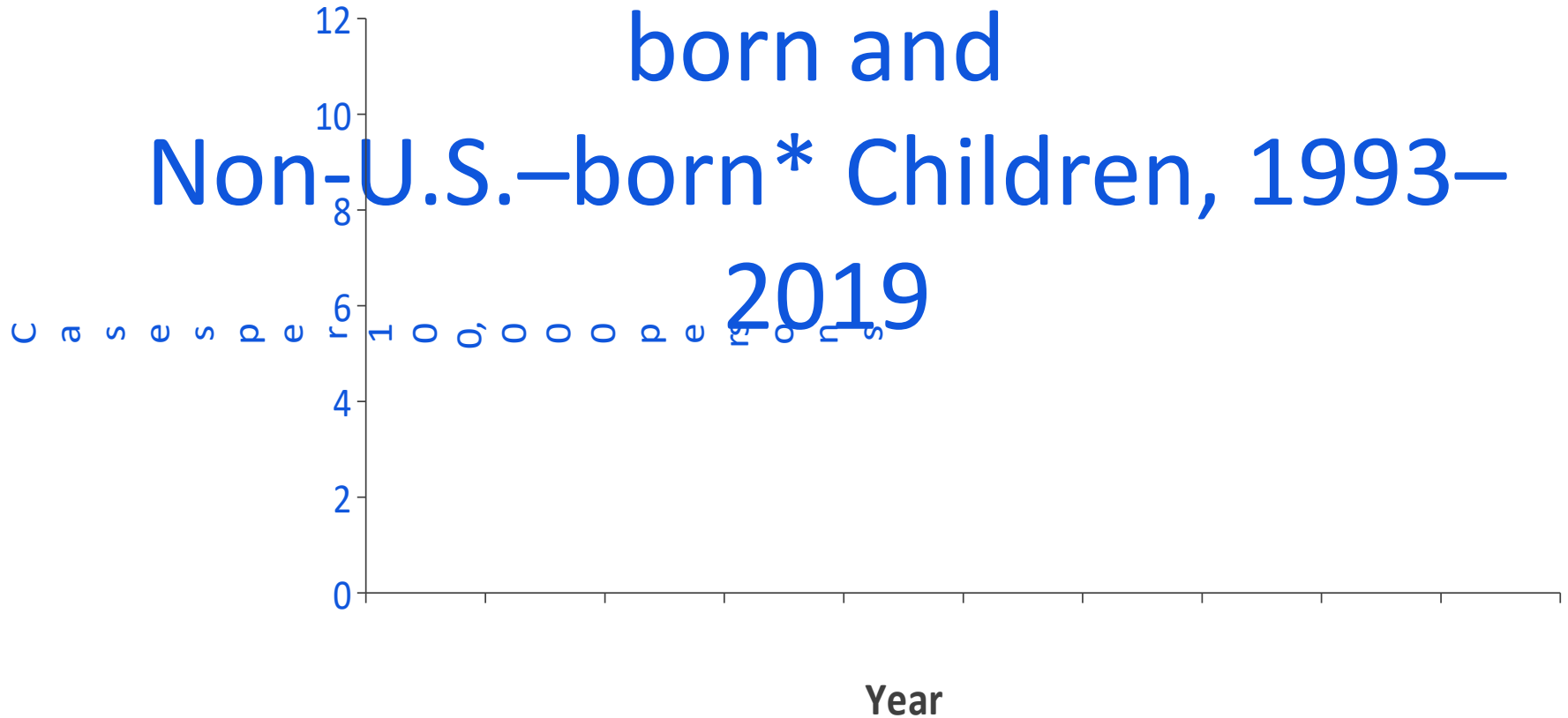
Number of Pediatric TB Cases

among U.S.-born and Non-U.S.-
born* Children, 1993–2019



*Non-U.S.-born refers to persons born outside the United States or its territories or not born to a U.S. citizen

Pediatric TB Case Rates for U.S.-born and Non-U.S.-born* Children, 1993–2019



*Non-U.S.-born refers to persons born outside the United States or its territories or not born to a U.S. citizen

Number of U.S. Pediatric TB Cases among U.S.-Born Children by Parent/Guardian Status, 2010–2019



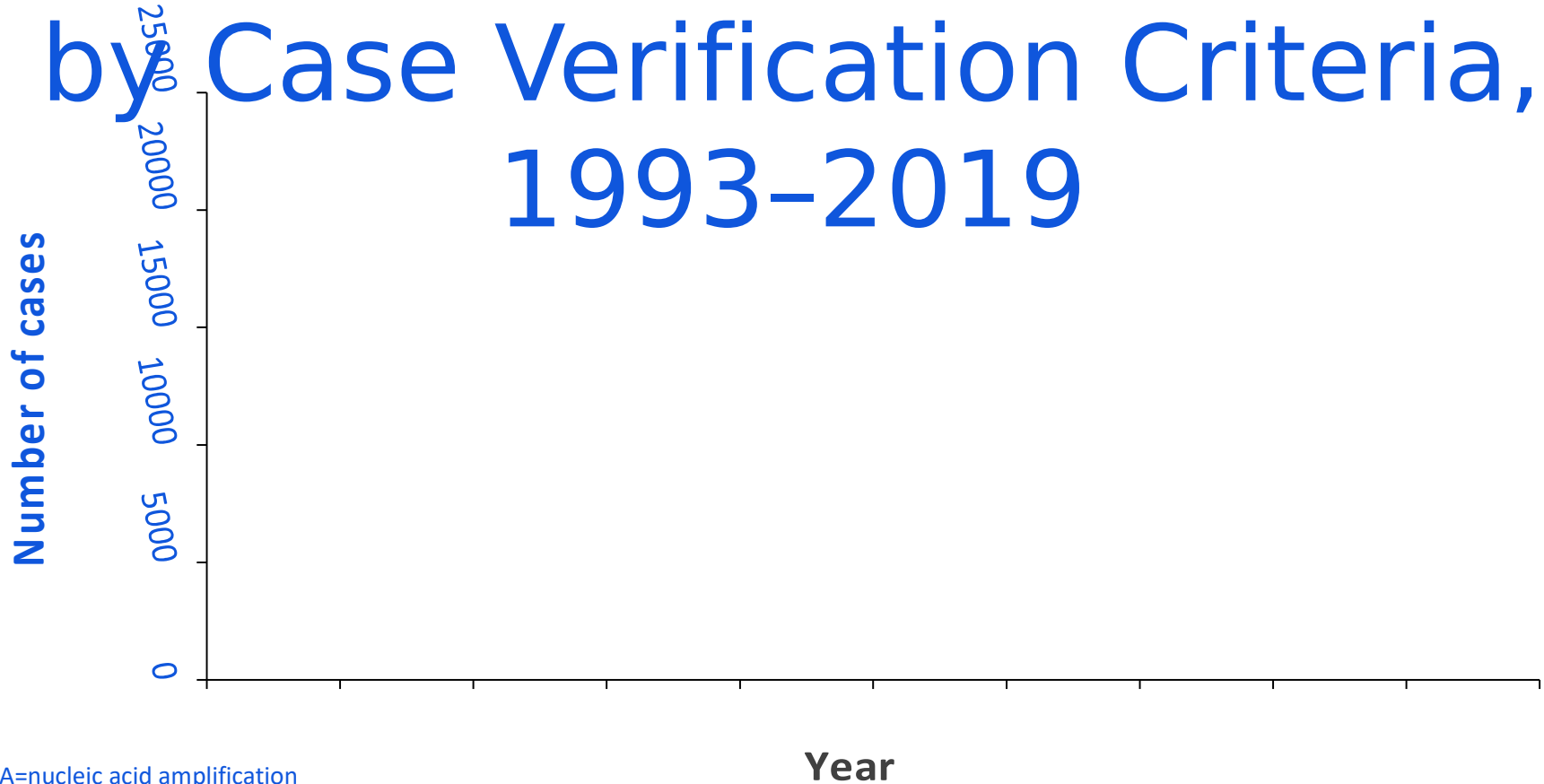
*At least one parent/guardian was non-U.S.-born

Number of Pediatric TB Cases among U.S.-born Children by Parent/Guardian Status, 2019 (N=293)

*At least one parent/guardian was non-U.S.-born.



