



The Epidemiology of Tuberculosis in Minnesota 2016 – 2020

Minnesota Department of Health

Tuberculosis Prevention and Control Program

(651) 201-5414 | www.health.state.mn.us/tb

Land Acknowledgement

Every community owes its existence and vitality to generations from around the world who contributed their hopes, dreams, and energy to making the history that led to this moment. Some were brought here against their will, some were drawn to leave their distant homes in hope of a better life, and some have lived on this land for more generations than can be counted. Truth and acknowledgment are critical to building mutual respect and connection across all barriers of heritage and difference.

We begin this effort to acknowledge what has been buried by honoring the truth. We are standing on the ancestral lands of the Dakota people. We want to acknowledge the Dakota, the Ojibwe, the Ho Chunk, and the other nations of people who also called this place home. We pay respects to their elders past and present. Please take a moment to consider the treaties made by the Tribal nations that entitle non-Native people to live and work on traditional Native lands. Consider the many legacies of violence, displacement, migration, and settlement that bring us together here today. Please join us in uncovering such truths at any and all public events.*

*This is the acknowledgment given in the USDAC Honor Native Land Guide – edited to reflect this space by Shannon Geshick, MTAG, Executive Director Minnesota Indian Affairs Council

TB Morbidity and Mortality Minnesota, 2016-2020

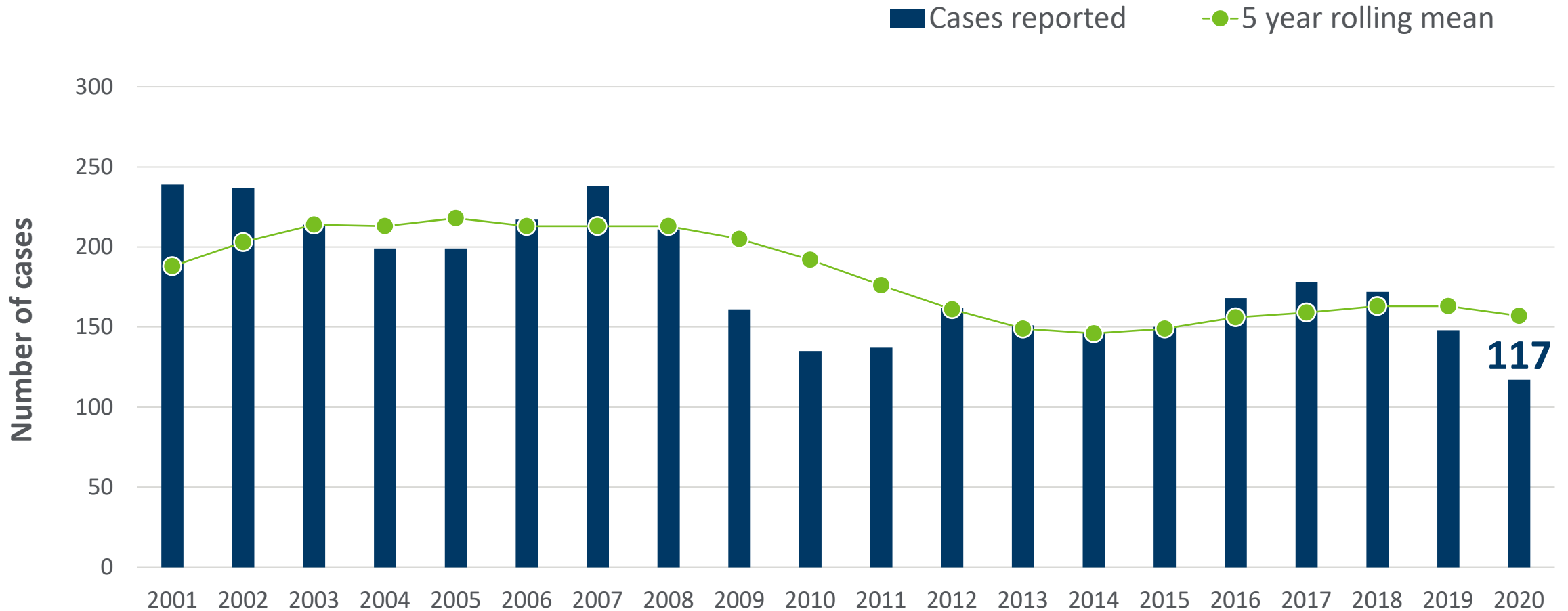
as of April 28, 2022

Year	No. of New Cases (Rate)*	No. of TB Deaths (% of New Cases)**
2016	168 (3.0)	8 (5)
2017	178 (3.2)	6 (3)
2018	172 (3.1)	2 (1)
2019	148 (2.6)	7 (5)
2020	117 (2.1)	6 (5)

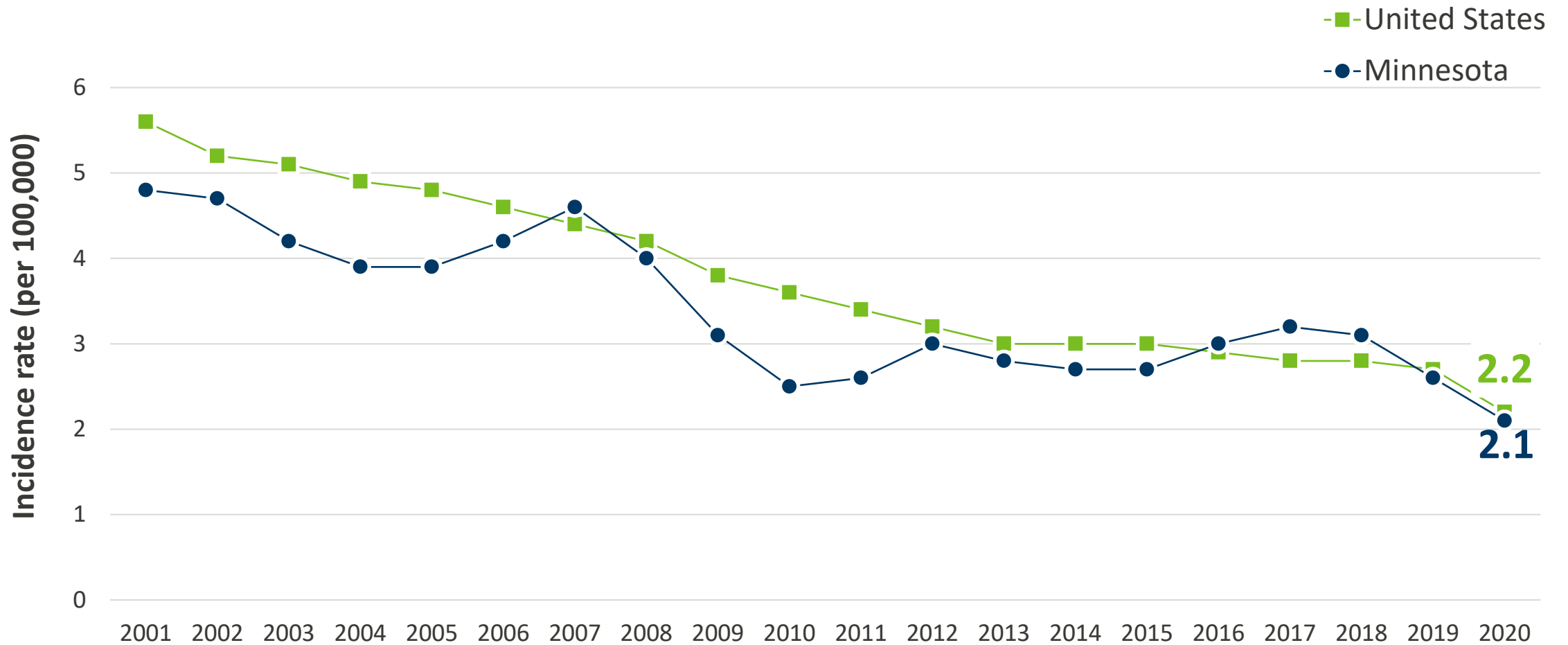
* Cases per 100,000 population. Rates calculated using state population estimates from the U.S. Census Bureau.

** Represents only deaths due to TB disease or TB drug-induced toxicity; percentages based on the number of new TB cases for each year

