Overview of Global and National TB Epidemiology, 2023

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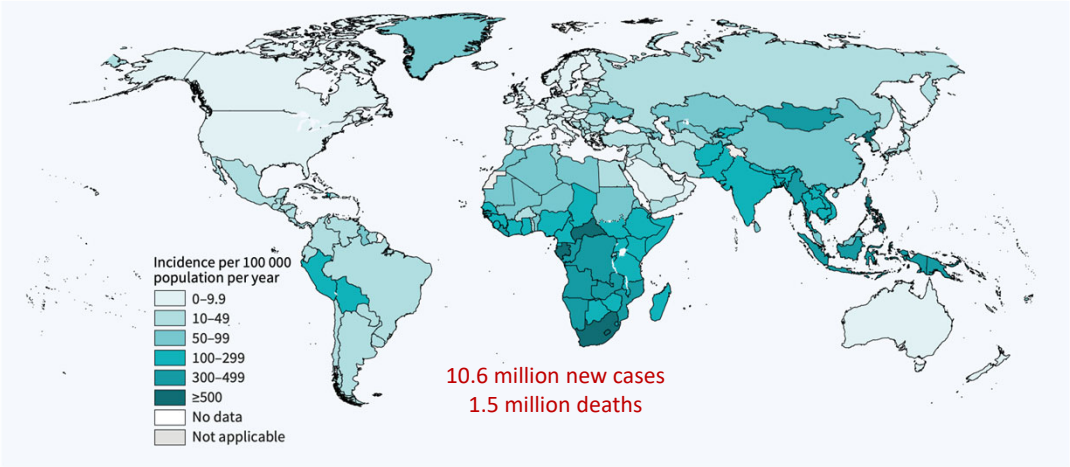
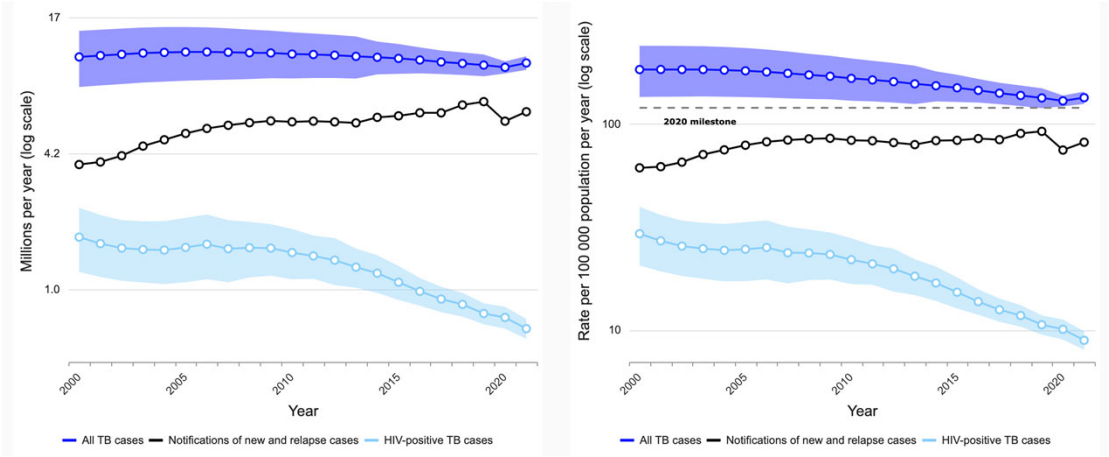
Global tuberculosis incidence



Source: WHO Global Tuberculosis Report 2022

2

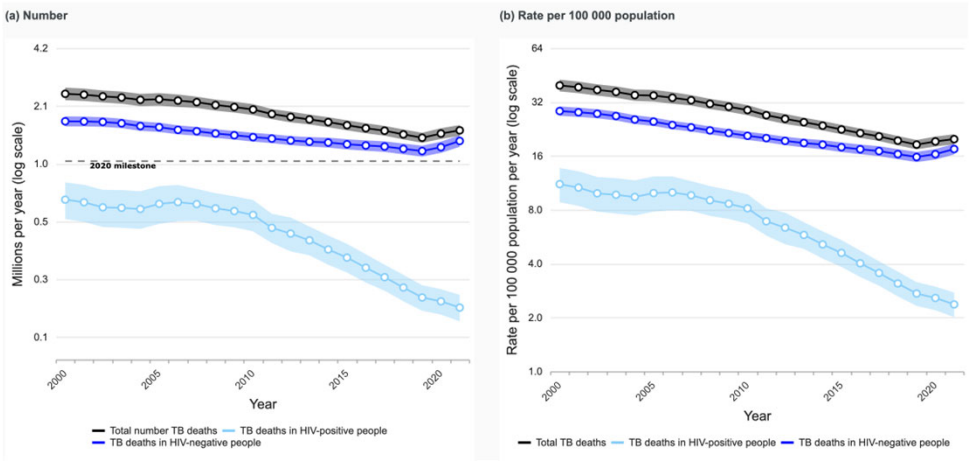
Global trends in incident TB cases and rates



WHO Global Tuberculosis Report 2022

3

Global trends in TB deaths and mortality rate



WHO Global Tuberculosis Report 2022

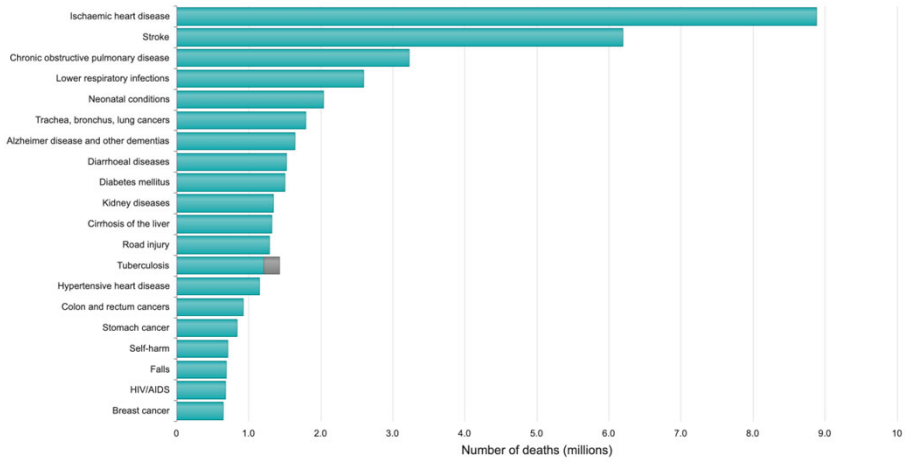
4

Age distribution of TB cases in women and men

Source: WHO Global Tuberculosis Report 2022

5

Leading causes of death in the world, 2019



WHO Global TB Report 2022

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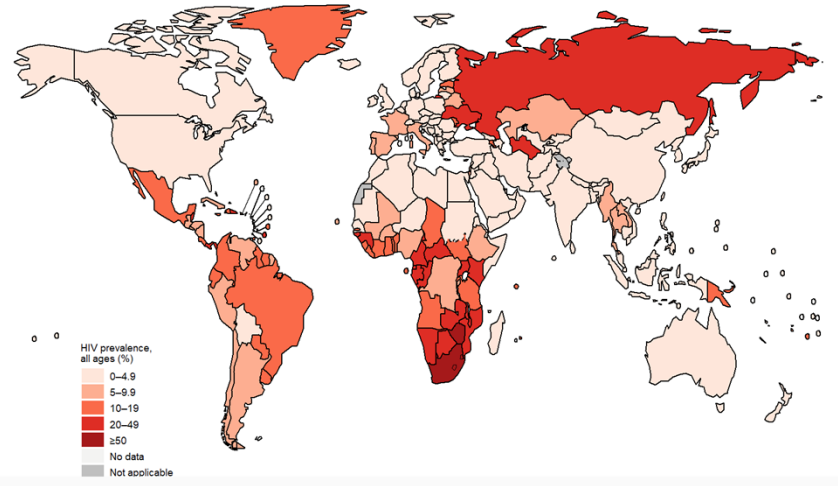
HIV prevalence among new cases of TB



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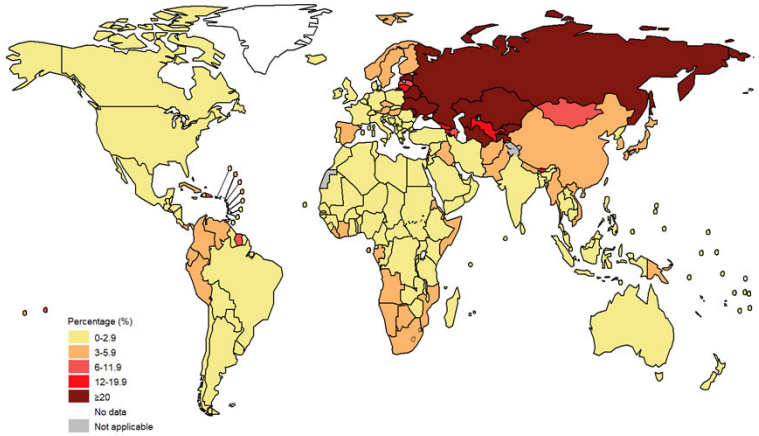
Percentage of new TB cases with multidrug resistant or rifampin monoresistant (MDR/RR) TB