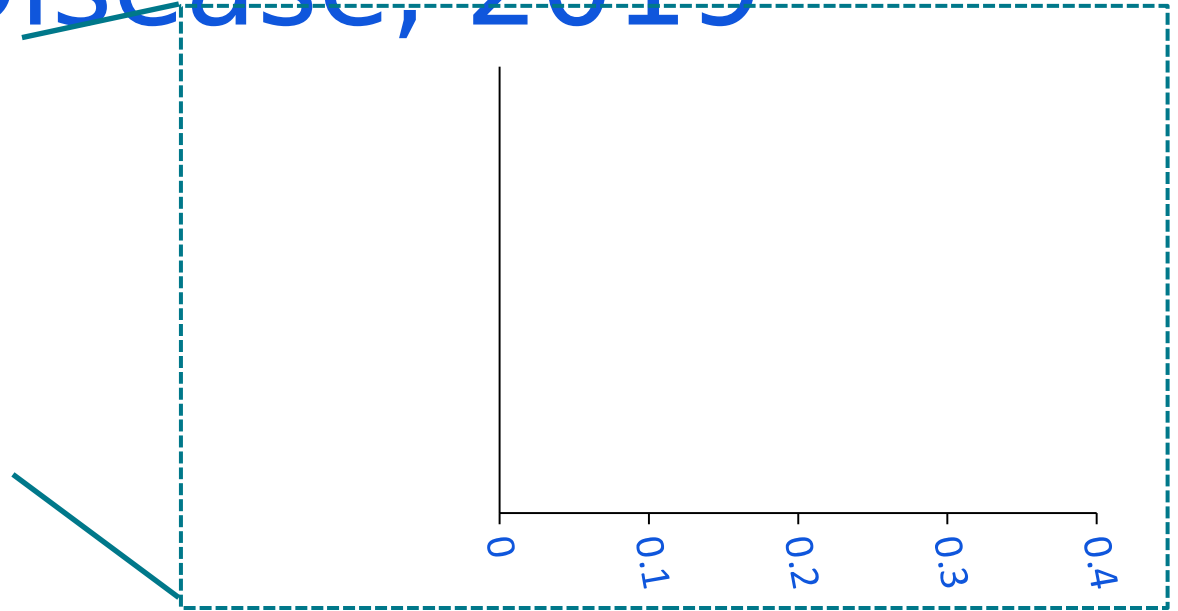
Number of U.S. TB Cases by Case Verification Criteria, 1993–2019



*NAA=nucleic acid amplification

Percentage of U.S. TB Cases by Case Verification Criteria, 2019 (N=8,916)

U.S. TB Cases by Site of Disease, 2019



*Any pulmonary involvement which includes cases that are pulmonary only and both pulmonary and extrapulmonary.
Patients may have more than one disease site but are counted in mutually exclusive categories for surveillance purposes.
Note: Percentages are rounded.

TB Cases* by Initial Drug Regimen,

United States, 1993–2019



*Alive at diagnosis

†IRZE=isoniazid, rifampin, pyrazinamide, and ethambutol

Percentage of TB Cases*, by Initial Drug Regimen, United States, 2019 (N=8,676)

*Alive at diagnosis

†IRZE=isoniazid, rifampin, pyrazinamide,
and ethambutol

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Mode of Treatment

Percentage of all
treatment modalities†

100
80
60
40
20
0

Year

DOT=directly observed therapy; SA=self-administered therapy.

* Data available through 2017 only. †Percentage of total cases among persons alive at diagnosis, with an initial regimen of one or more drugs prescribed and excluding cases with unknown mode of treatment administration.

Mode of Treatment Administration Among Persons Reported with TB*, United States, 2017 (N=8,707)

*Percentage of total cases among persons alive at diagnosis, with an initial regimen of one or more drugs prescribed and excluding cases with unknown mode of treatment administration.

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Completion of TB Therapy, %

Percentage completing therapy

100
80
60
40
20
0

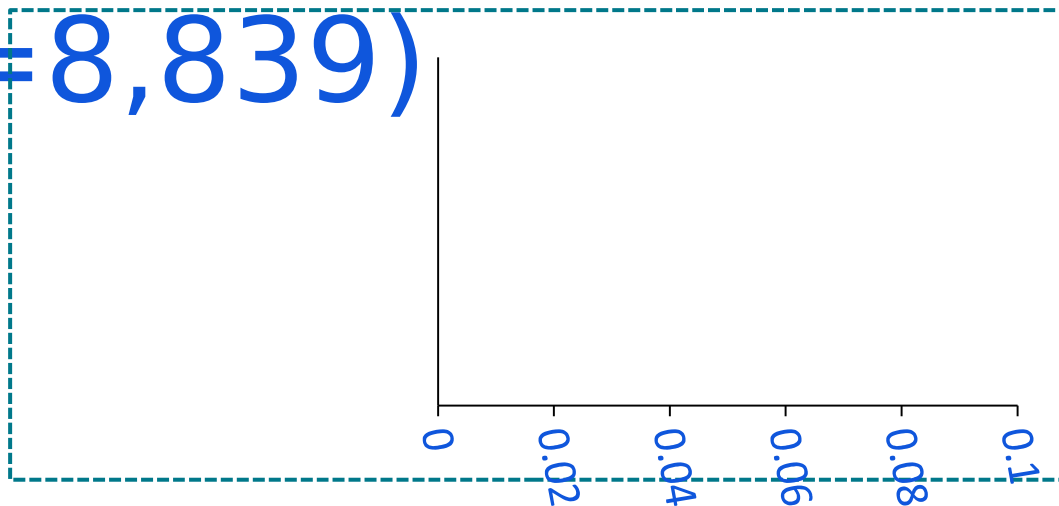
Year

National
Goal†:
95%

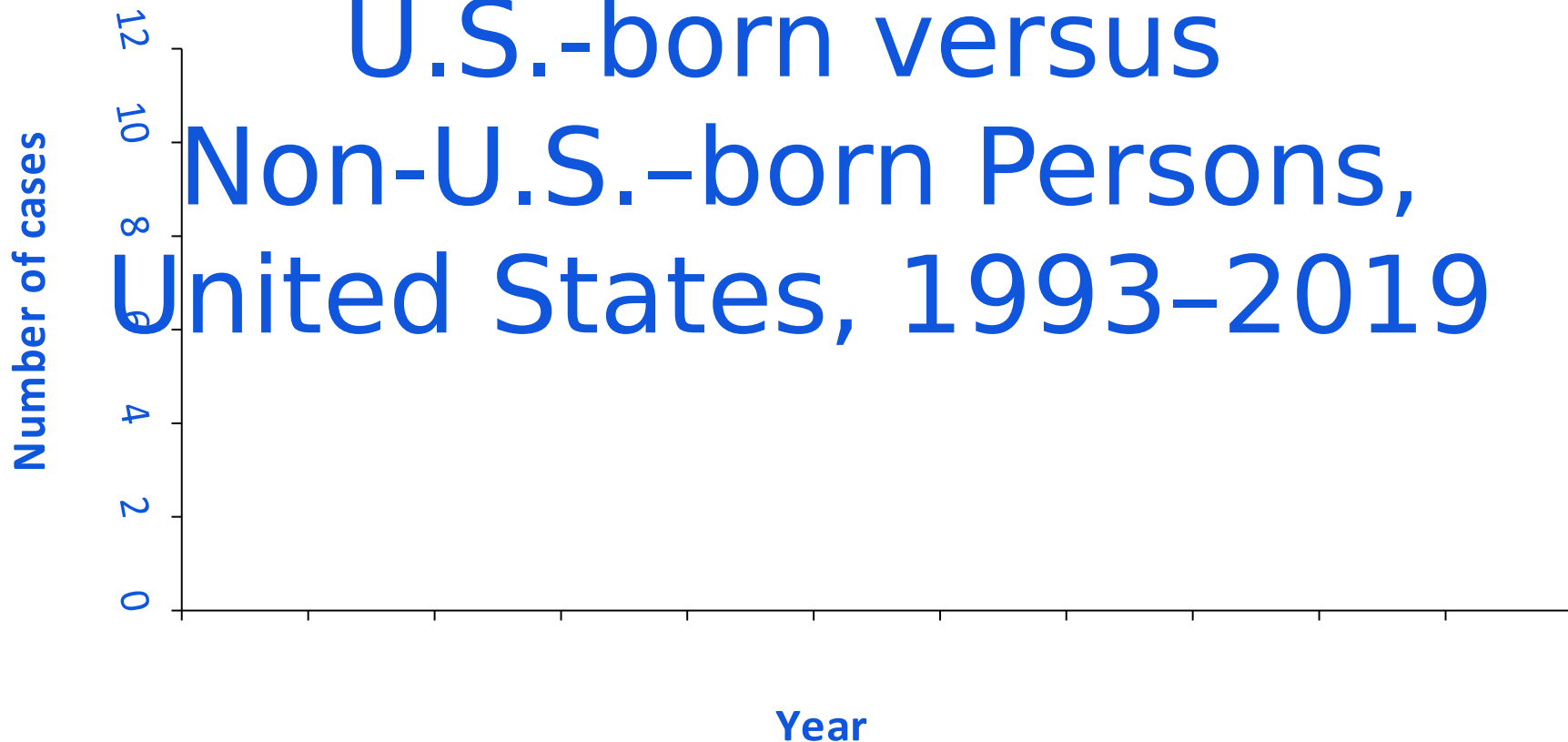
†National goal: for patients with newly diagnosed TB disease for whom ≤12 months of treatment is indicated, 95% complete treatment within 12 months.