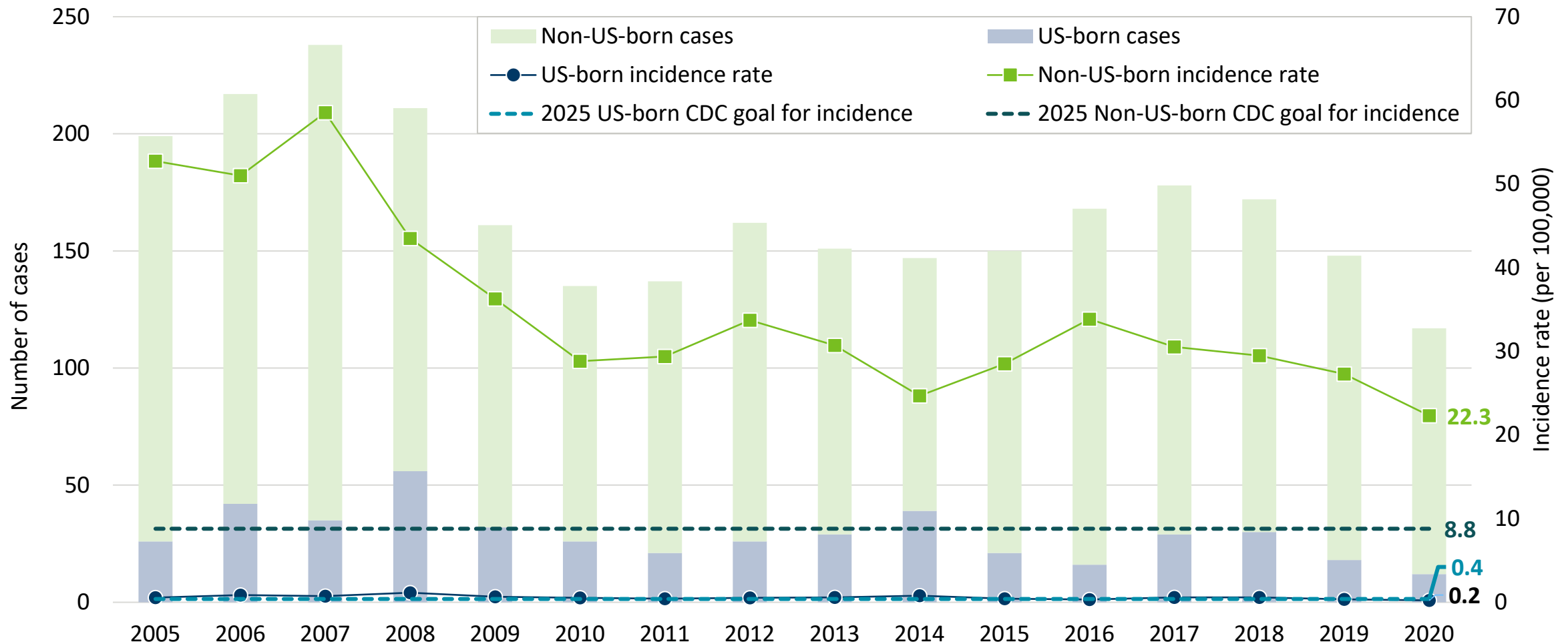
Active TB Cases Reported Annually Minnesota, 2001-2020