Estimate of total MDR/RR-TB cases
500,000

WHO Global TB Report 2022

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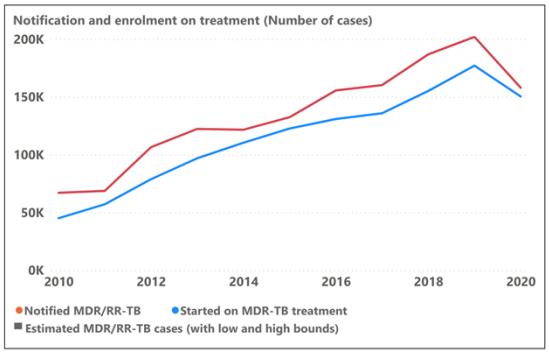
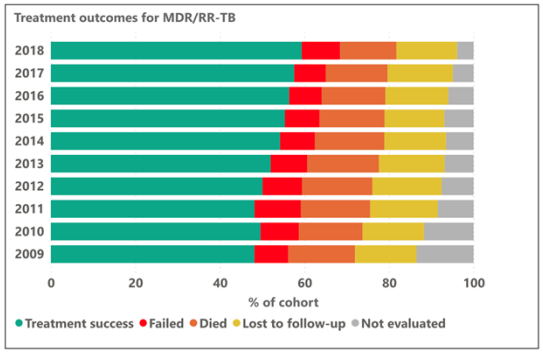
Most patients with MDR-TB are neither diagnosed nor treated, and outcomes of treatment are suboptimal





Source: WHO, accessed at www.who.int/tb/data on March 9, 2022

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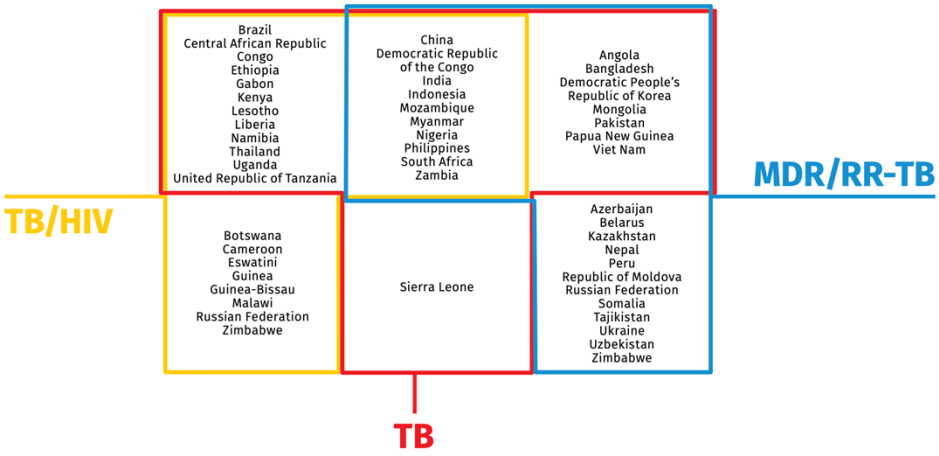
High-burden countries for TB, TB/HIV and MDRTB



WHO, Global Tuberculosis Report 2021

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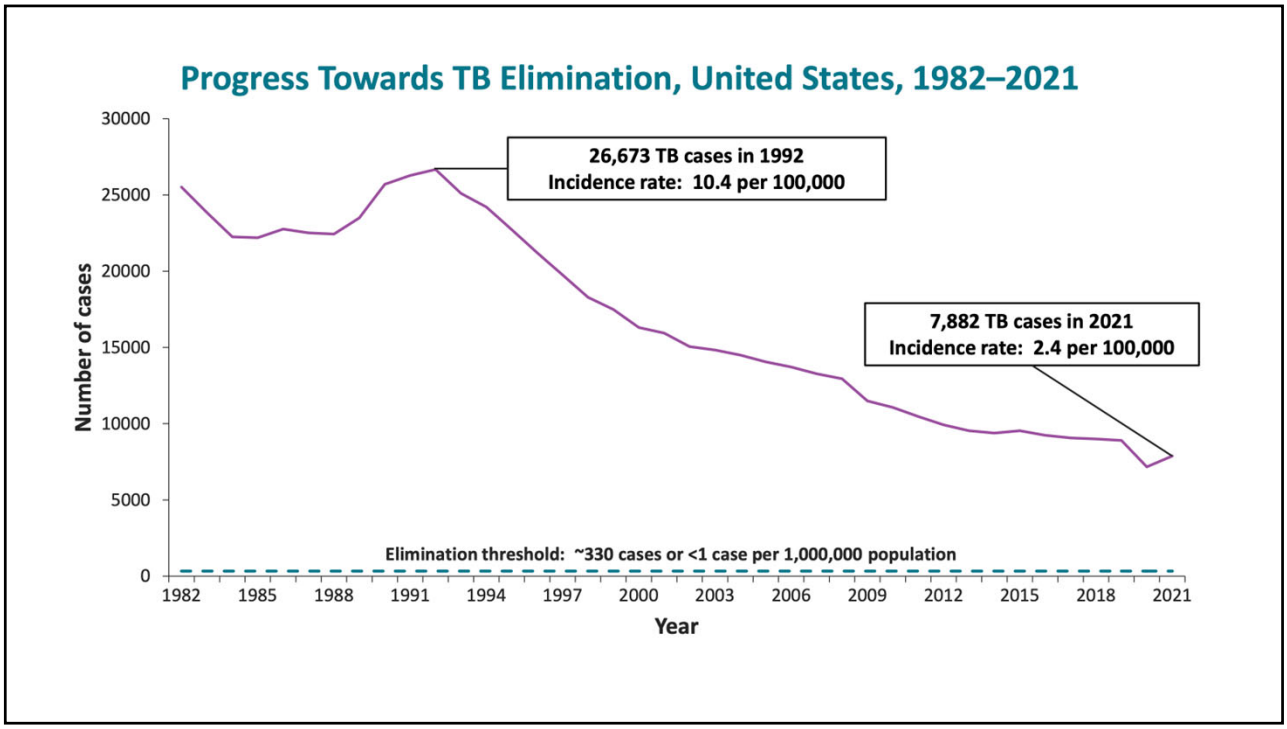

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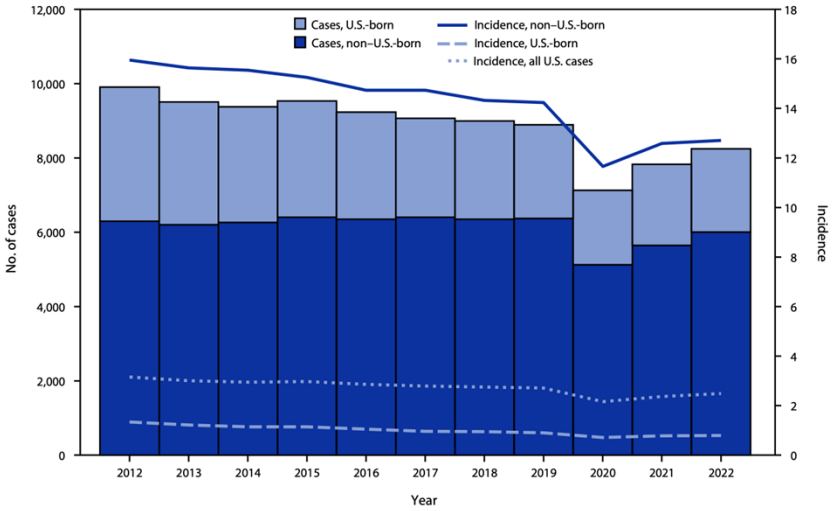
TB cases in the U.S., 2012-2022