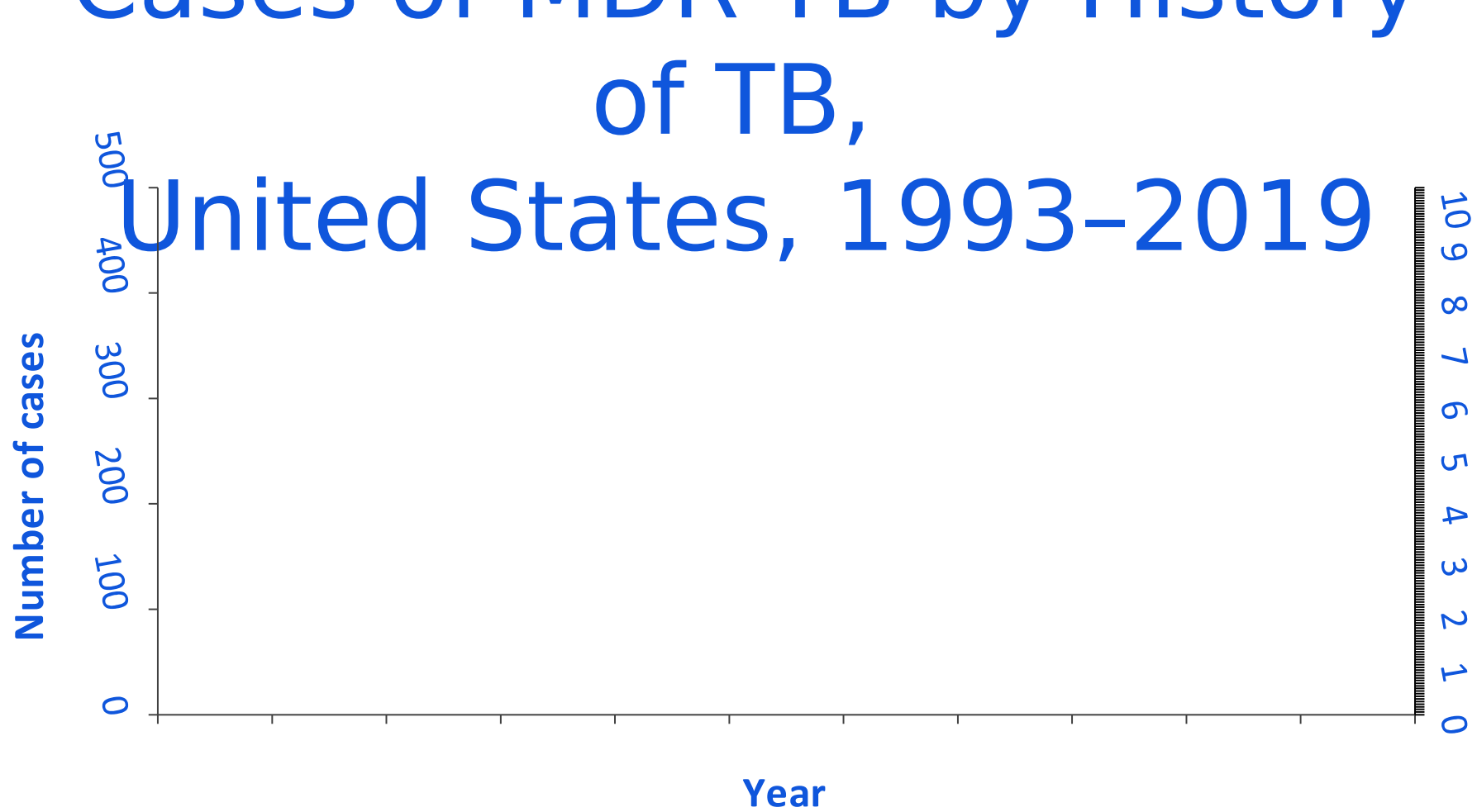
TB Cases by Reason Therapy Stopped, 2017 (N=8,839)

Outcomes for patients who
did not complete treatment



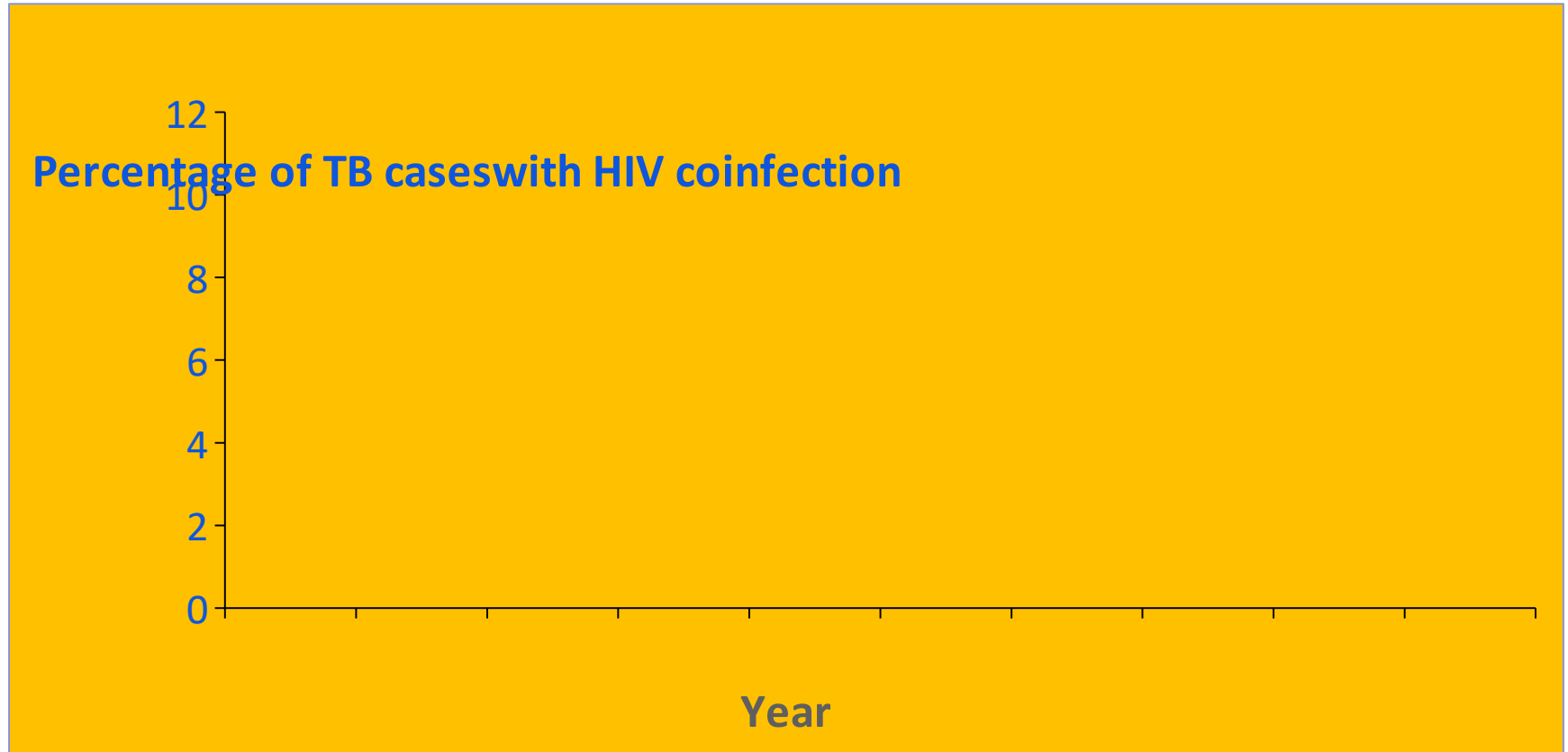
Isoniazid Resistance Among U.S.-born versus Non-U.S.-born Persons, United States, 1993–2019