TB Incidence Rates per 100,000 Population United States and Minnesota, 2001-2020

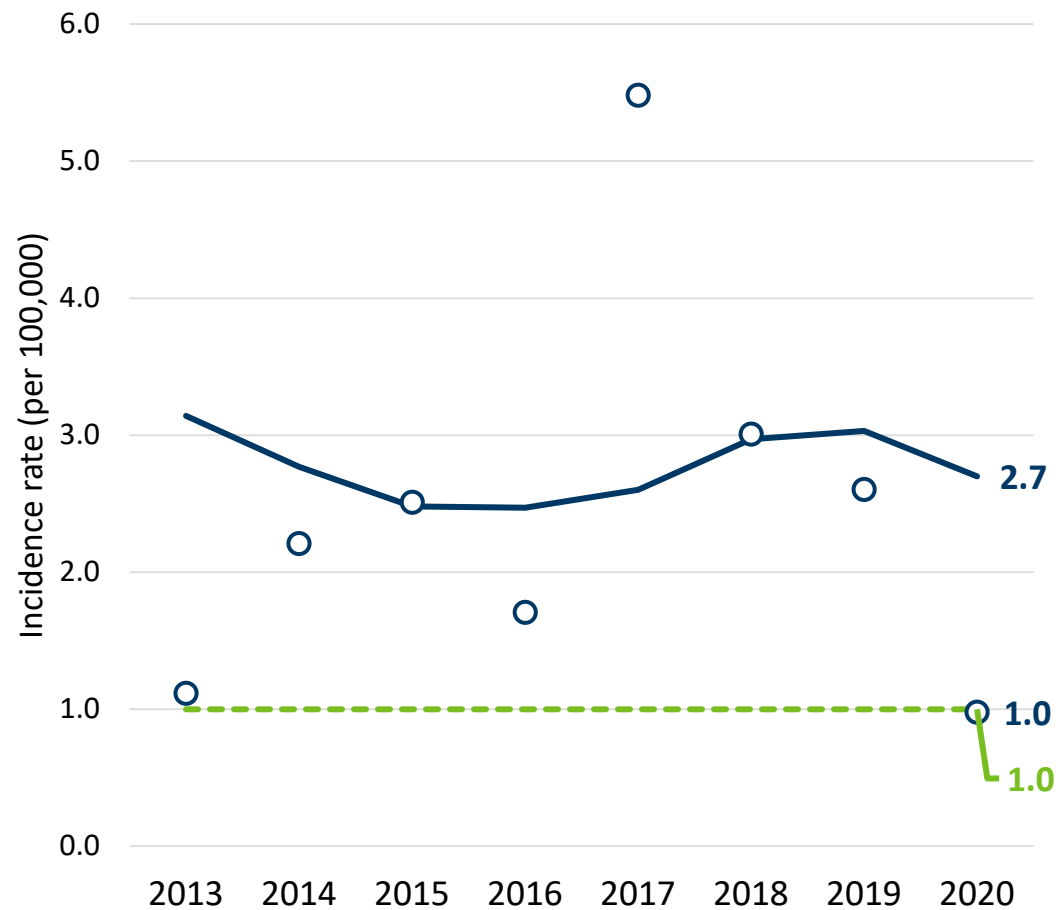


2025 CDC TB Incidence Reduction Targets for US-born and Non-US-born populations, Minnesota, 2005-2020

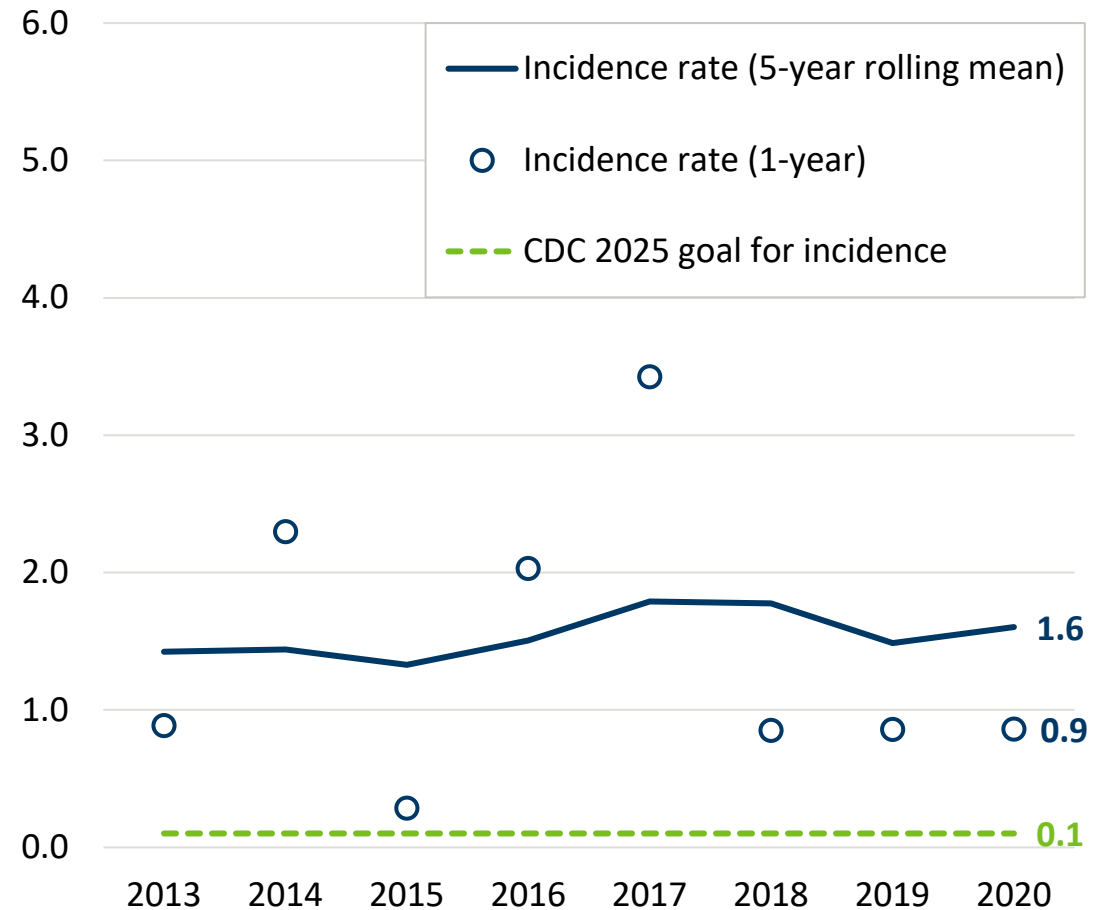


2025 CDC TB Incidence Reduction Targets continued, Minnesota, 2013-2020

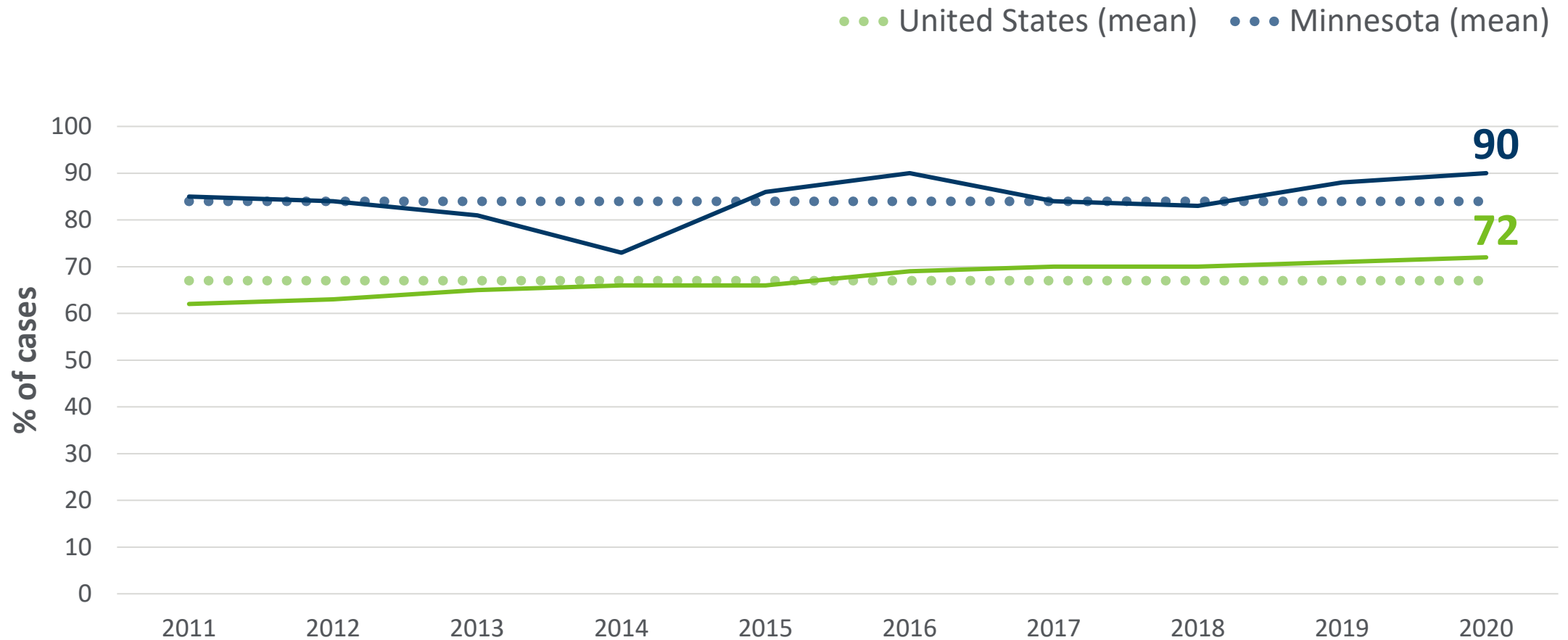
US-born, Non-Hispanic, Black/African-American



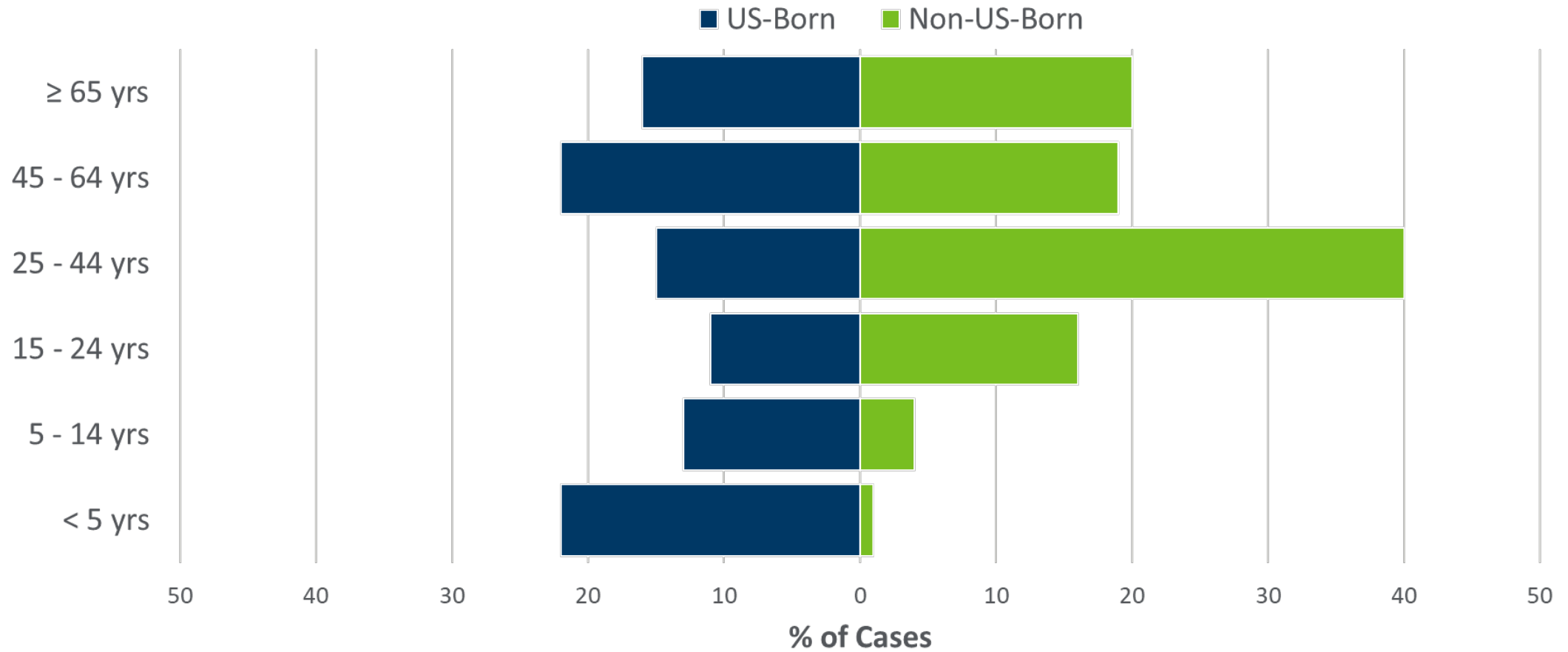
Children < 5 years of age



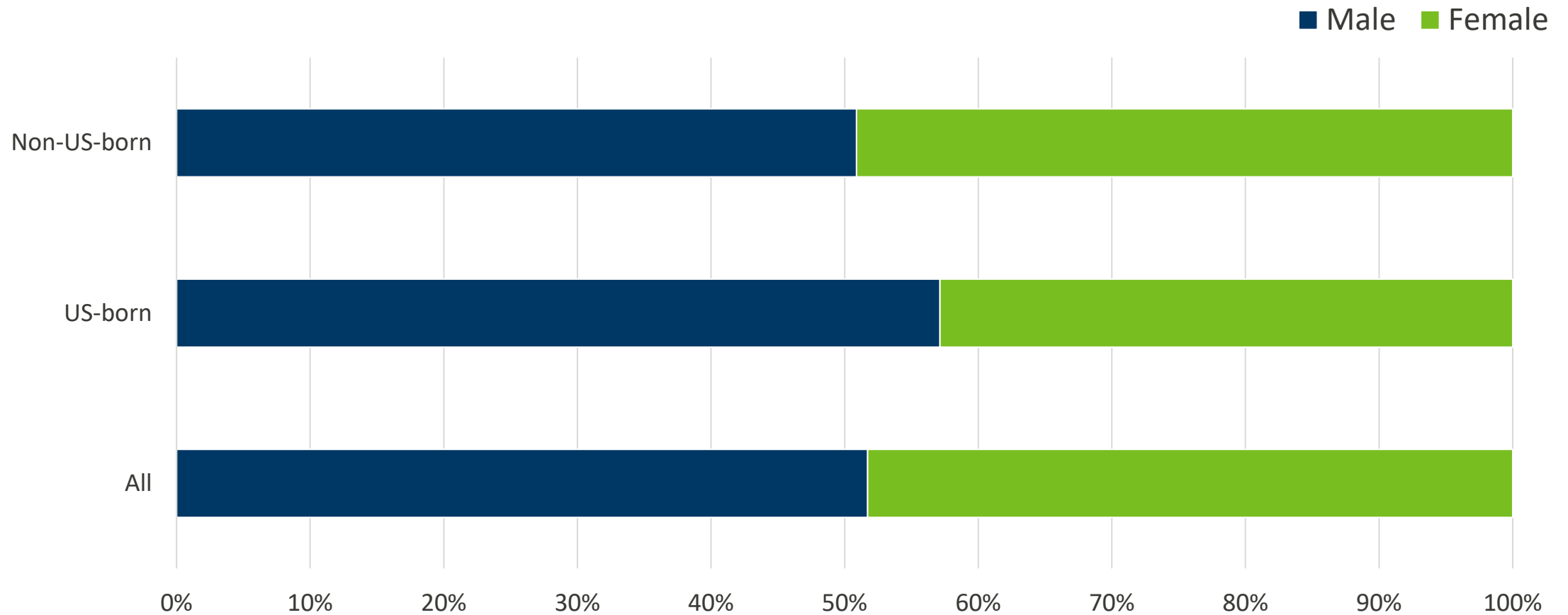
Proportion of TB Cases Born Outside of the United States United States and Minnesota, 2011-2020