MMWR March 24, 2023

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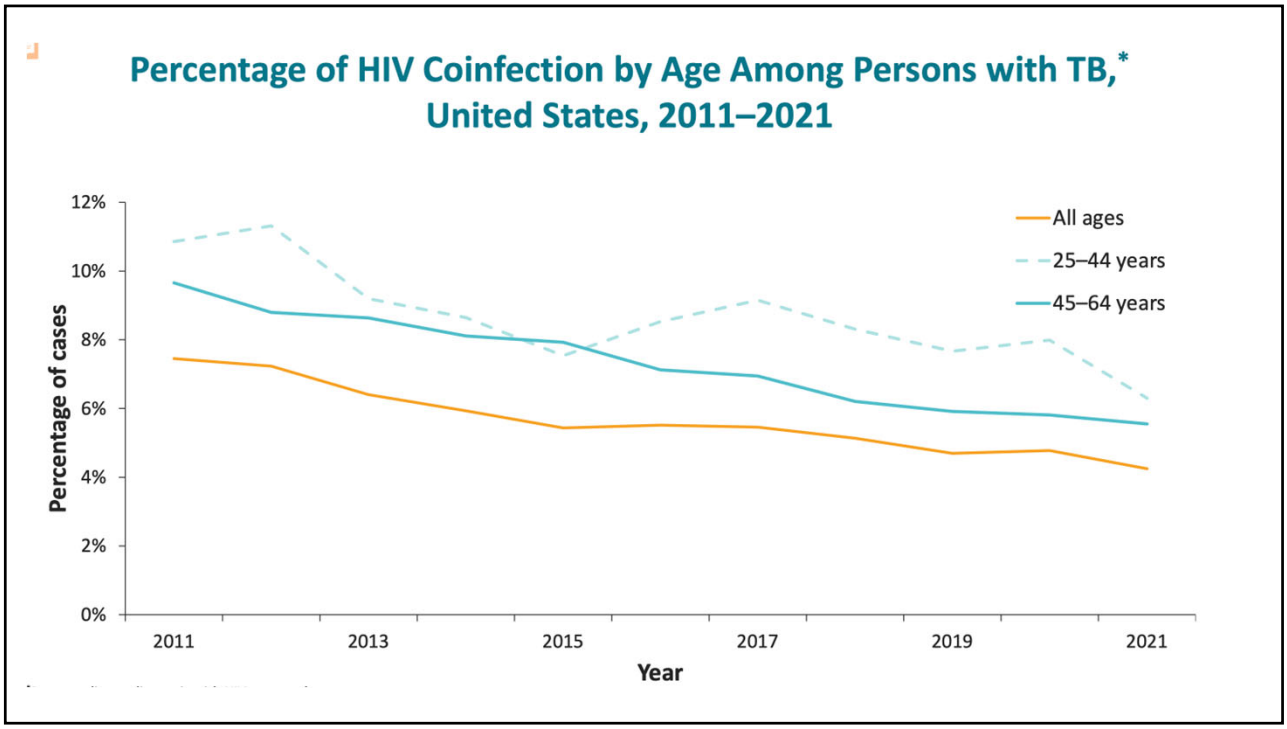
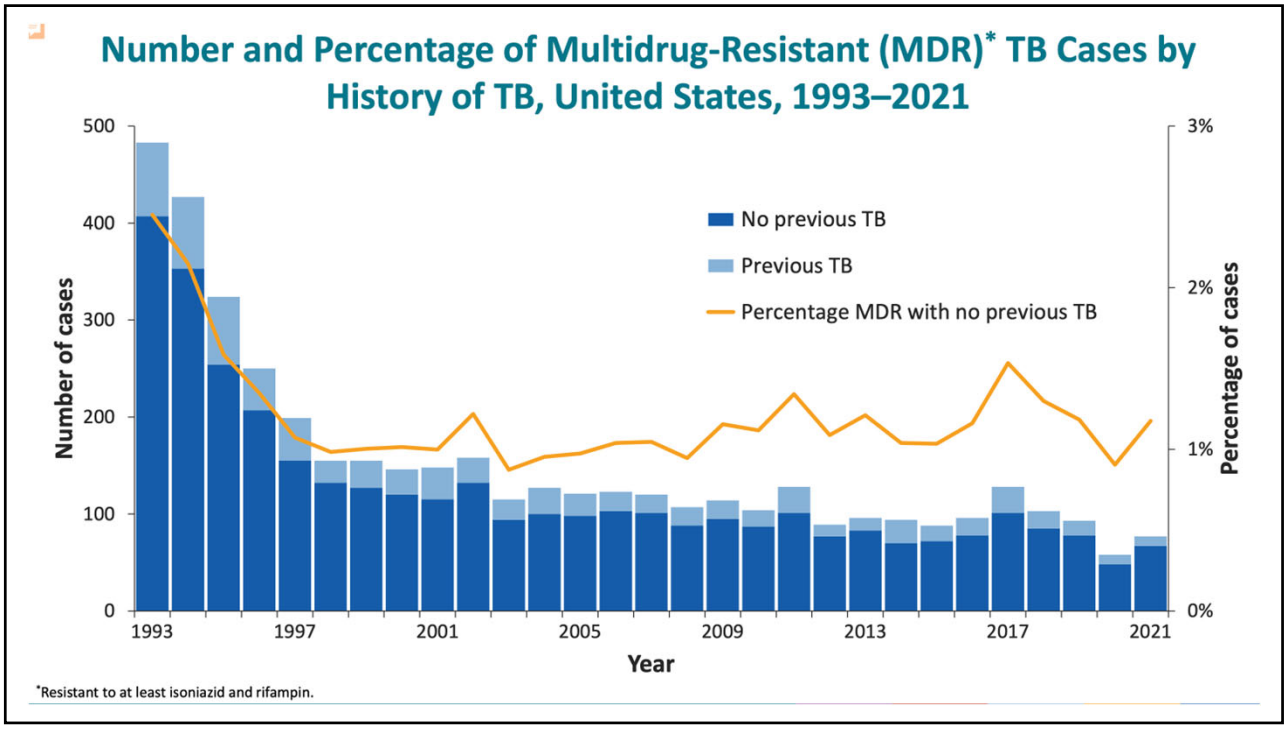

Percentage of HIV Coinfection by Age Among Persons with TB,* United States, 2011–2021
12%
10%
8%
6%
4%
2%
0%
Percentage of cases
2011
2013
2015
2017
2019
2021
Year
All ages
25–44 years
45–64 years

13


Number and Percentage of Multidrug-Resistant (MDR)* TB Cases by History of TB, United States, 1993–2021
500
400
300
200
100
0
Number of cases
3%
2%
1%
0%
Percentage of cases
1993
1997
2001
2005
2009
2013
2017
2021
Year
No previous TB
Previous TB
Percentage MDR with no previous TB
*Resistant to at least isoniazid and rifampin.

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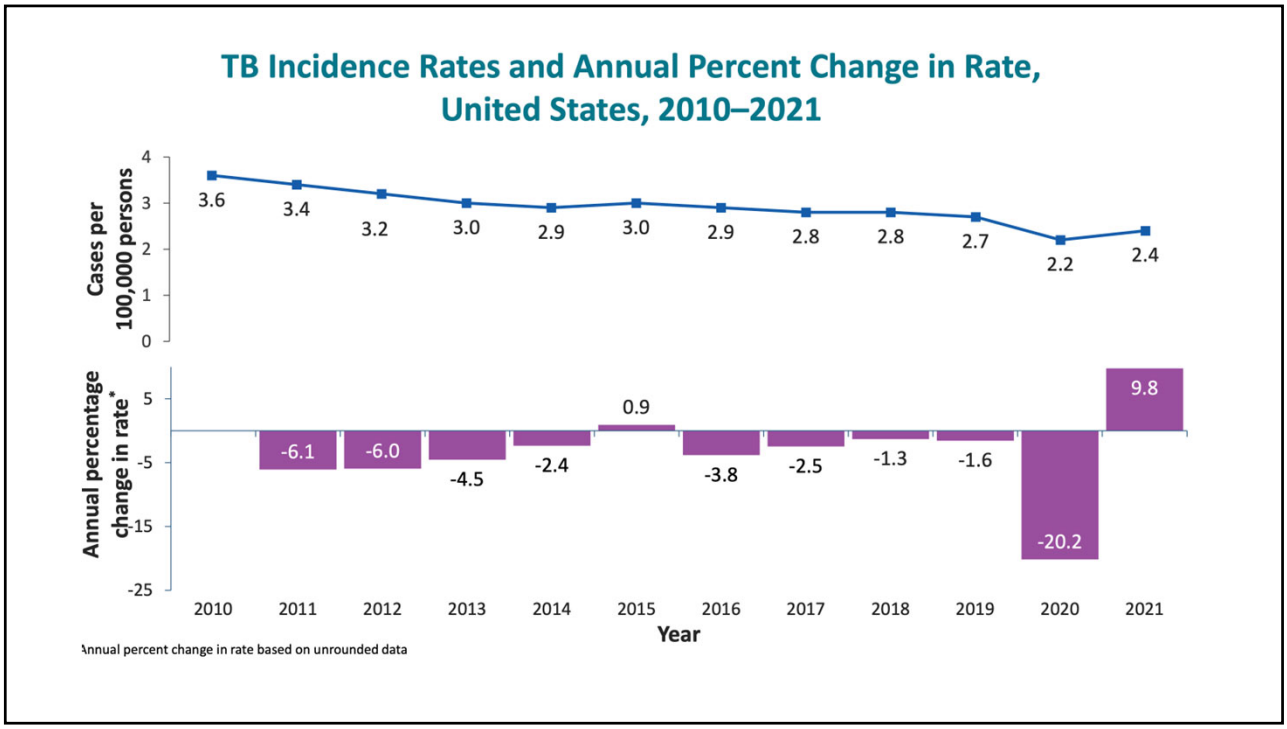
TB Incidence Rates and Annual Percent Change in Rate, United States, 2010–2021
Cases per 100,000 persons
4
3
2
1
0
3.6
3.4
3.2
3.0
2.9
3.0
2.9
2.8
2.8
2.7
2.2
2.4
Annual percentage change in rate*
5
-5
-15
-25
-6.1
-6.0
-4.5
-2.4
0.9
-3.8
-2.5
-1.3
-1.6
-20.2
9.8
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Year
*Annual percent change in rate based on unrounded data