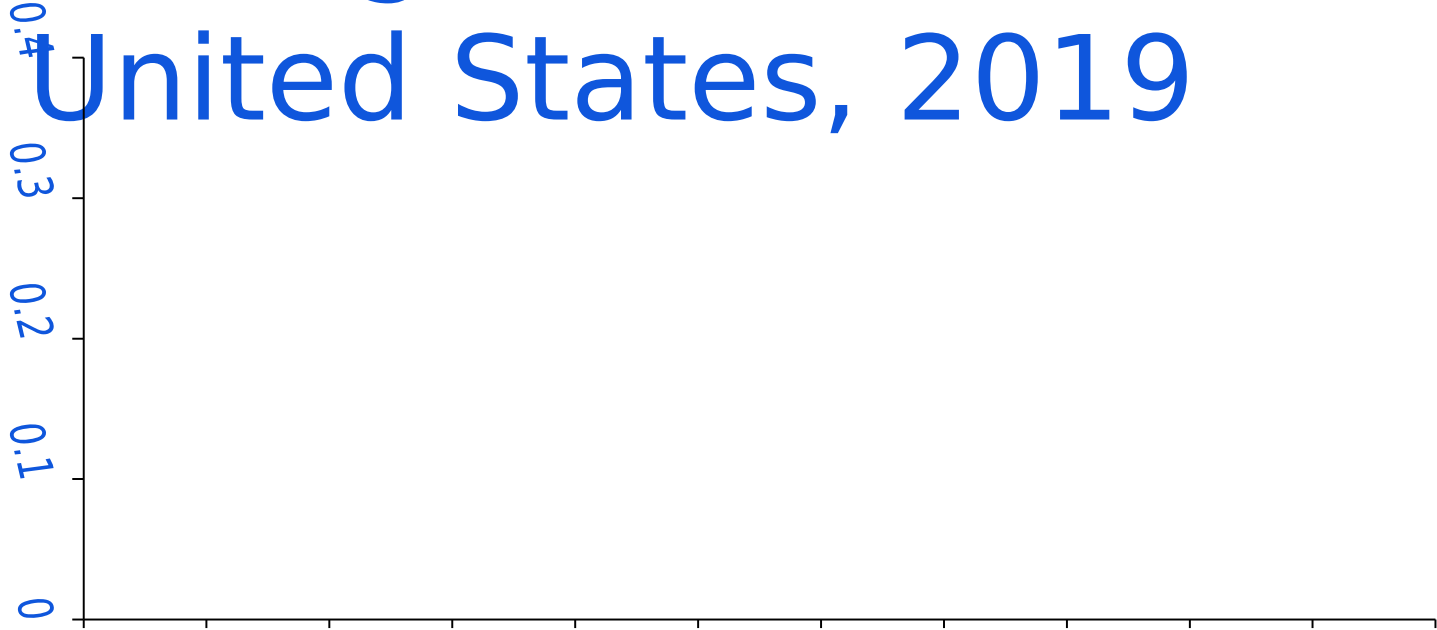
*Based on initial isolates from persons with no prior history of TB; multidrug-resistant TB (MDR TB) is defined as resistance to at least isoniazid and rifampin.