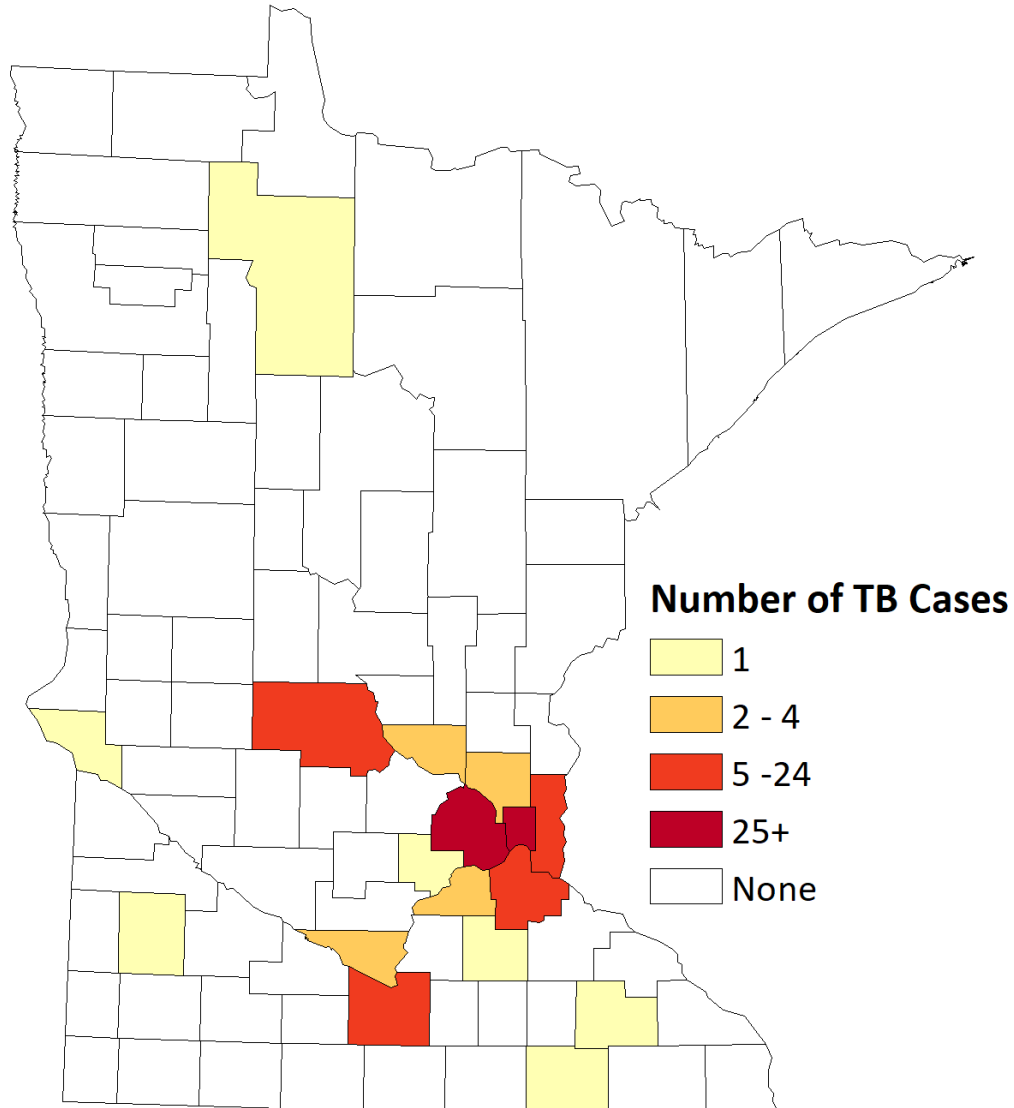
TB Cases by Age Group and Place of Birth Minnesota, 2016-2020



TB Cases by Sex Assigned at Birth and Place of Birth Minnesota, 2016-2020



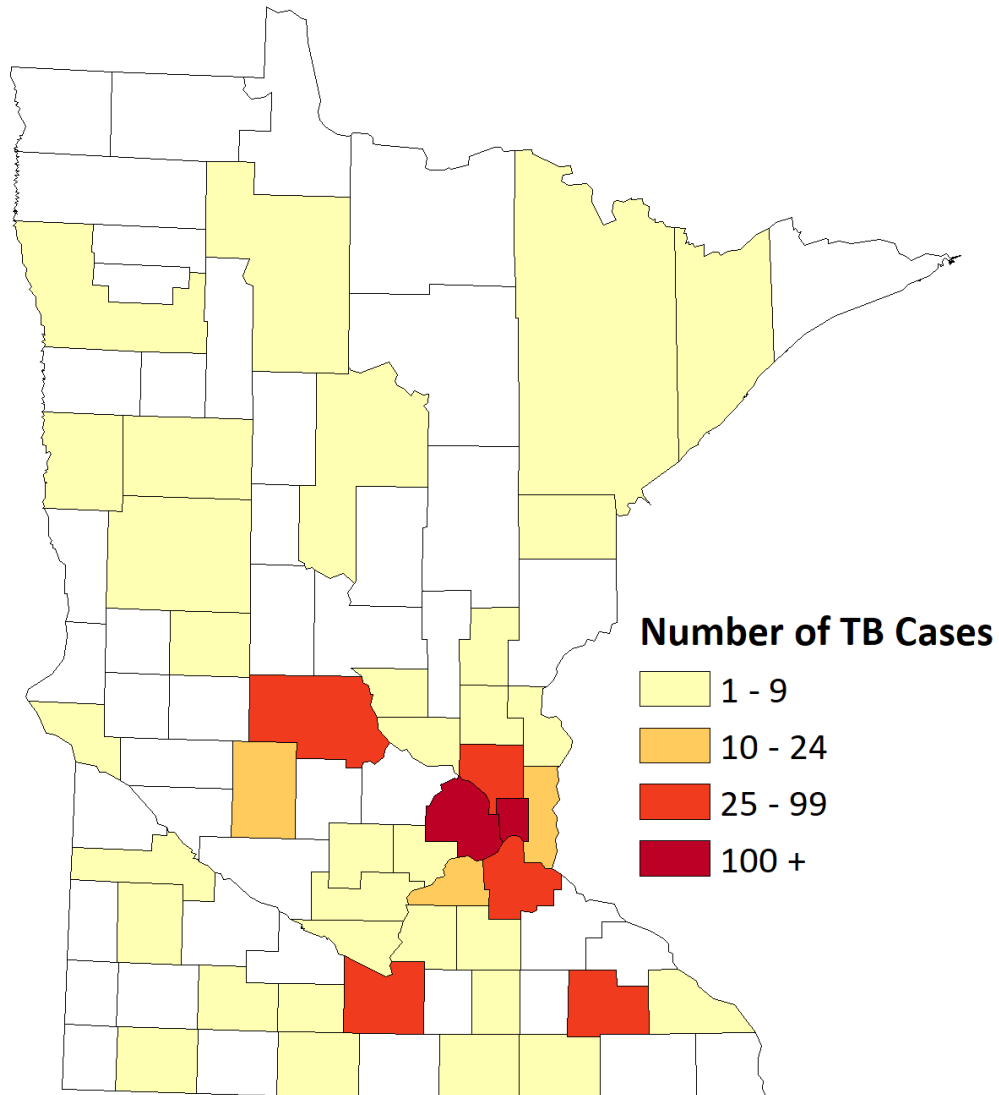
TB Disease by County of Residence Minnesota, 2020



Location of Residence	Count (% of total)
Hennepin County	44 (38)
Ramsey County	31 (26)
Suburban Metro*	20 (17)
Greater MN	22 (19)
Total	117

*Anoka, Carver, Dakota, Scott, Washington

TB Disease by County of Residence Minnesota, 2016-2020



Location of Residence	Count (% of total)
Hennepin County	294 (37.5)
Ramsey County	172 (22)
Suburban Metro*	117 (15)
Greater MN	200 (25.5)
Total	783

*Anoka, Carver, Dakota, Scott, Washington

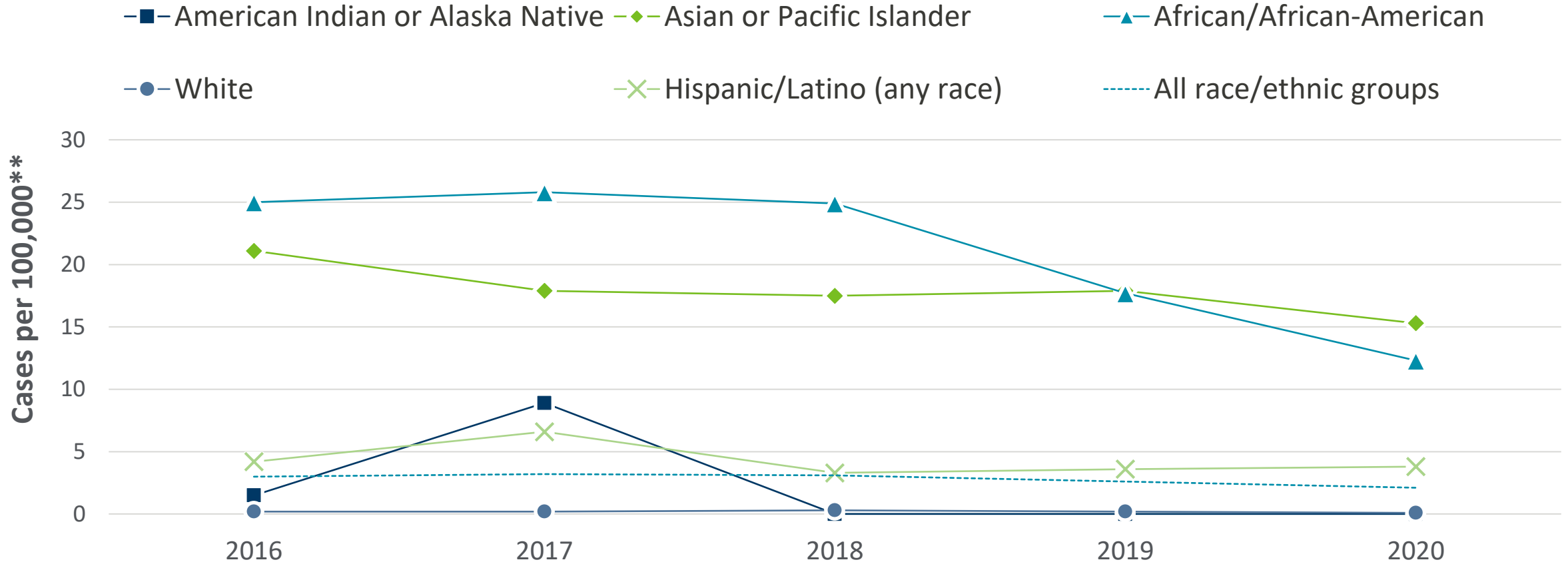
Number of Cases and Incidence of TB by Location of Residence Minnesota, 2016-2020

Location of Residence	2016 No. (Rate)*	2017 No. (Rate)*	2018 No. (Rate)*	2019 No. (Rate)*	2020 No. (Rate)*
Hennepin County	73 (6.0)	70 (5.7)	54 (4.3)	53 (4.2)	44 (3.5)
Ramsey County	40 (7.4)	38 (7.0)	34 (6.2)	29 (5.3)	31 (5.6)
Suburban Twin Cities Metro†	16 (1.3)	22 (1.7)	33 (2.6)	26 (2.0)	20 (1.5)
Olmsted County	11 (7.3)	12 (7.8)	12 (7.7)	6 (3.8)	1 (0.6)
Greater Minnesota (excluding Olmsted)	28 (1.2)	36 (1.5)	39 (1.7)	34 (1.4)	21 (0.9)
Total	168 (3.0)	178 (3.2)	172 (3.1)	148 (2.6)	117 (2.1)

* Cases per 100,000 population. Rates calculated using state population estimates from the U.S. Census Bureau.