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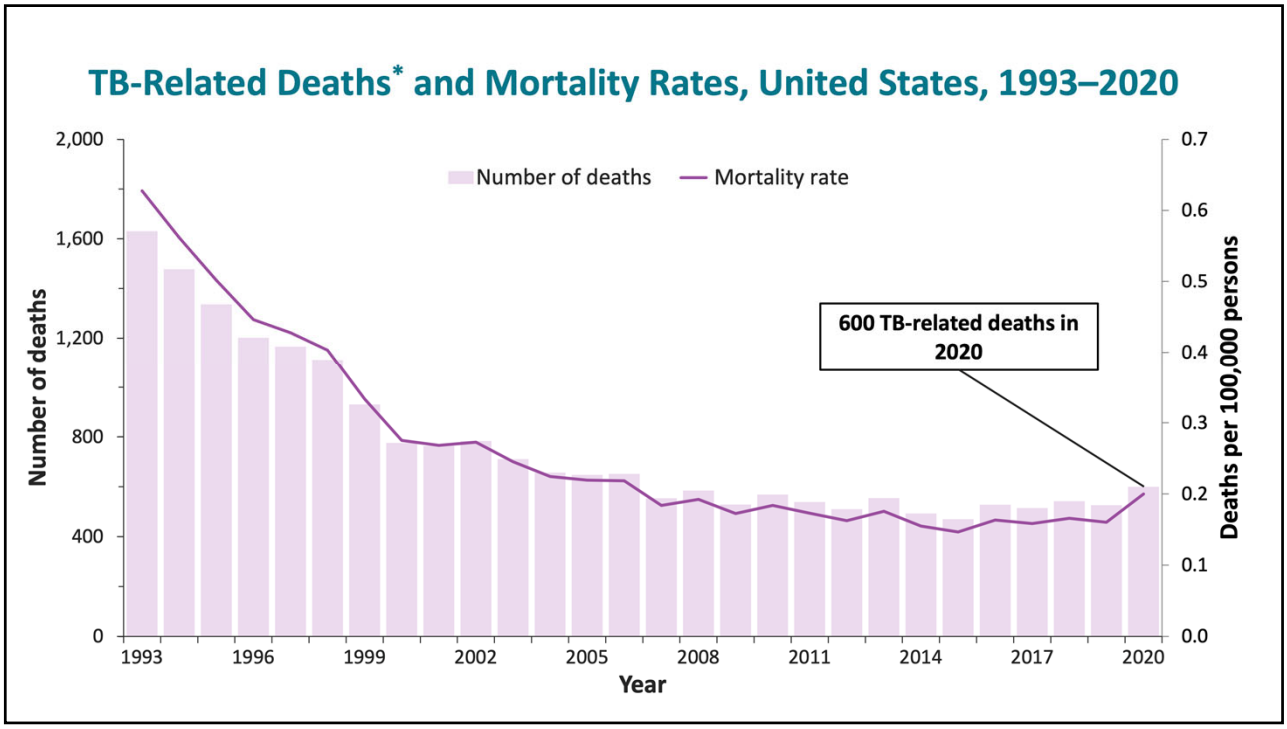
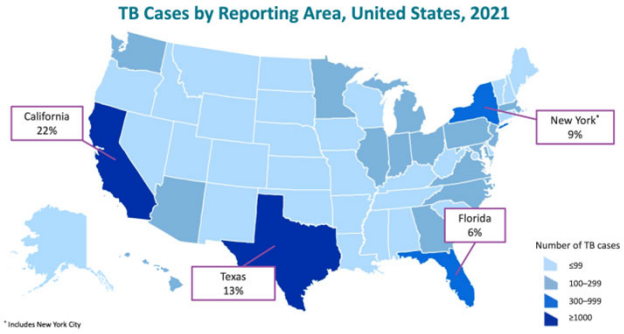
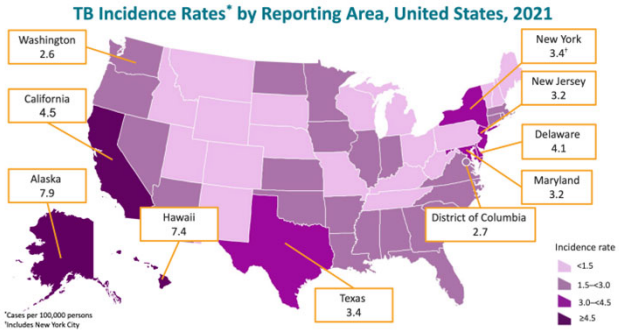

TB-Related Deaths* and Mortality Rates, United States, 1993–2020
Number of deaths
Mortality rate
Number of deaths
2,000
1,600
1,200
800
400
0
Deaths per 100,000 persons
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
600 TB-related deaths in 2020
1993
1996
1999
2002
2005
2008
2011
2014
2017
2020
Year

16

TB cases and incidence, United States, 2021





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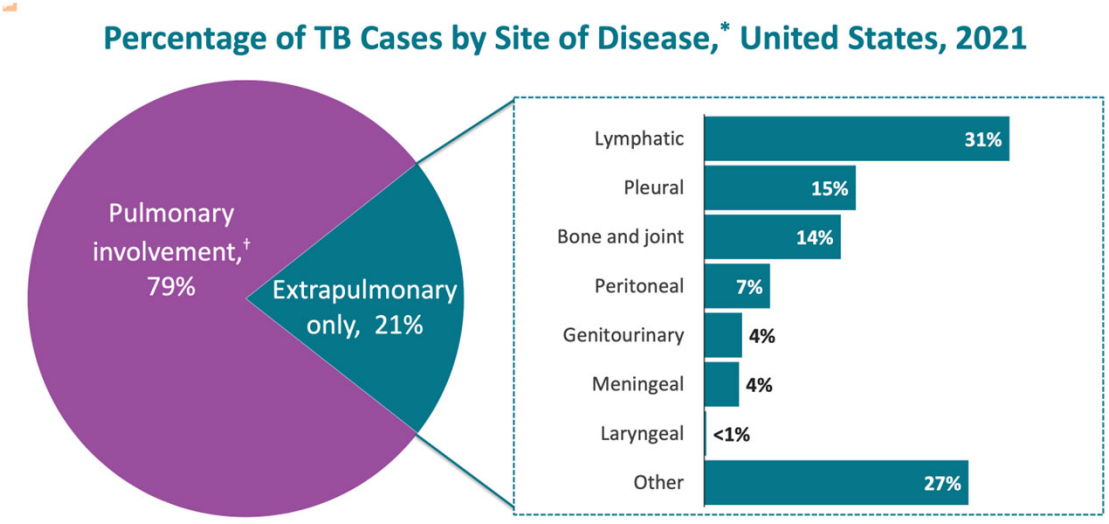

*Patients may have more than one disease site but are counted in mutually exclusive categories for surveillance purposes.
†Any pulmonary involvement which includes cases that are pulmonary only and both pulmonary and extrapulmonary.

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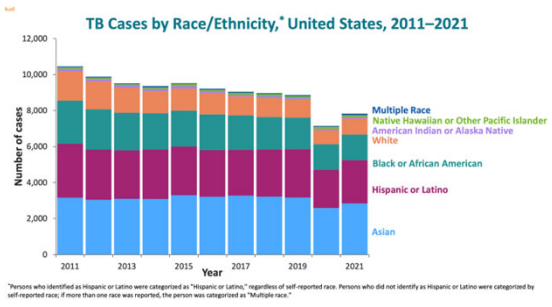
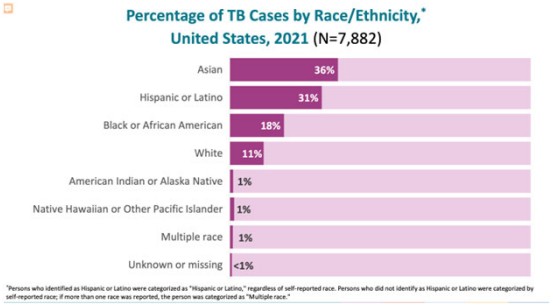
TB cases by race and ethnicity, U.S.