HIV Coinfection by Age

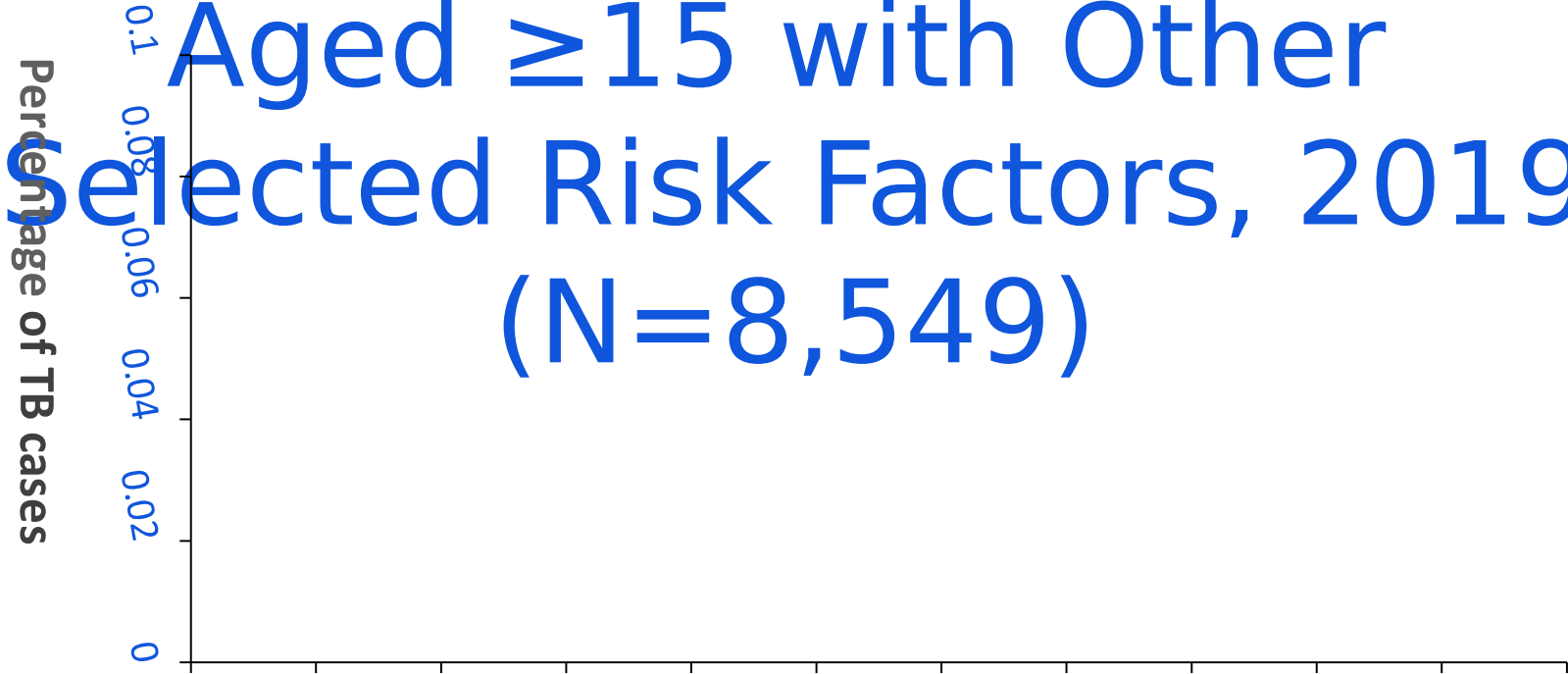


Percentage of TB cases with reported risk factors

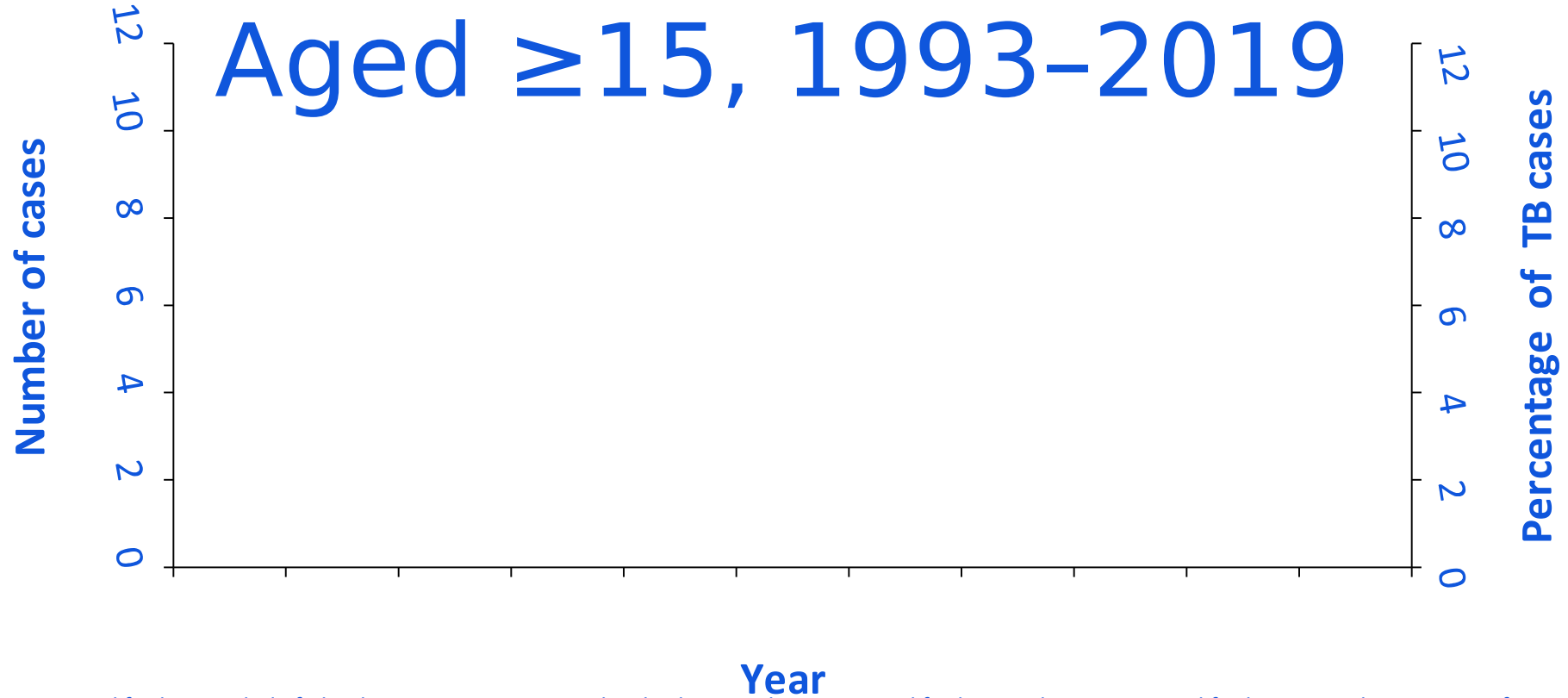
Selected Risk Factors by Origin of Birth, United States, 2019



TB Cases Among Persons Aged ≥ 15 with Other Selected Risk Factors, 2019 (N=8,549)