† Anoka, Carver, Dakota, Scott, and Washington counties

TB Incidence Rate by Race*/Ethnicity Minnesota, 2016-2020



*Race categories do not include persons of Hispanic/Latino ethnicity. 1 multi-racial case is not included.

**Rate per 100,000 population. Calculated using population estimates from the U.S. Census Bureau.

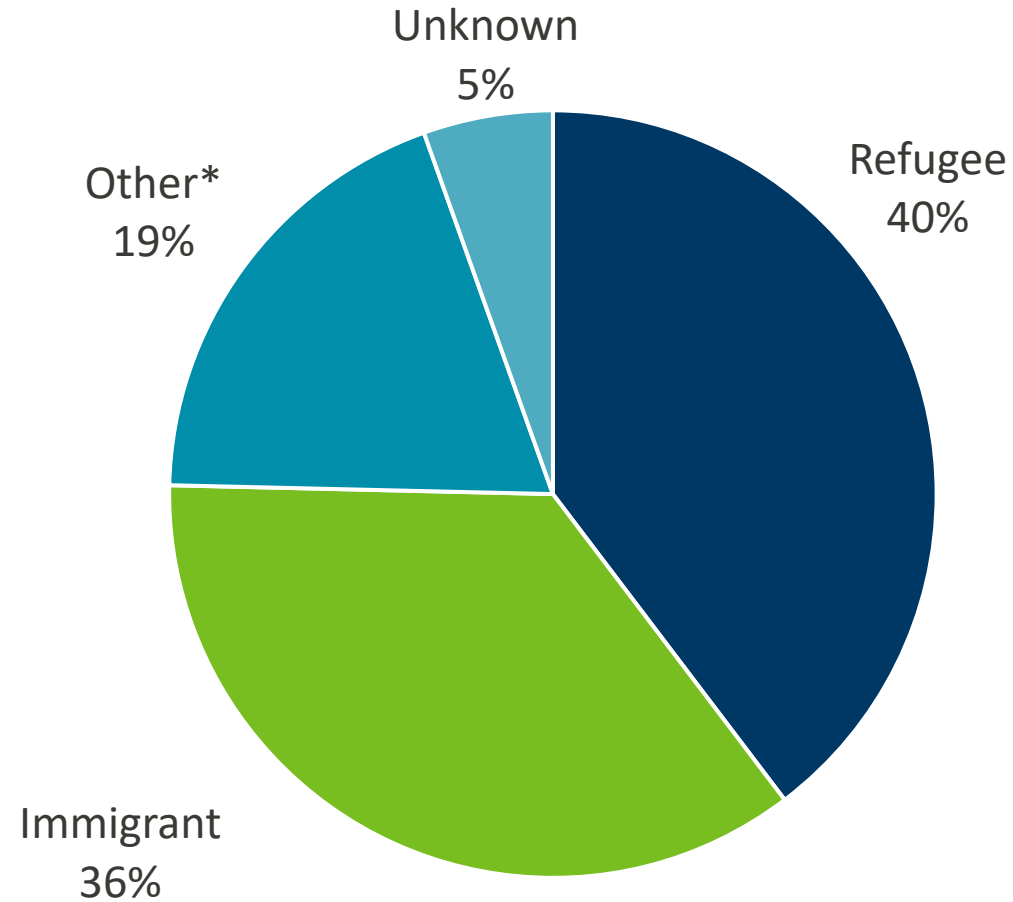
TB Cases by Race/Ethnicity and Place of Birth Minnesota, 2016-2020

Race* / Ethnicity	Non-US-Born Cases No. (%)	US-Born Cases No. (%)
White	14 (2)	30 (29)
Black	364 (54)	40 (38)
Asian	249 (37)	12 (11)
American Indian / Alaska Native	0	7 (7)
Native Hawaiian / Pacific Islander	1 (<1)	1 (1)
Multi-racial	0	1 (1)
Hispanic / Latino	50 (7)	14 (13)
Total	678 (100)	105 (100)

*Race categories do not include persons of Hispanic/Latino ethnicity

Non-US-Born TB Cases by Visa Status Upon Arrival in the US Minnesota, 2016-2020

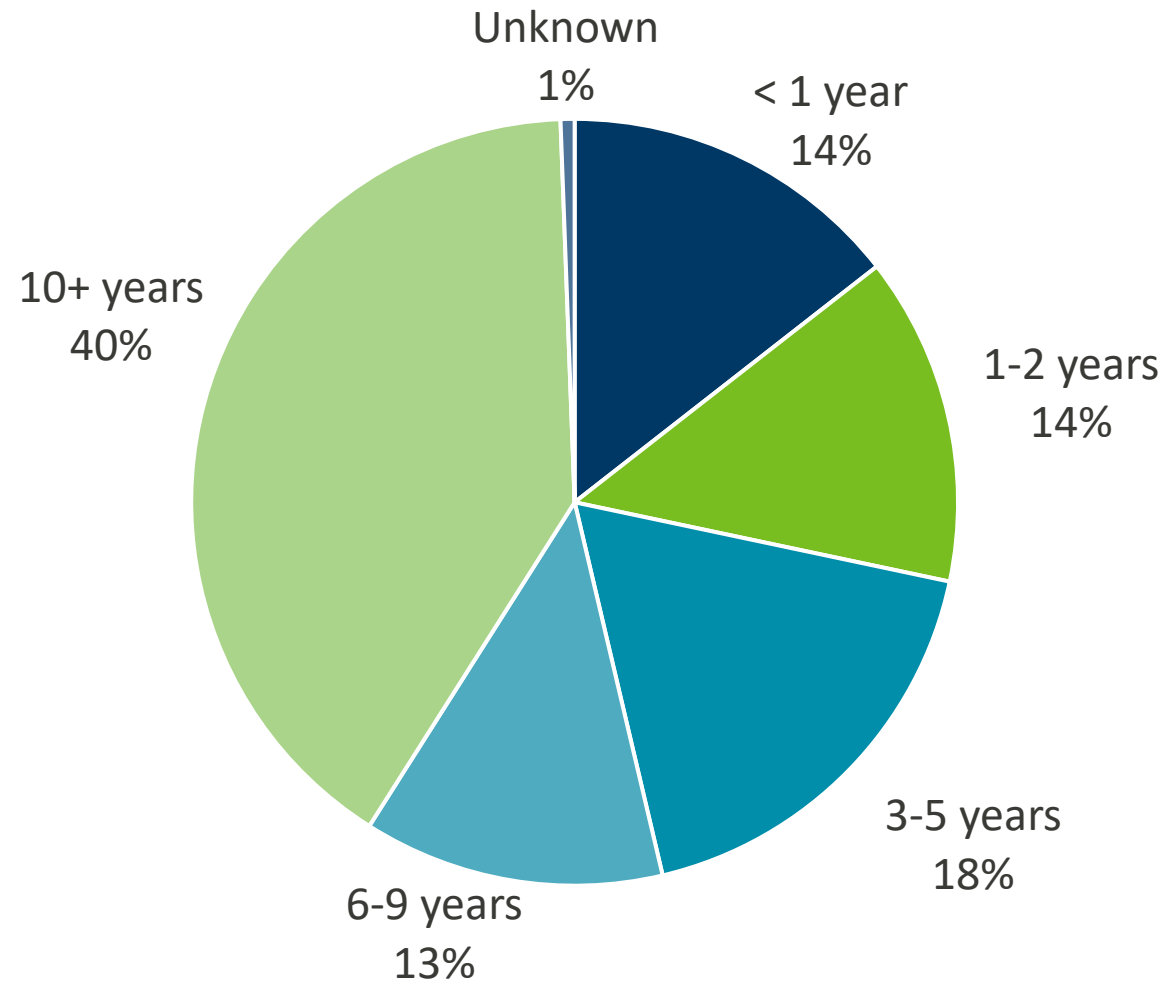
N = 678



* "Other" includes visitors, tourists, students, and those arriving on employment visas