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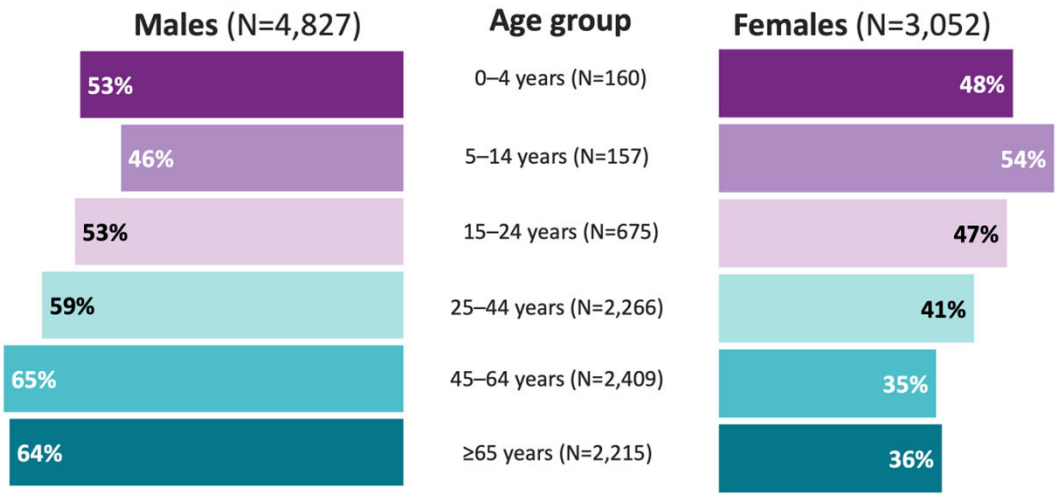
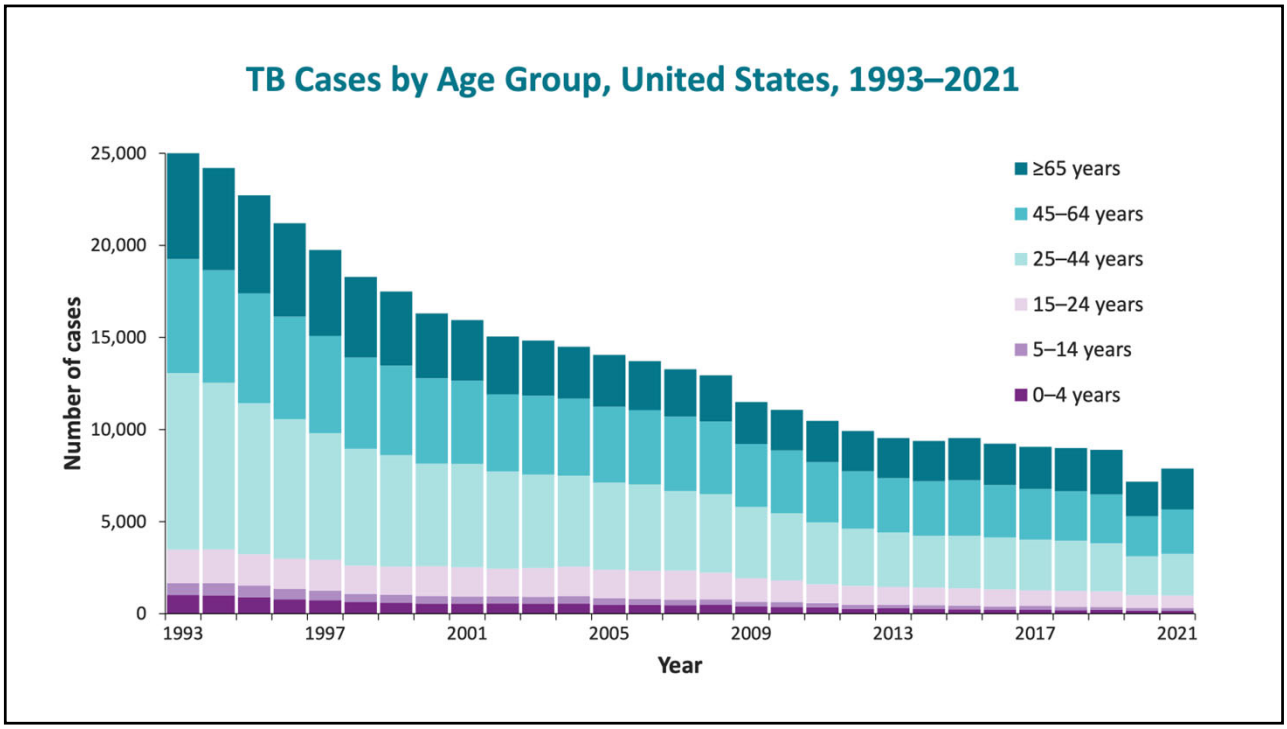
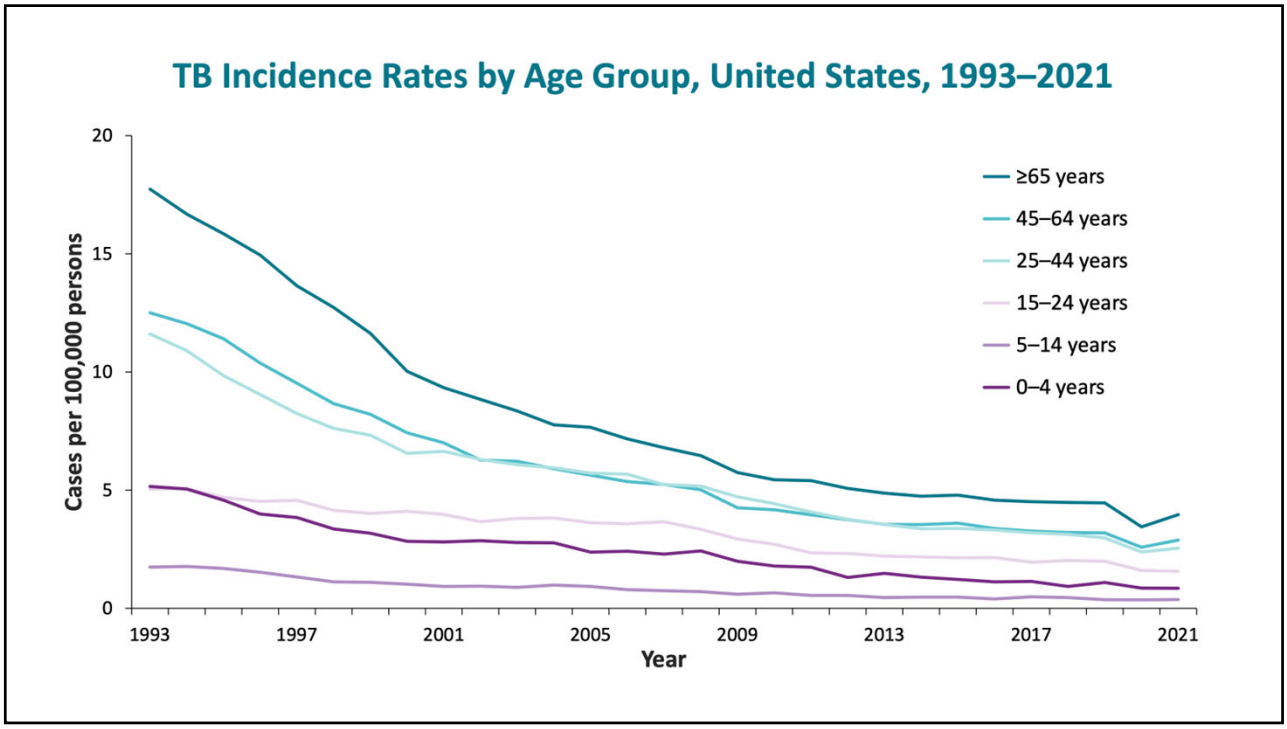
Percentage of TB Cases by Sex and Age Group, United States, 2021



20

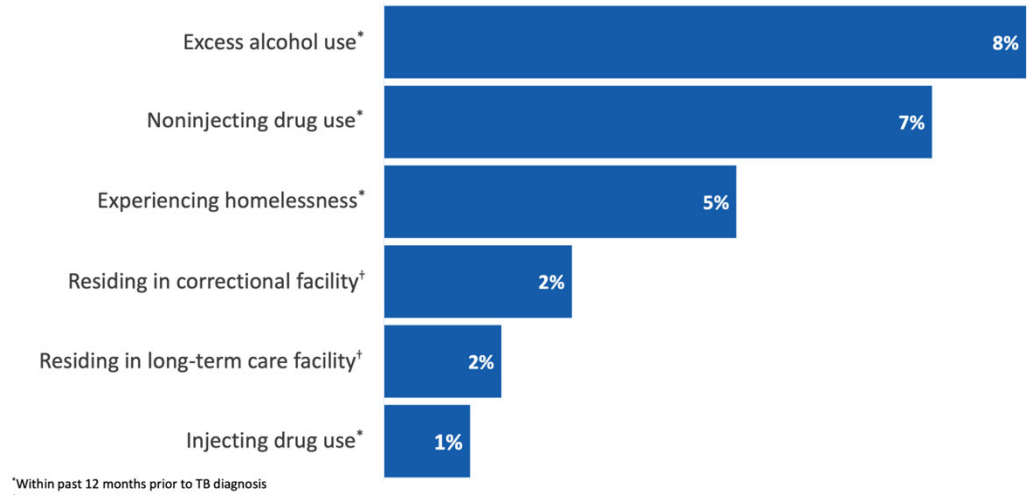

TB Cases by Age Group, United States, 1993–2021
Number of cases
25,000
20,000
15,000
10,000
5,000
0
1993
1997
2001
2005
2009
2013
2017
2021
Year
≥65 years
45–64 years
25–44 years
15–24 years
5–14 years
0–4 years