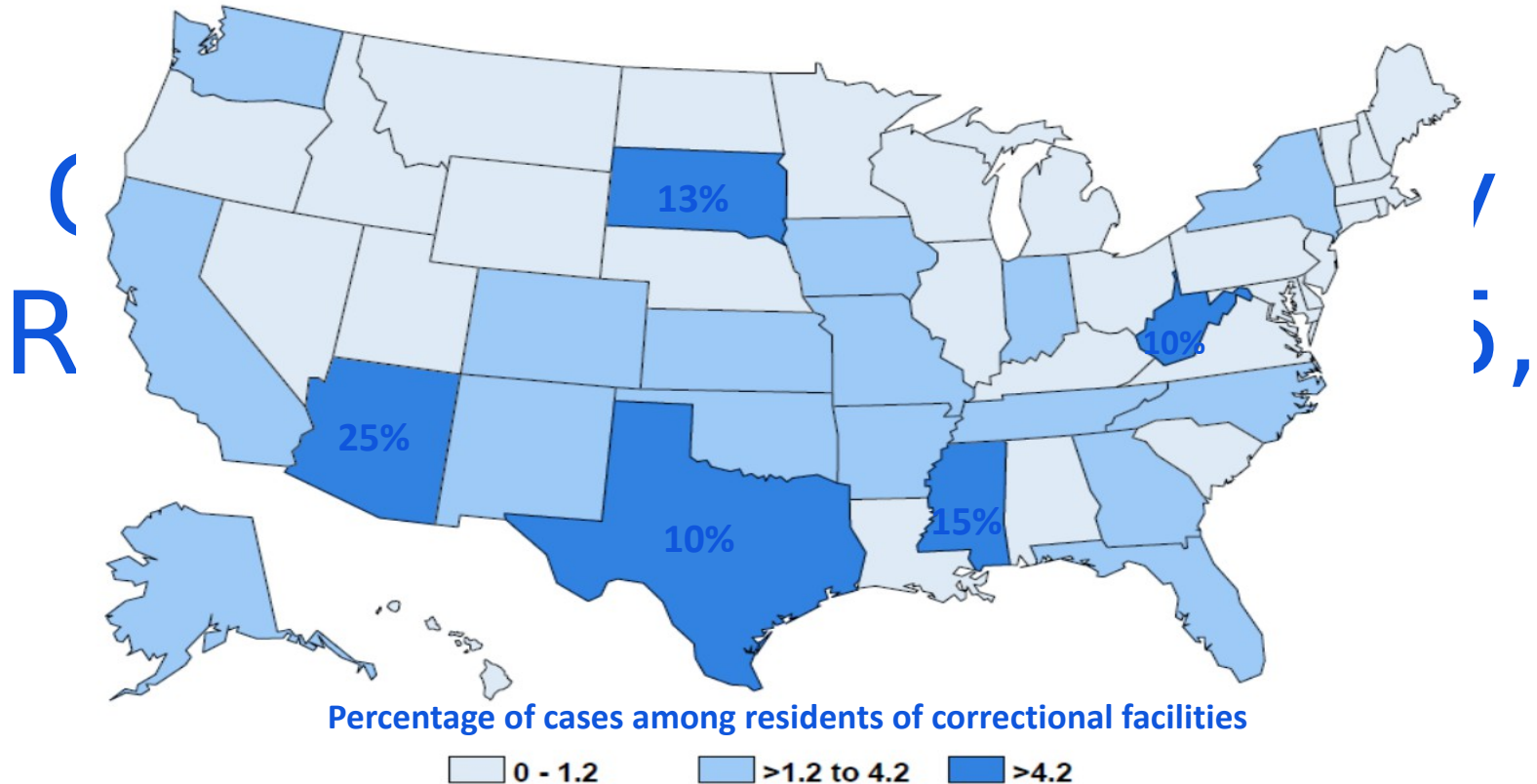


TB cases among Residents of Correctional Facilities*, Aged ≥ 15 , 1993–2019



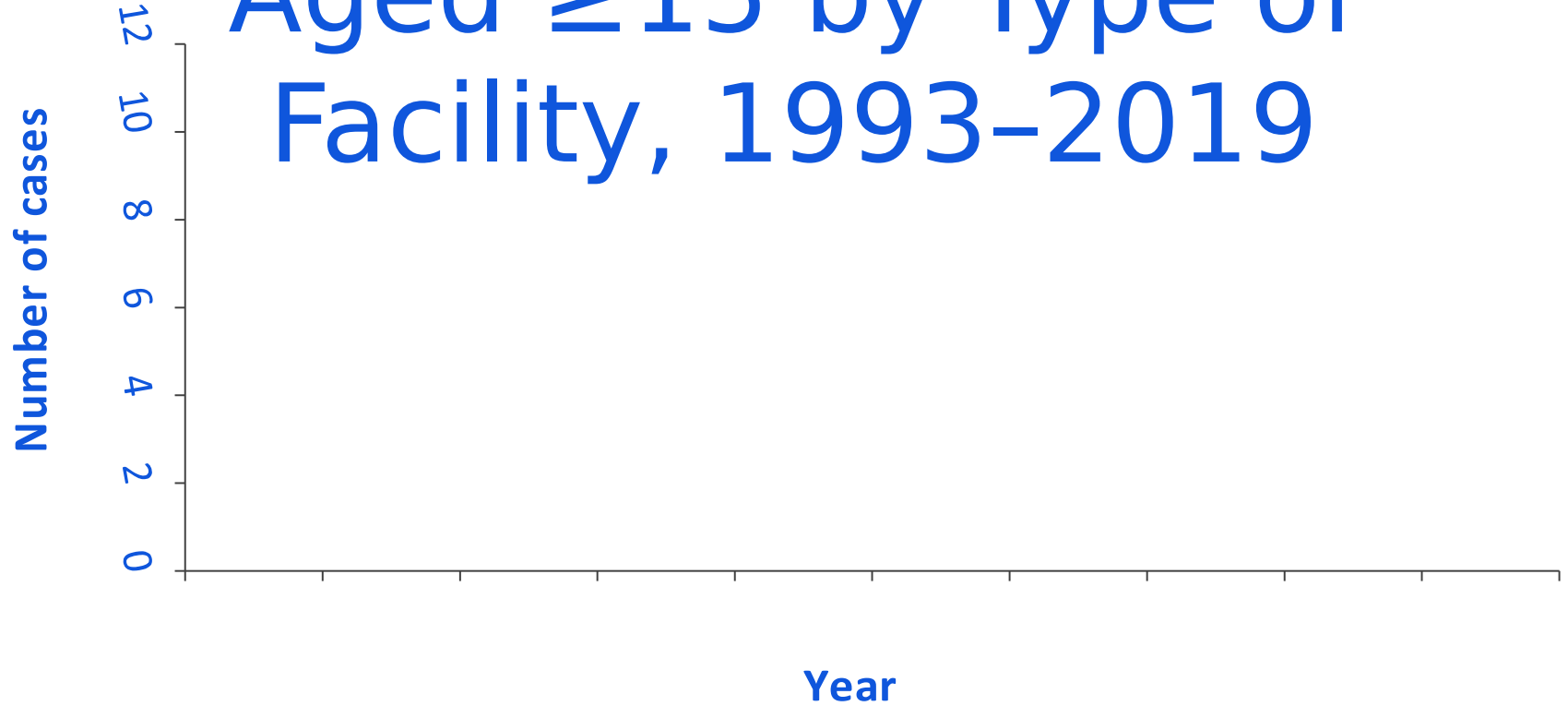
*Correctional facilities include federal prisons, state prisons, local jails, juvenile correctional facilities, other correctional facilities, or unknown type of correctional facility.

Percentage of TB Cases



*Correctional facilities include federal prisons, state prisons, local jails, juvenile correctional facilities, other correctional facilities, or unknown type.

of Correctional Facilities Aged ≥ 15 by Type of Facility, 1993–2019



*Includes Immigration and Customs Enforcement (ICE) detention centers, tribal jails operated by Indian reservations, police lockups (temporary holding facilities for person who have not been formally charged in court), military stockades and jails, or federal park facilities

Percent of TB patients aged ≥ 15 years

10
9
8
7
6
5
4
3
2
1
0

Substance Use Disorder Among TB Patients ≥ 15 Years, United States, 2019 (N=8,549)

Primary Occupation Among U.S. TB Patients Aged ≥ 15 Years, 2019 (N=8,549)

Percentage of TB Cases

0.5
0.4
0.3
0.2
0.1
0

1%

<1%

Occupation

Deaths Attributed to TB, 2017*

Among TB patients
diagnosed in 2017,

9% died

before diagnosis or
during treatment



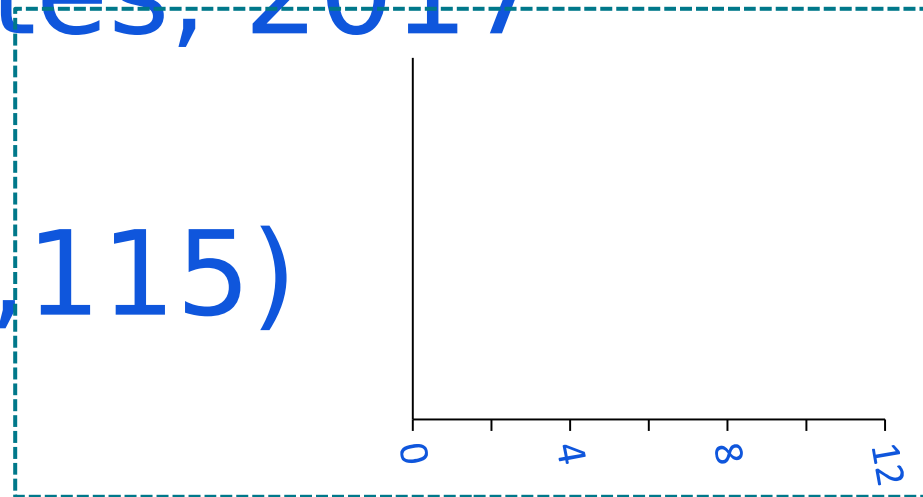
Of those deaths,

**1/3 attributed
to TB**

Sputum Culture Conversion, United States, 2017*

Reasons sputum culture
conversion not documented

(N=5,115)



* Data available through 2017 only; among patients with a positive sputum culture.

National TB Genotyping

Surveillance Coverage*

United States†, 2004–2019



* The proportion of culture-confirmed TB cases with at least one genotyped isolate.

† Includes 50 states and the District of Columbia.

Definitions for TB

Genotyping
in the United States

Spoligotype:

0000000000003771

Initial 12-locus MIRU-VNTR*:

223325173533

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

PCRTYPE:
PCR00002

+

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

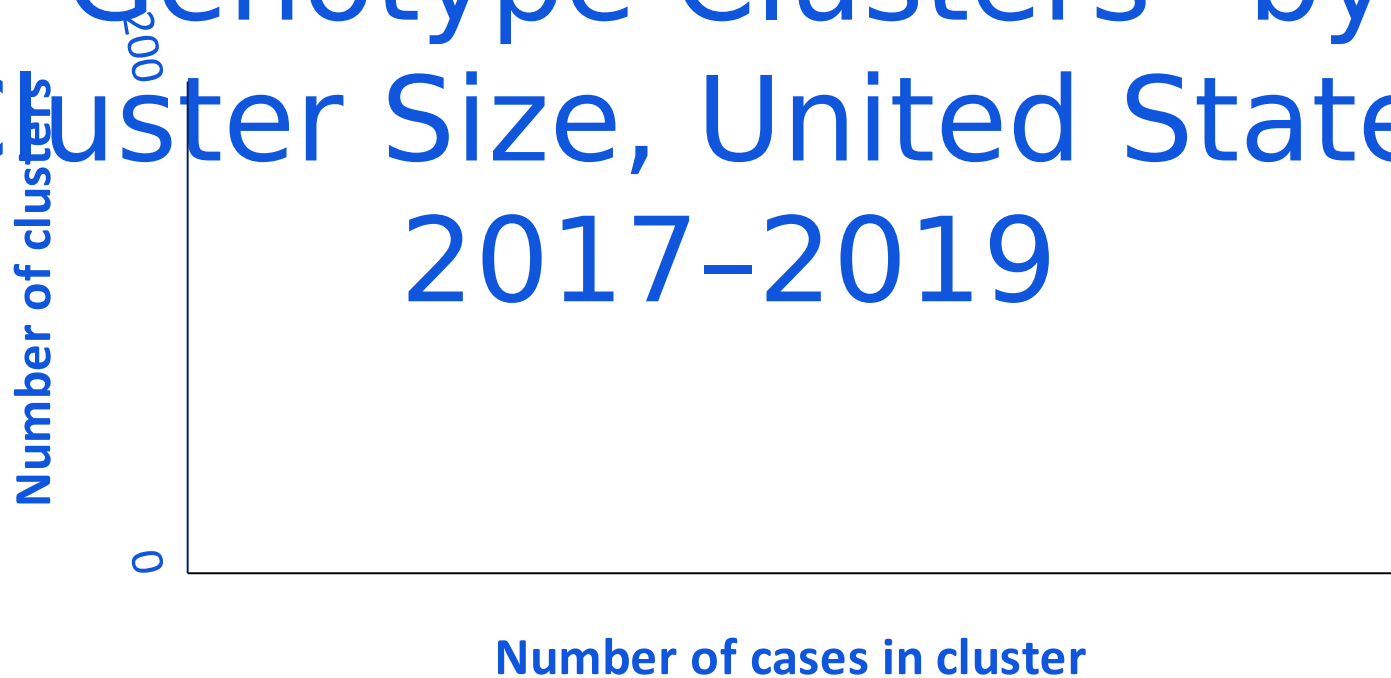
Sequentially assigned for
each unique spoligotype
and 24-locus MIRU-VNTR
combination

GENType:
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. GENType designations.

Number of County-based TB Genotype Clusters* by Cluster Size, United States, 2017–2019



* Genotype clusters are defined as two or more cases with matching spoligotype and 24-locus MIRU-VNTR (GENType) within a county during the specified 3-year time period.

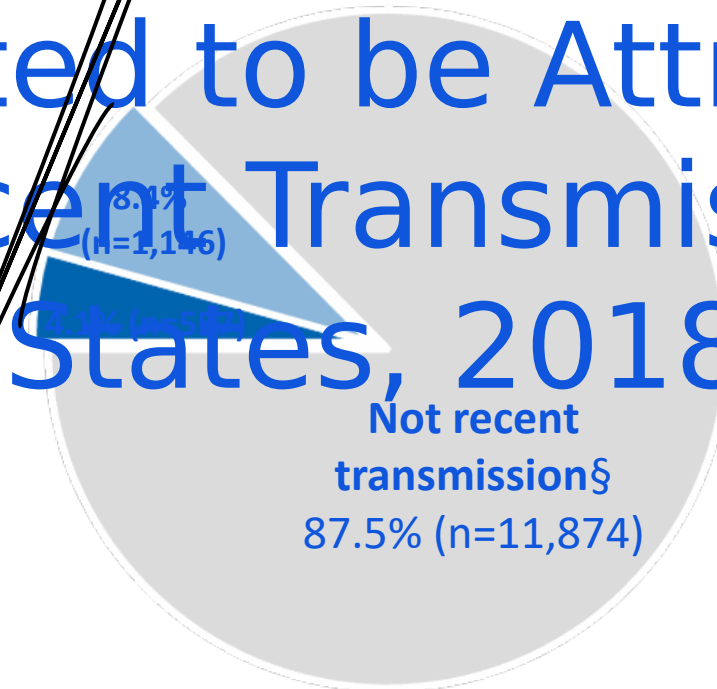
TB Genotype Clusters by TB GIMS* Alert Level†, United States, 2017–2019

* TB GIMS=Tuberculosis Genotyping Information Management System

† Alert levels are determined by the log likelihood ratio (LLR) statistic for a given cluster, identifying higher than expected geospatial concentrations for a TB genotype cluster in a specific county, compared to the national distribution of that genotype; TB GIMS generates alert level notifications based on this statistic: “No alert” is indicated if LLR is between $0 < \text{LLR} < 5$, “medium” is for LLR of $5 < \text{LLR} < 10$ and “high” alert is for clusters with $\text{LLR} \geq 10$.

Genotyped TB Cases Estimated to be Attributed to Recent Transmission, United States, 2018–2019

- Limited recent transmission
- Extensive recent transmission†

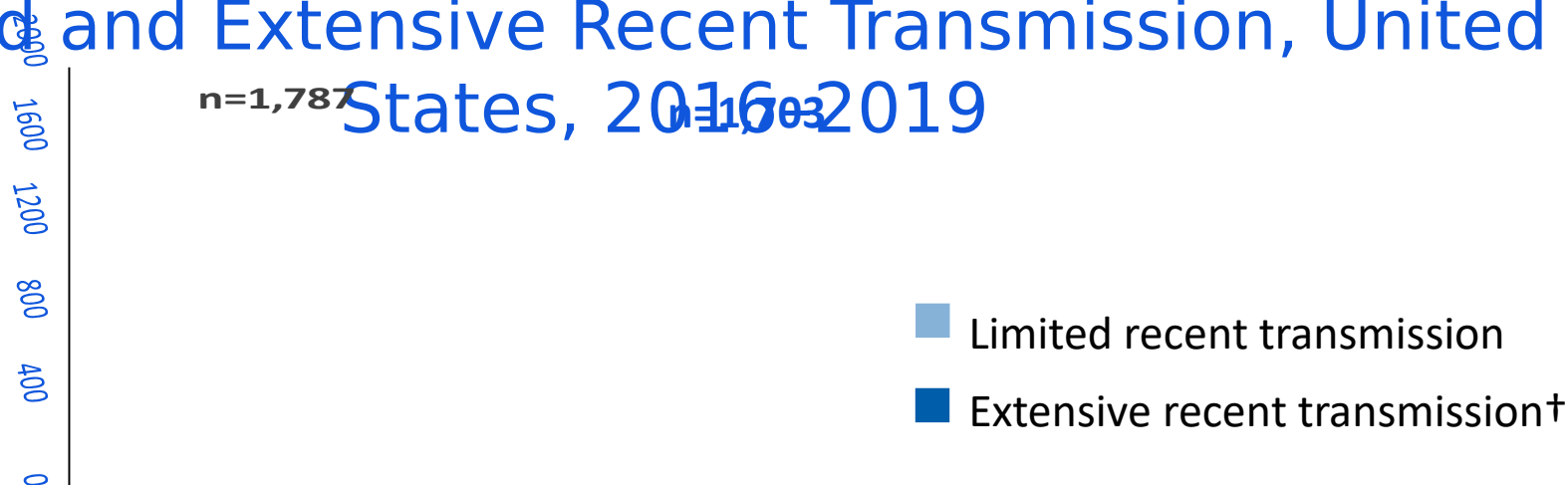


* A TB case is designated as attributed to recent transmission if a plausible source case can be identified in a person who i) has the same *M. tuberculosis* genotype, ii) has an infectious form of TB disease, iii) resides within 10 miles of the TB case, iv) is 10 years of age or older, and v) was diagnosed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