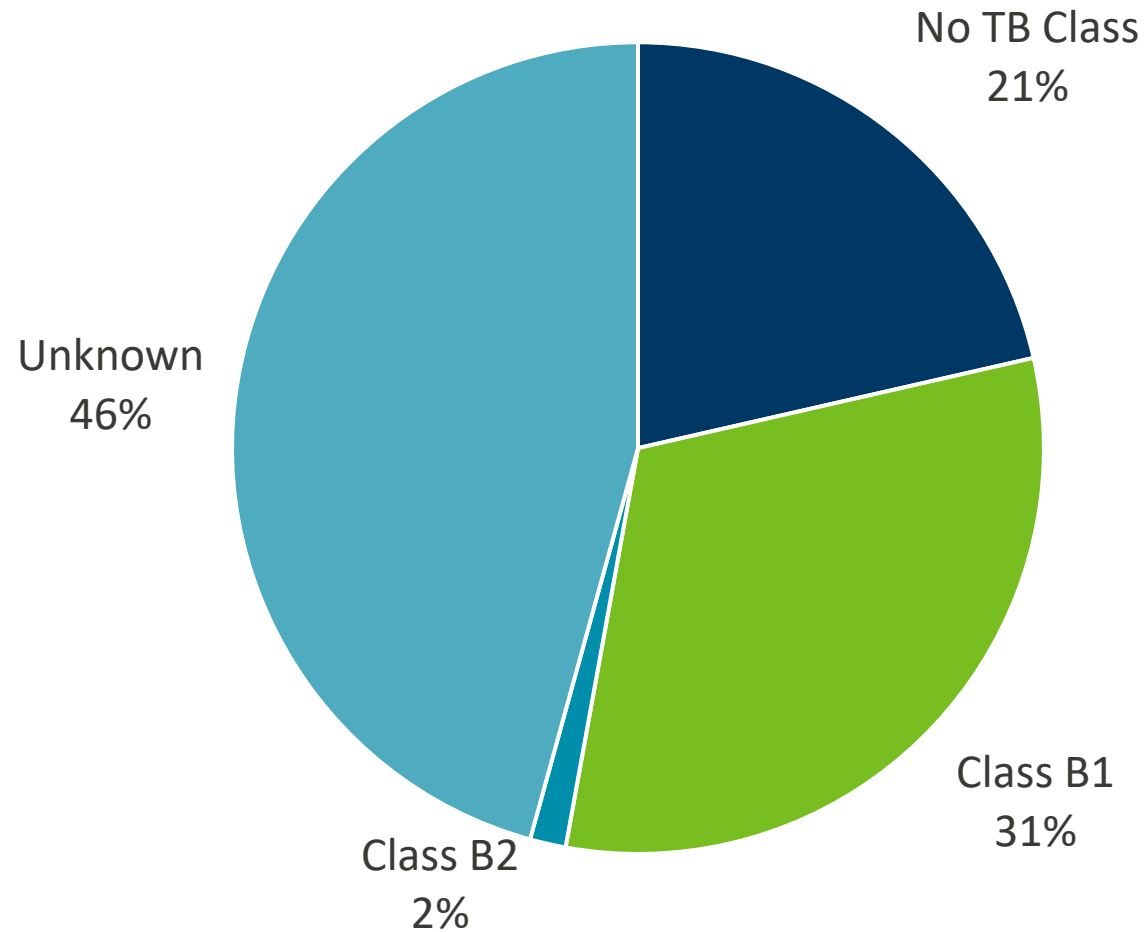
Non-US-Born TB Cases by Interval Between Arrival in US and Diagnosis of TB Minnesota, 2016-2020

N = 678



TB Class Notifications* Among Refugees/Immigrants Diagnosed with TB within One Year After Arrival to US Minnesota, 2016-2020

N = 70



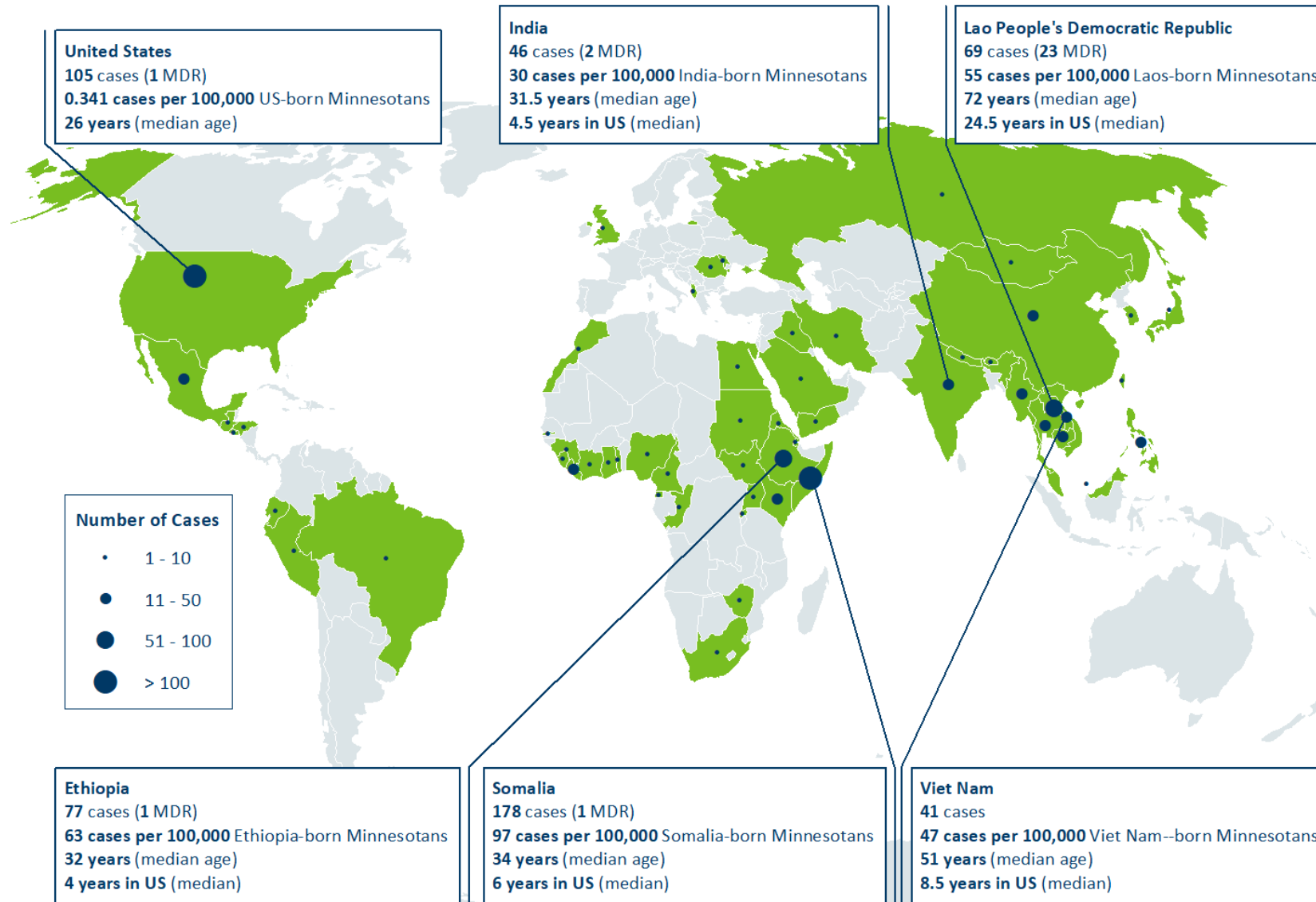
* Per results of pre-immigration screening performed overseas

Non-US-Born TB Cases by Top Five Countries of Birth Minnesota, 2016-2020

Country of Birth	No. of Cases (%)
Somalia	178 (26)
Ethiopia	77 (11)
Laos	69 (10)
India*	46 (7)
Viet Nam*	41 (6)
Other	267 (40)
Total	678

* Top 5 nationally in 2020

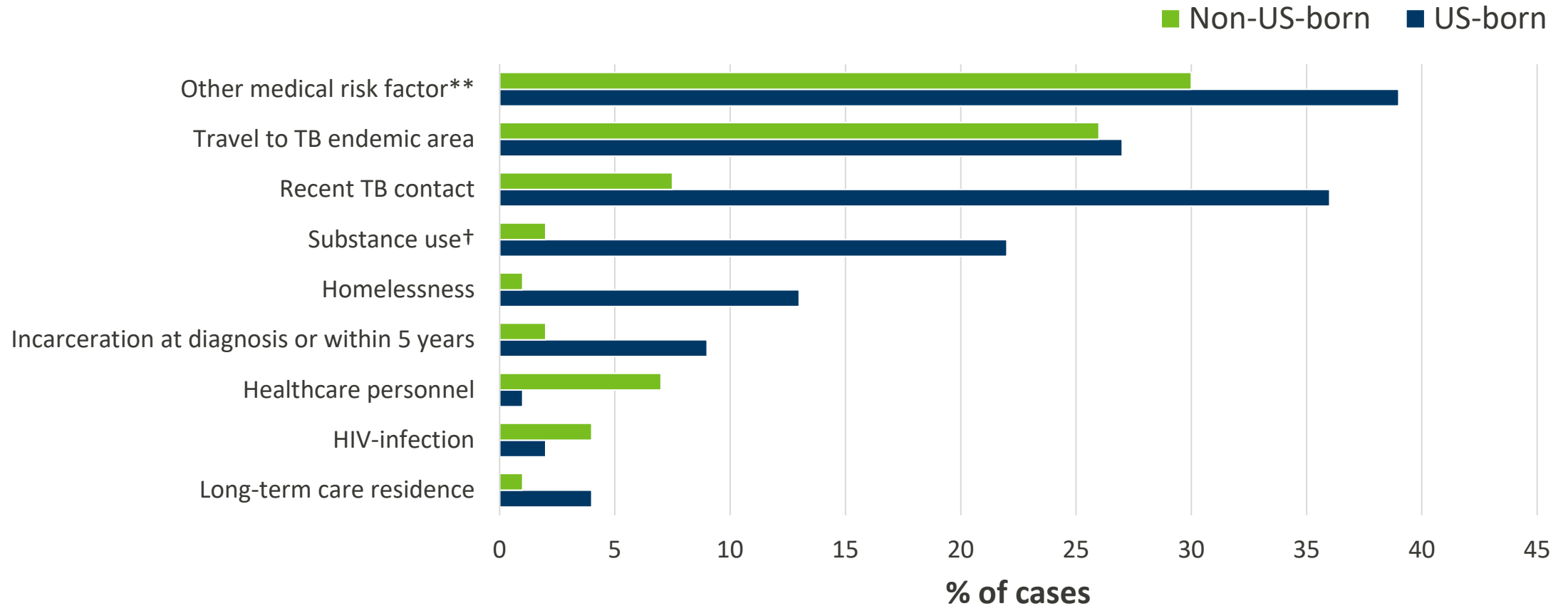
Number of TB Cases by Country of Birth Minnesota, 2016-2020