21


TB Incidence Rates by Age Group, United States, 1993–2021
Cases per 100,000 persons
20
15
10
5
0
1993
1997
2001
2005
2009
2013
2017
2021
Year
≥65 years
45–64 years
25–44 years
15–24 years
5–14 years
0–4 years

22

Percentage of Social and Behavioral Risk Factors Among Persons Aged ≥15 Years with TB, United States, 2021



*Within past 12 months prior to TB diagnosis
†At the time of TB diagnosis

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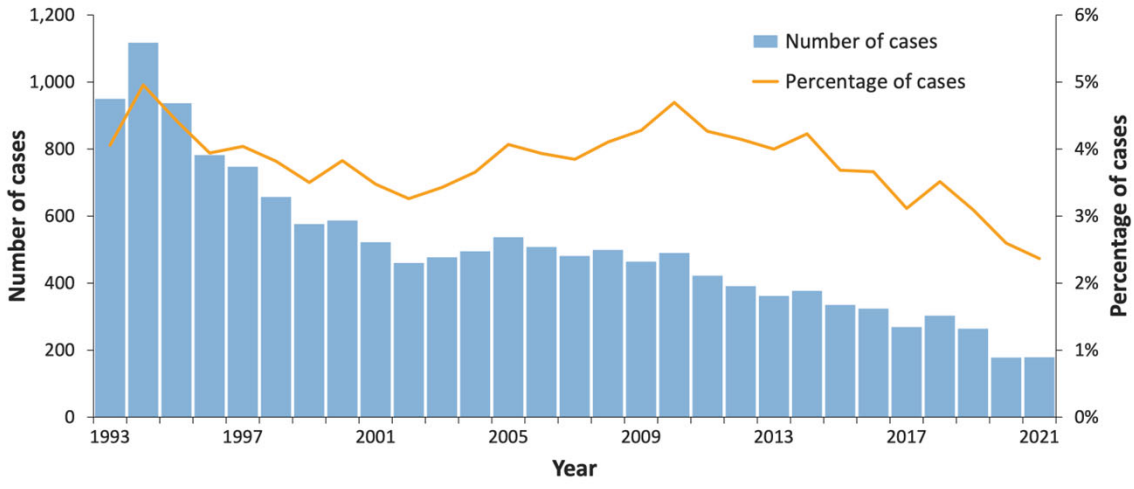
Number and Percentage of Correctional Facility* Residents Among Persons Aged ≥15 Years with TB, United States, 1993–2021



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

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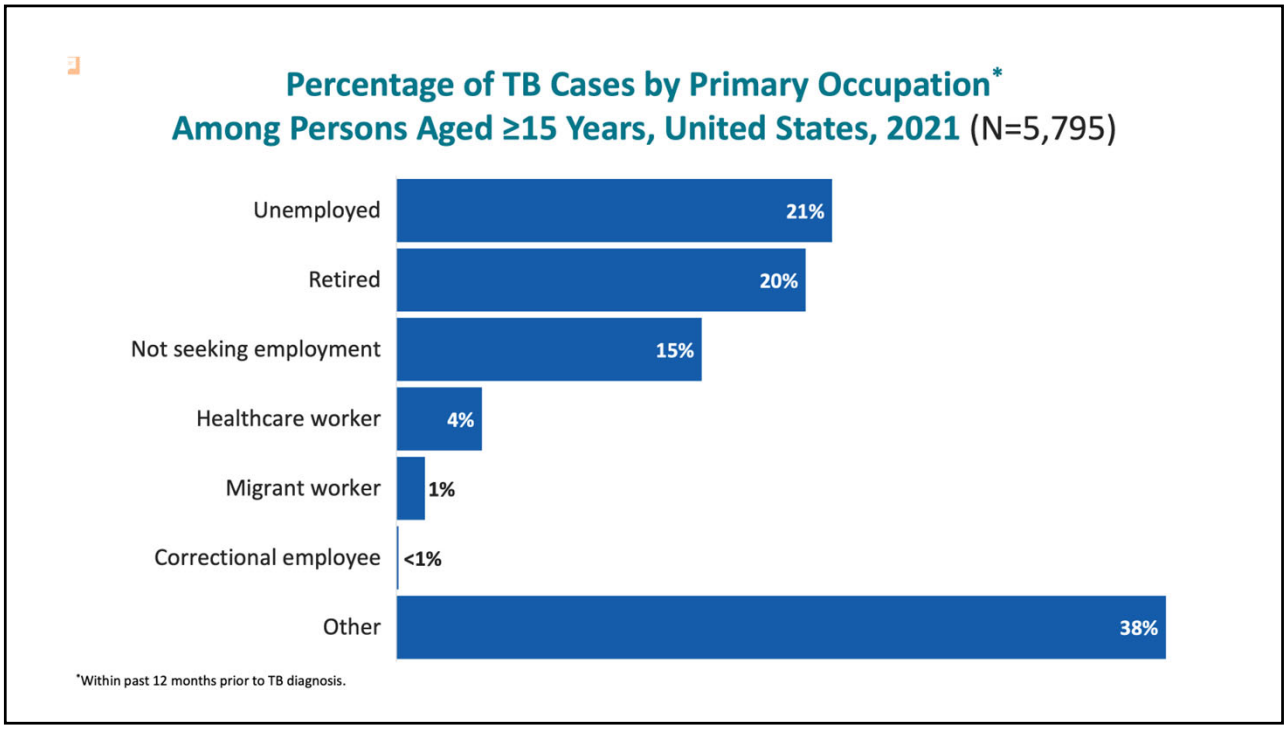
Percentage of TB Cases by Primary Occupation*
Among Persons Aged ≥15 Years, United States, 2021 (N=5,795)
Unemployed
21%
Retired
20%
Not seeking employment
15%
Healthcare worker
4%
Migrant worker
1%
Correctional employee
<1%
Other
38%
*Within past 12 months prior to TB diagnosis.

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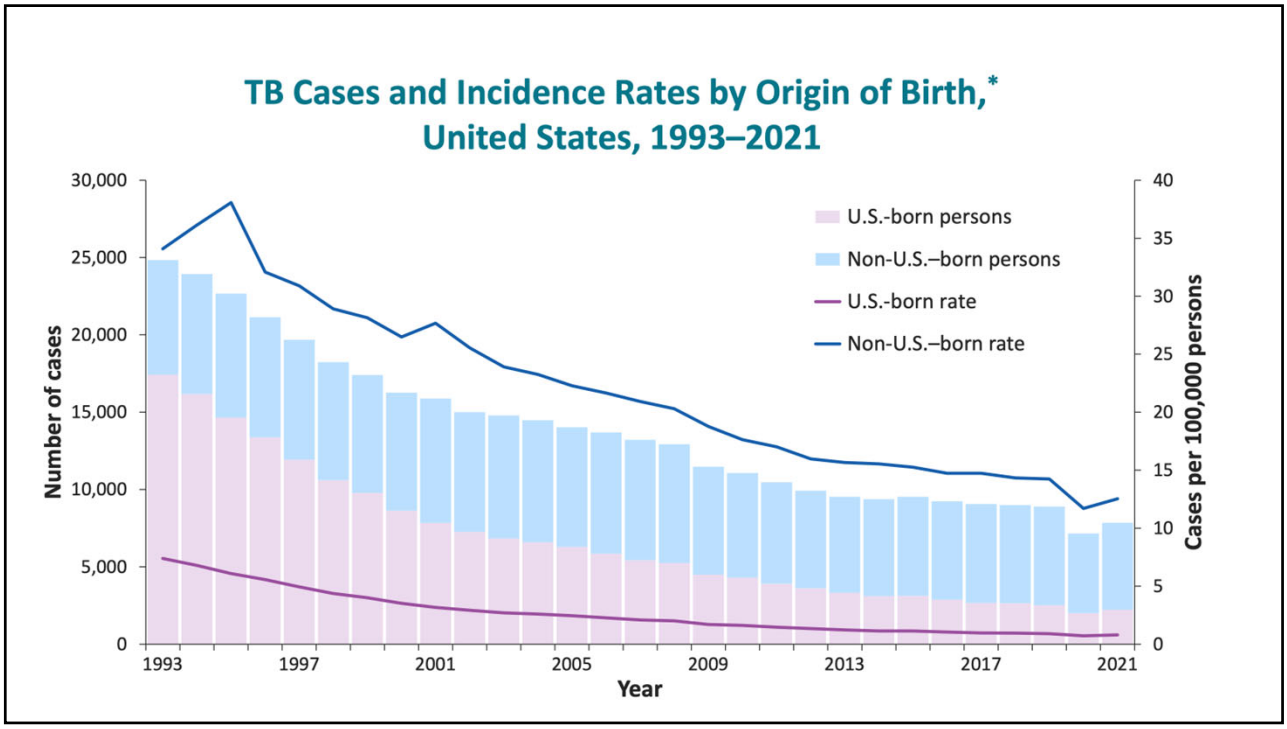
TB Cases and Incidence Rates by Origin of Birth,*
United States, 1993–2021
Number of cases
30,000
25,000
20,000
15,000
10,000
5,000
0
Cases per 100,000 persons
40
35
30
25
20
15
10
5
0
1993
1997
2001
2005
2009
2013
2017
2021
Year
U.S.-born persons
Non-U.S.–born persons
U.S.-born rate
Non-U.S.–born rate