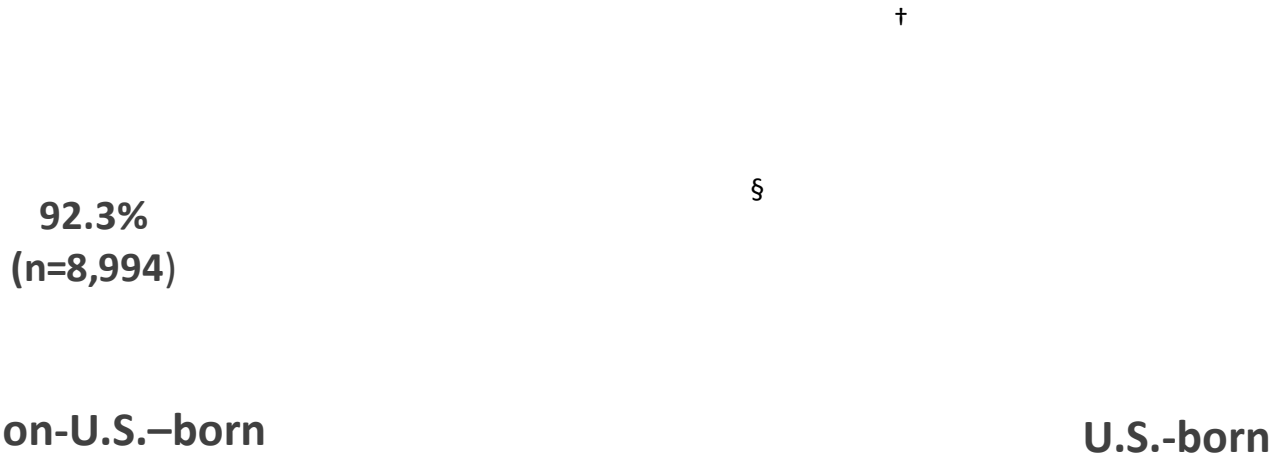
Genotyped Cases Estimated to be Attributed to Limited and Extensive Recent Transmission, United States, 2016–2019



* 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*, 2018–2019

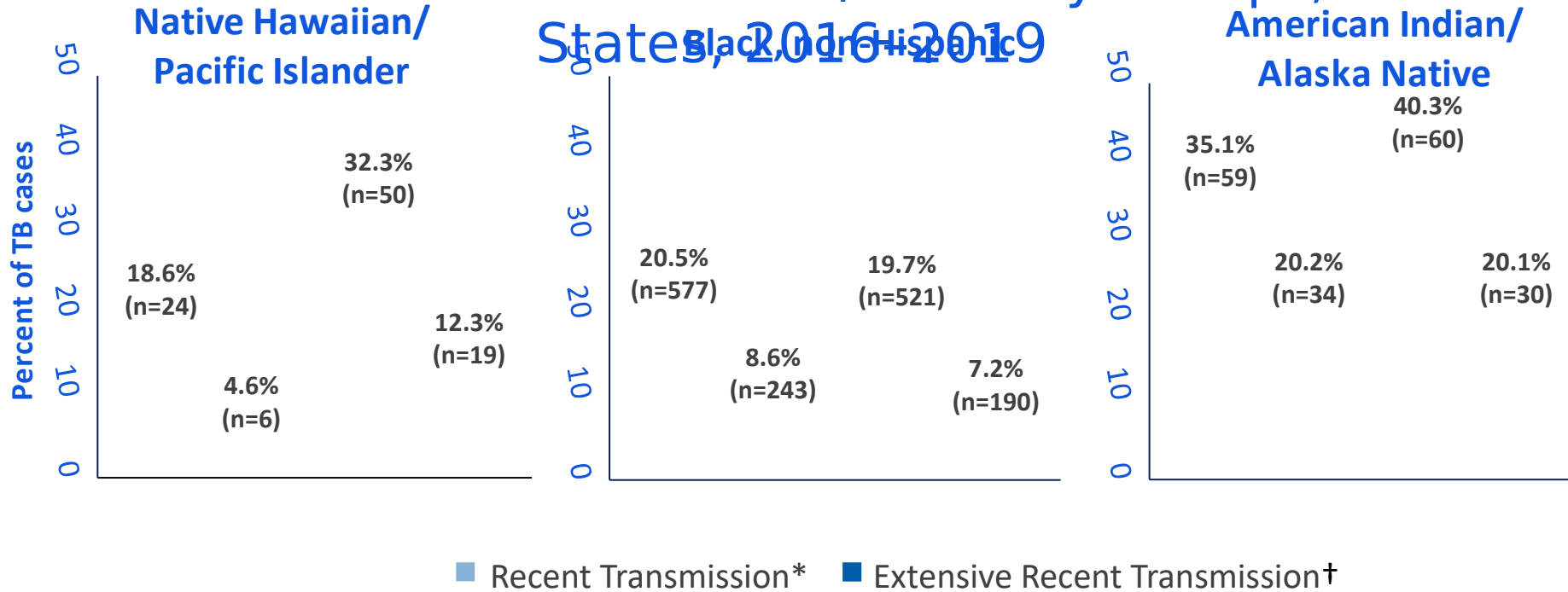


* Cases with unknown origin of birth not shown (n=11).

† 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.

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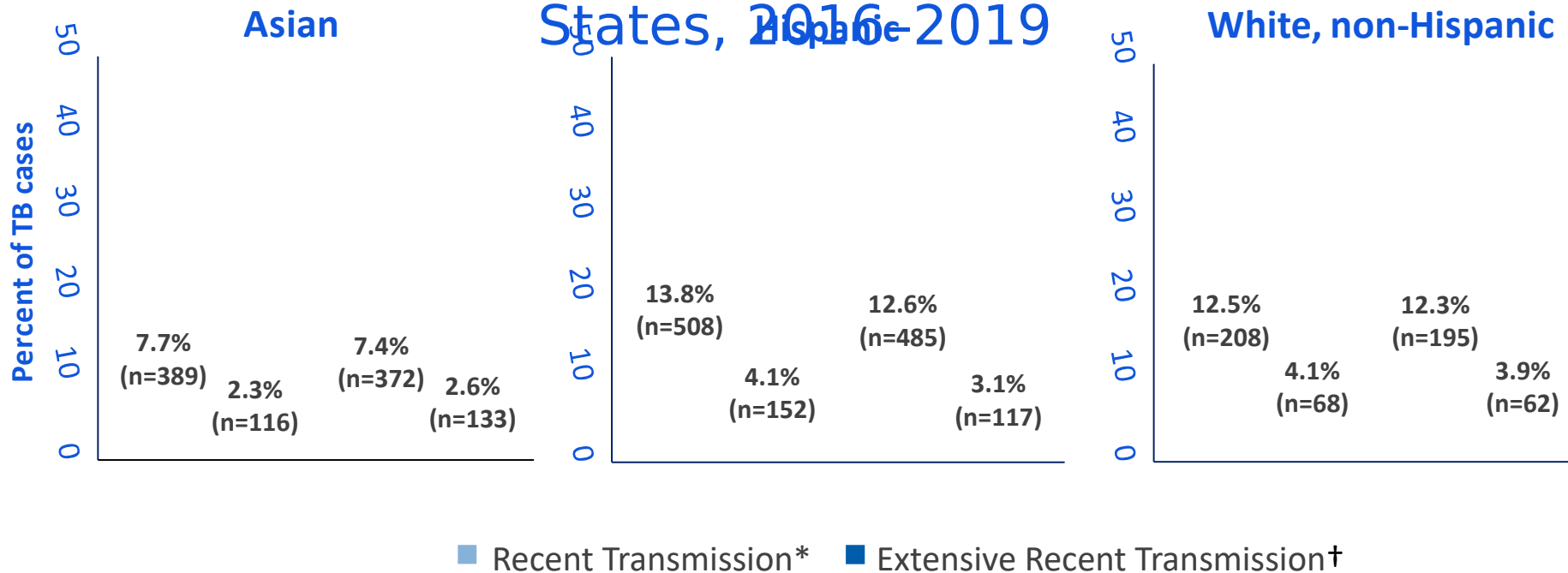
Proportion of TB Cases Estimated to be Attributed to Recent Transmission and Extensive Recent Transmission for Select Race/Ethnicity Groups, United States, 2016–2019



* 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.

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Proportion of TB Cases Estimated to be Attributed to Recent Transmission and Extensive Recent Transmission for Select Race/Ethnicity Groups, United States, 2016-2019



* 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.

Division of Tuberculosis Elimination

National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

Centers for Disease Control and Prevention

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Atlanta, GA 30329

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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.