TB Cases by Method of Case Identification Minnesota, 2016-2020

Method of Identification	No. of Cases (%)
TB symptoms	636 (81)
TB contact investigations	62 (8)
Overseas TB Class follow-up	18 (2)
Domestic refugee health exam	5 (<1)
Other immigration exams	7 (<1)
Employment screening (including health care personnel)	11 (1)
Other targeted testing	19 (2)
Incidental chest X-ray or lab result	25 (3)
Total	783

TB Cases by Risk Category* and Place of Birth Minnesota, 2016-2020



*Risk categories are not mutually exclusive

**Conditions or therapies increasing risk for progression to active TB disease, not including HIV/AIDS

†Excess alcohol use and/or injection or non-injection drug use

TB Cases With Other Medical Risk Factors* by Type of Risk Factor Minnesota, 2016-2020

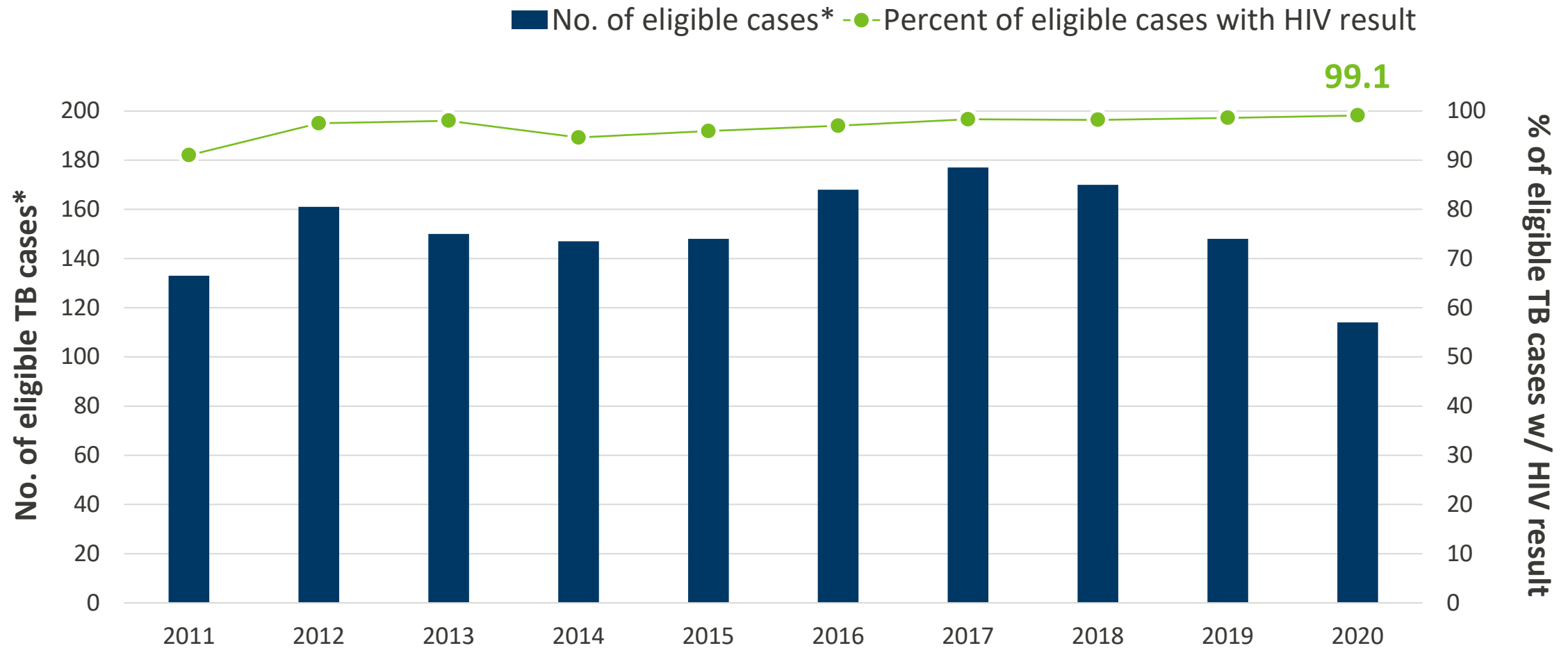
Medical risk factor**	Cases (N=783) No. (%)
Diabetes	128 (16)
Immunosuppressive condition (not HIV/AIDS) or therapy***	47 (6)
End stage renal disease	21 (3)
Weight loss/undernutrition/malabsorption	16 (2)
Other: e.g. chronic kidney disease, active smoking, hematologic disease	85 (11)

* Conditions or therapies that increase risk for progression from latent TB infection to active TB disease, not including HIV/AIDS