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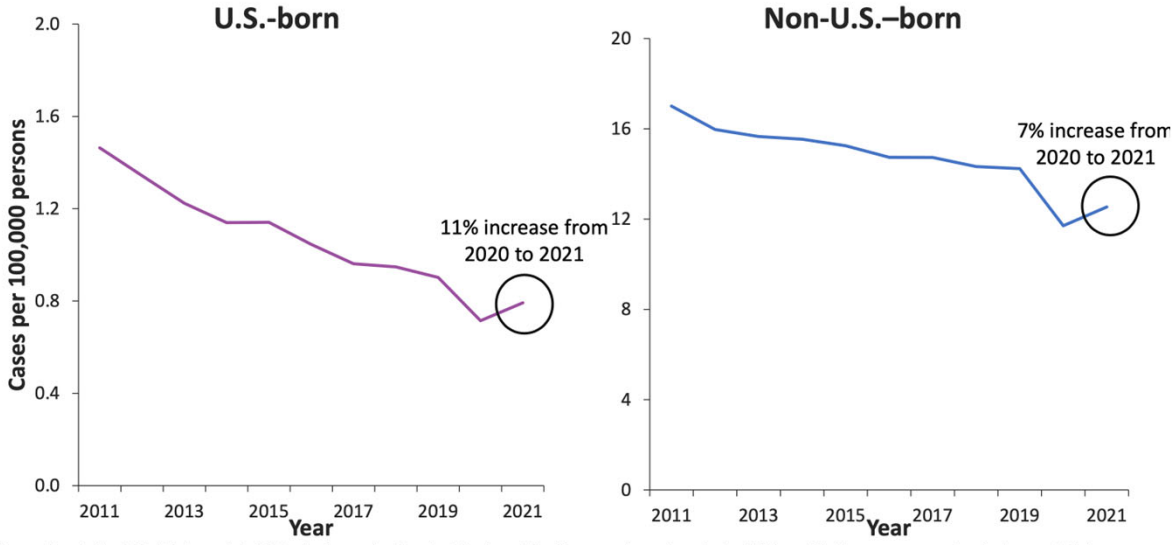
TB Incidence Rates by Origin of Birth,* United States, 2011–2021



*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.

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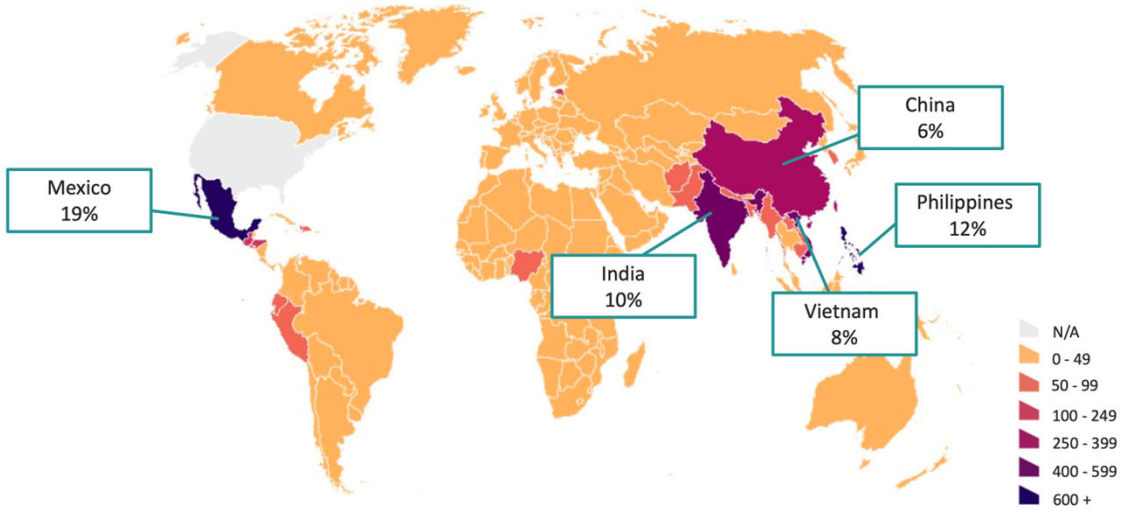
TB Cases by Countries of Birth Among Non-U.S.–Born* Persons with TB, United States, 2021 (N=5,626)



*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.

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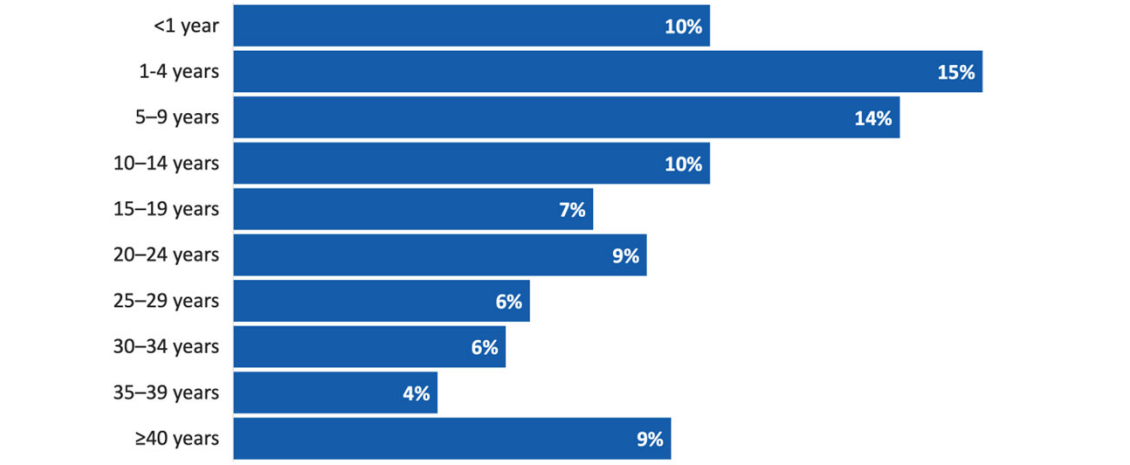
Percentage of TB Cases Among Non-U.S.–Born* Persons by Years Since Initial Arrival in the United States at Diagnosis,† 2021 (N=5,626)



*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.

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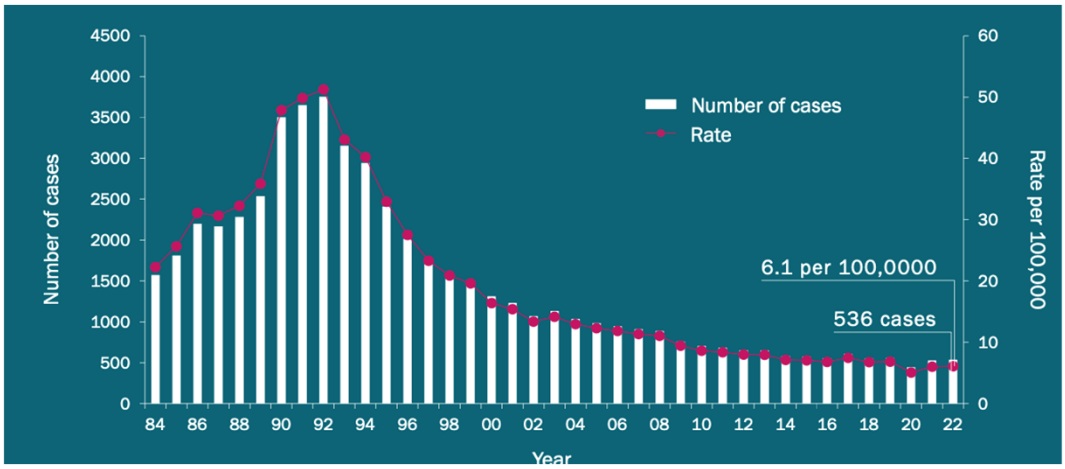
TB cases, New York City, 1984-2022



Source: NYC DOHMH

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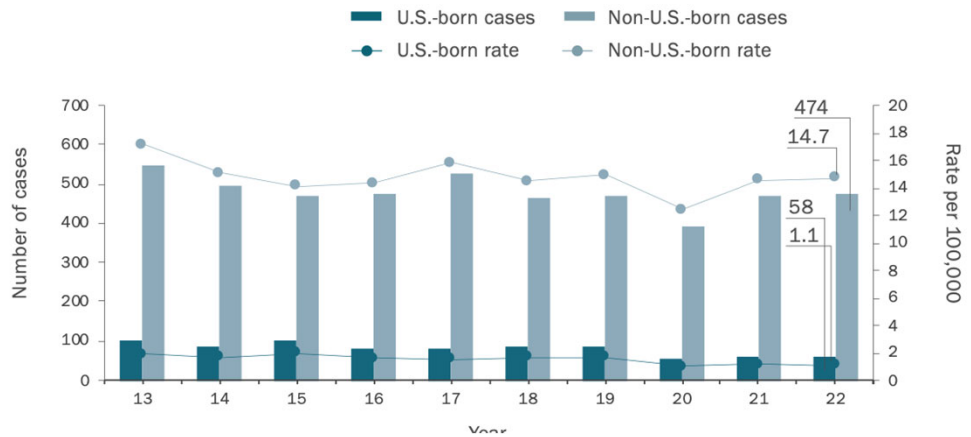
TB cases by place of birth, New York City 2013-2022



Source: NYC DOHMH

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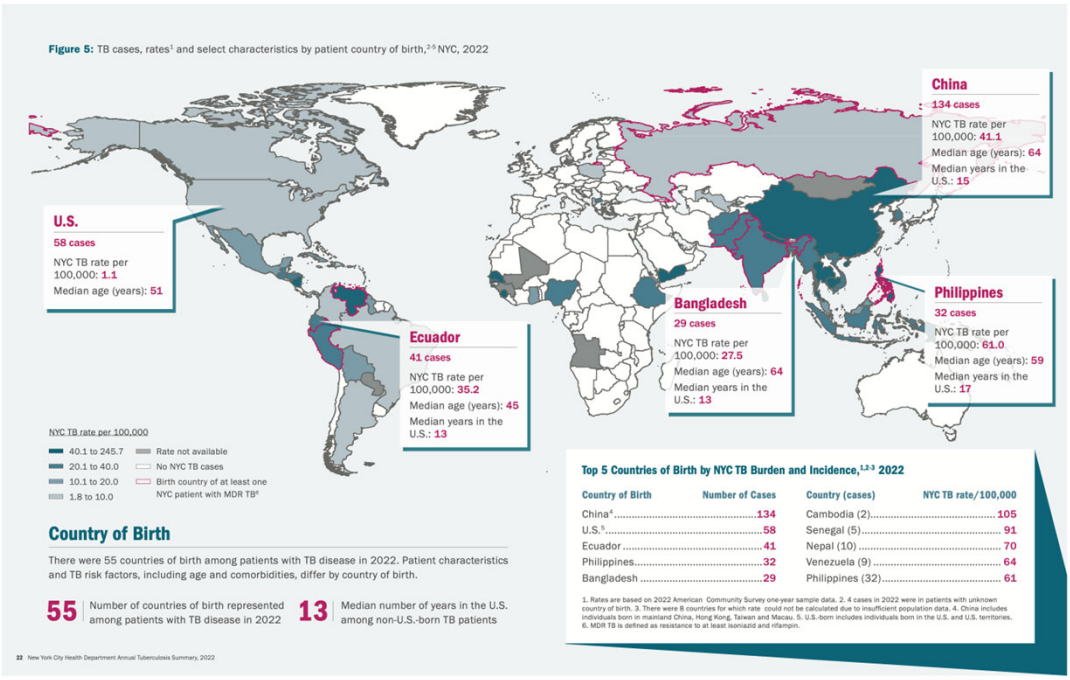

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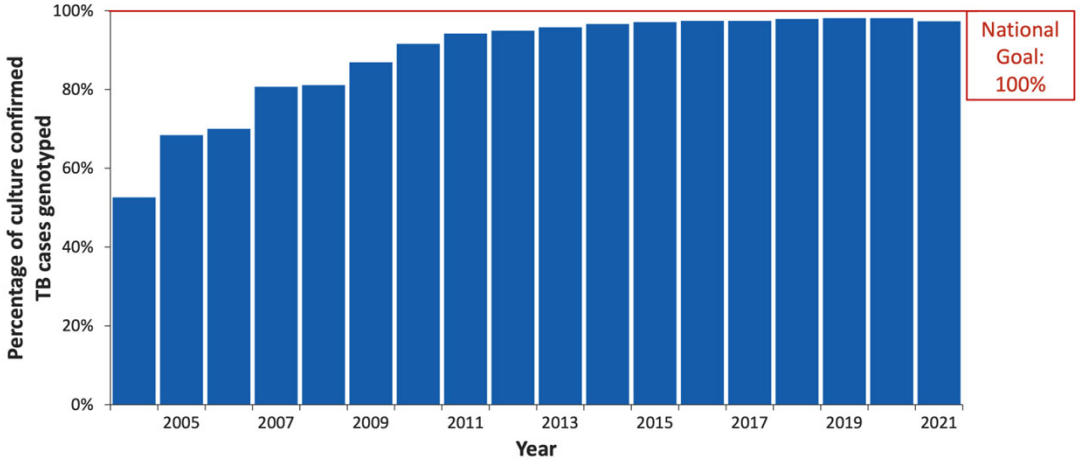
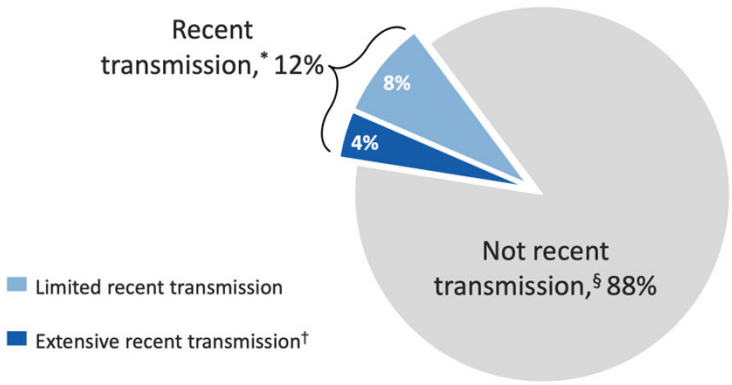
National TB Genotyping Surveillance Coverage,* United States, 2004–2021



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

33

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.

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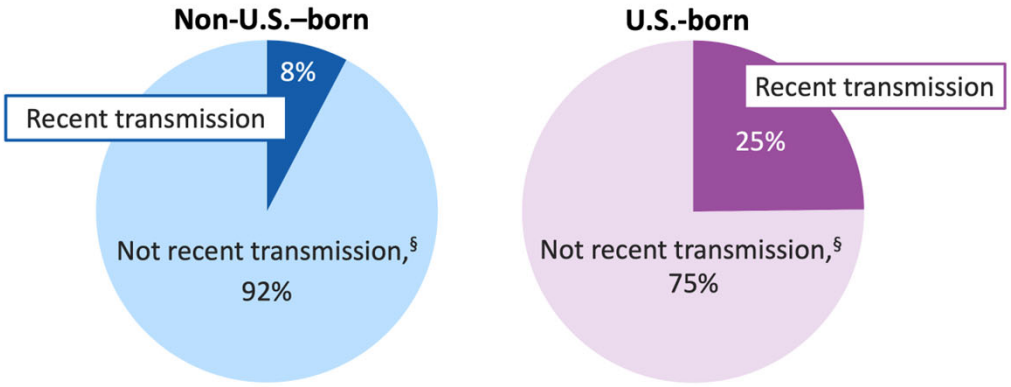
Percentages of TB Cases Estimated to be Attributed and Not Attributed to Recent Transmission* by Origin of Birth,† 2020–2021



* 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.

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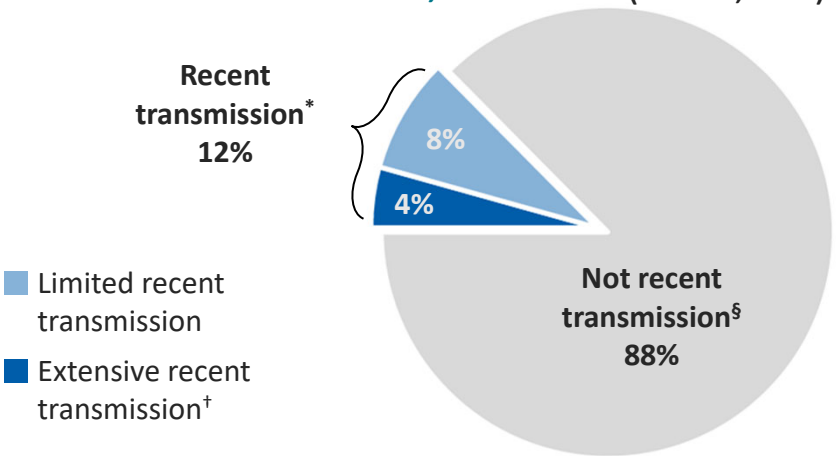
Genotyped TB Cases Estimated to be Attributed to Recent Transmission, United States, 2019–2020 (N=12,242)



* 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.

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Epidemiology of TB 2023: Conclusions

- Globally, TB incidence rates have declined only gradually over the past 20 years
- The Covid-19 pandemic set back TB control efforts sharply in 2020 and led to an increase in TB mortality globally
- Mortality rates from TB have declined more sharply
- TB rates in the United States are at historic lows
- Non-U.S. born persons account for the majority of cases of active TB in the U.S. and almost all cases in this segment of the population are due to reactivation and not community transmission

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