** Patients could have > 1 medical condition

*** Includes TNF α antagonist therapy and post-organ transplant anti-rejection drugs

HIV Testing in Persons with TB Minnesota, 2011-2020

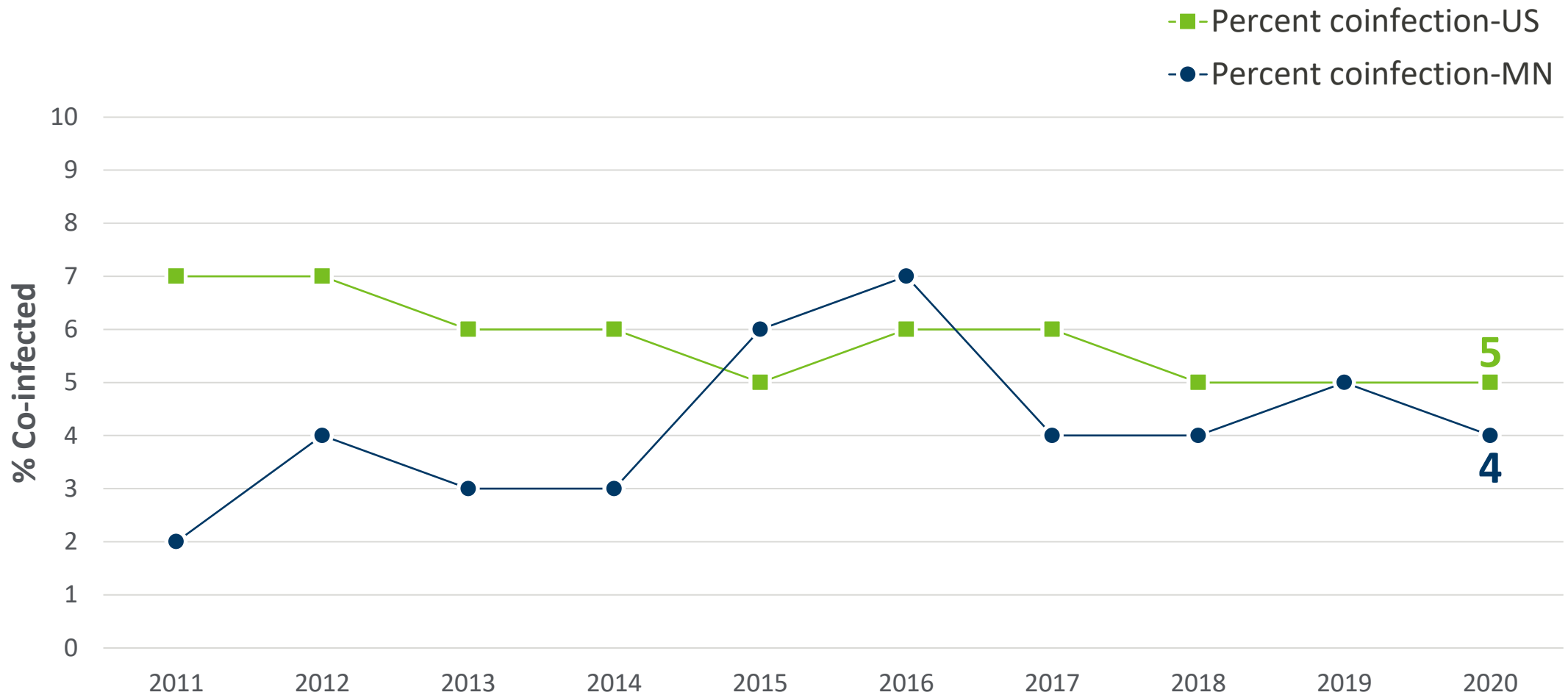


*Alive at time of diagnosis

TB Cases by HIV Status and Place of Birth Minnesota, 2016-2020

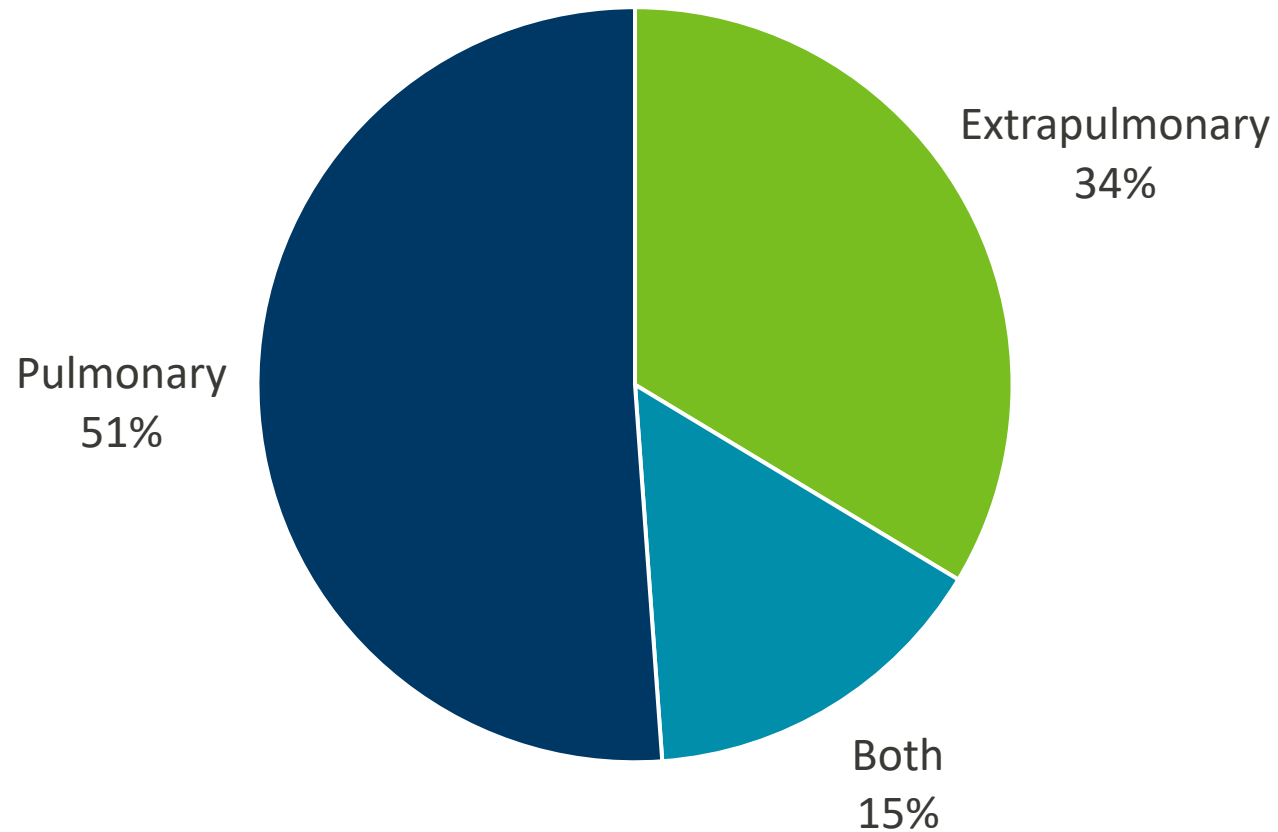
HIV Status	Non-US-Born Cases No. (%)	US-Born Cases No. (%)	Total No. (%)
Negative	636 (94)	99 (94)	735 (94)
Positive	28 (4)	2 (2)	30 (4)
Not Offered	12 (2)	3 (3)	15 (2)
Refused HIV testing	2 (<1)	0	2 (<1)
Unknown	0	1 (1)	1 (<1)
Total	678	105	783

TB-HIV Co-infected Cases United States and Minnesota, 2011-2020



TB Cases by Site of Disease Minnesota, 2016-2020

N = 782



Top five extrapulmonary sites of disease*

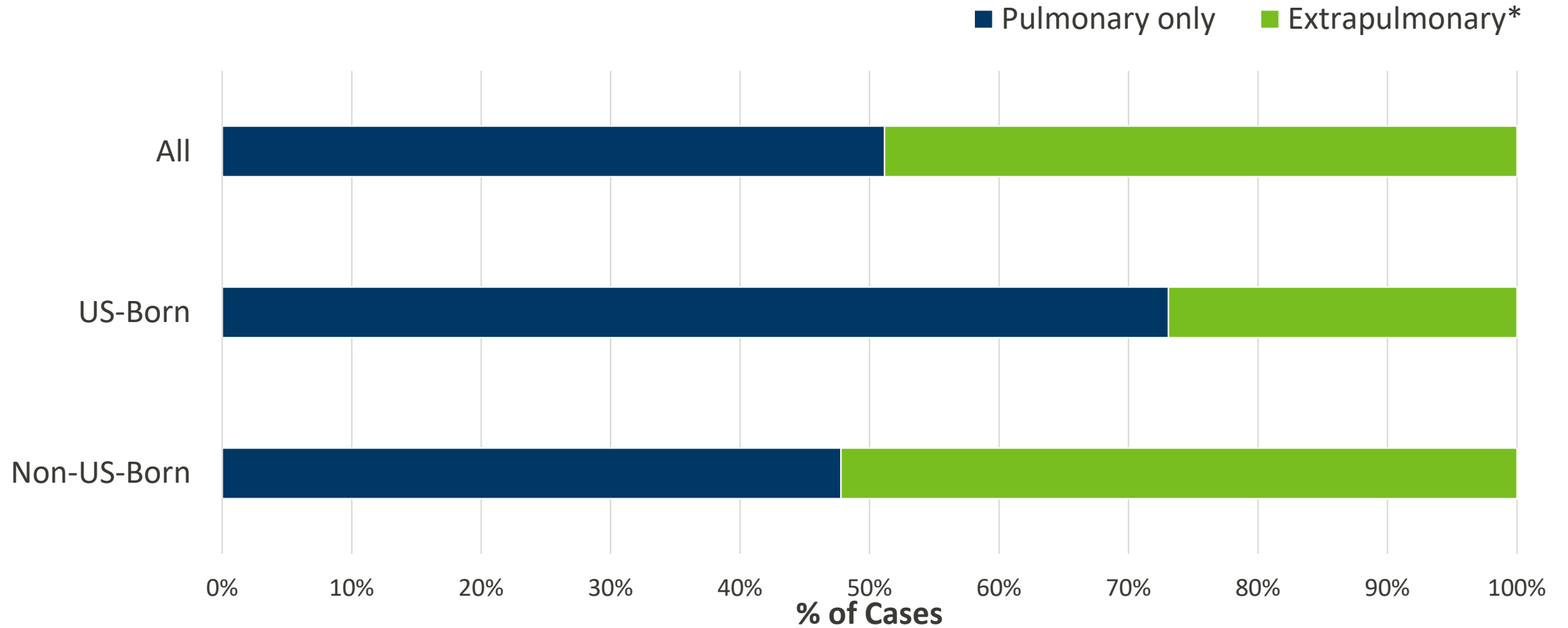
Cases (N=382)**
No. (%)

Lymphatic	200 (52)
Musculoskeletal	65 (17)
Pleural	50 (13)
Peritoneal	34 (9)
Genitourinary	26 (7)

* Patients may have multiple extrapulmonary sites of disease

** Includes TB cases with and without concurrent pulmonary disease

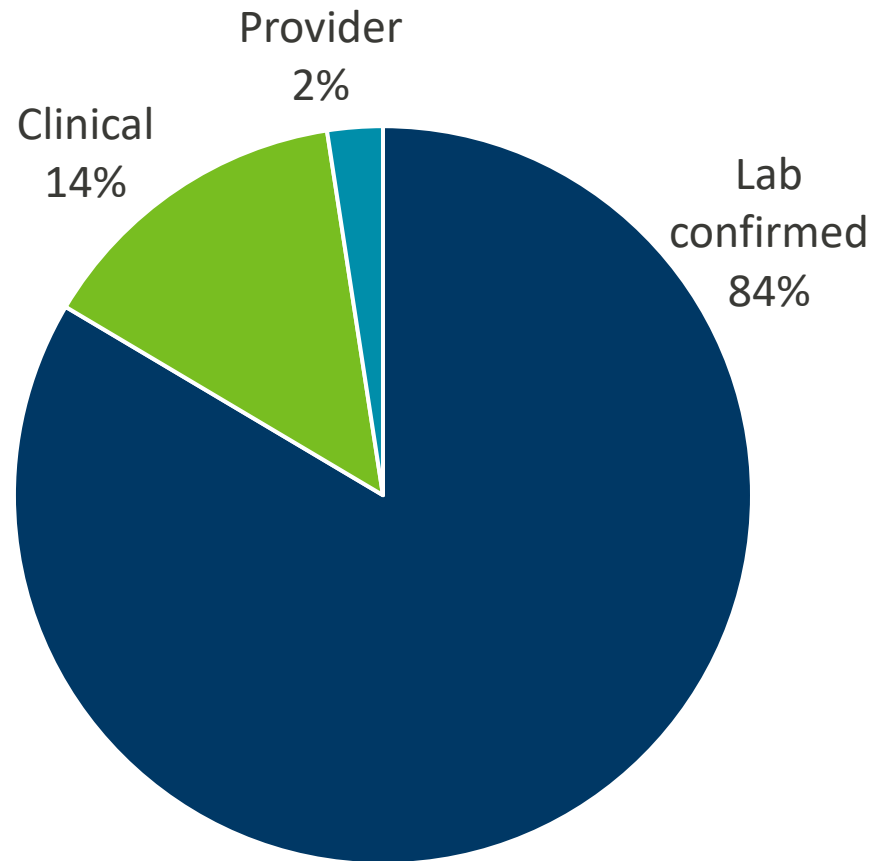
TB Cases by Site of Disease and Place of Birth Minnesota, 2016-2020



* Includes cases with and without concurrent pulmonary disease

TB Cases by Case Verification Criteria* Minnesota, 2016-2020

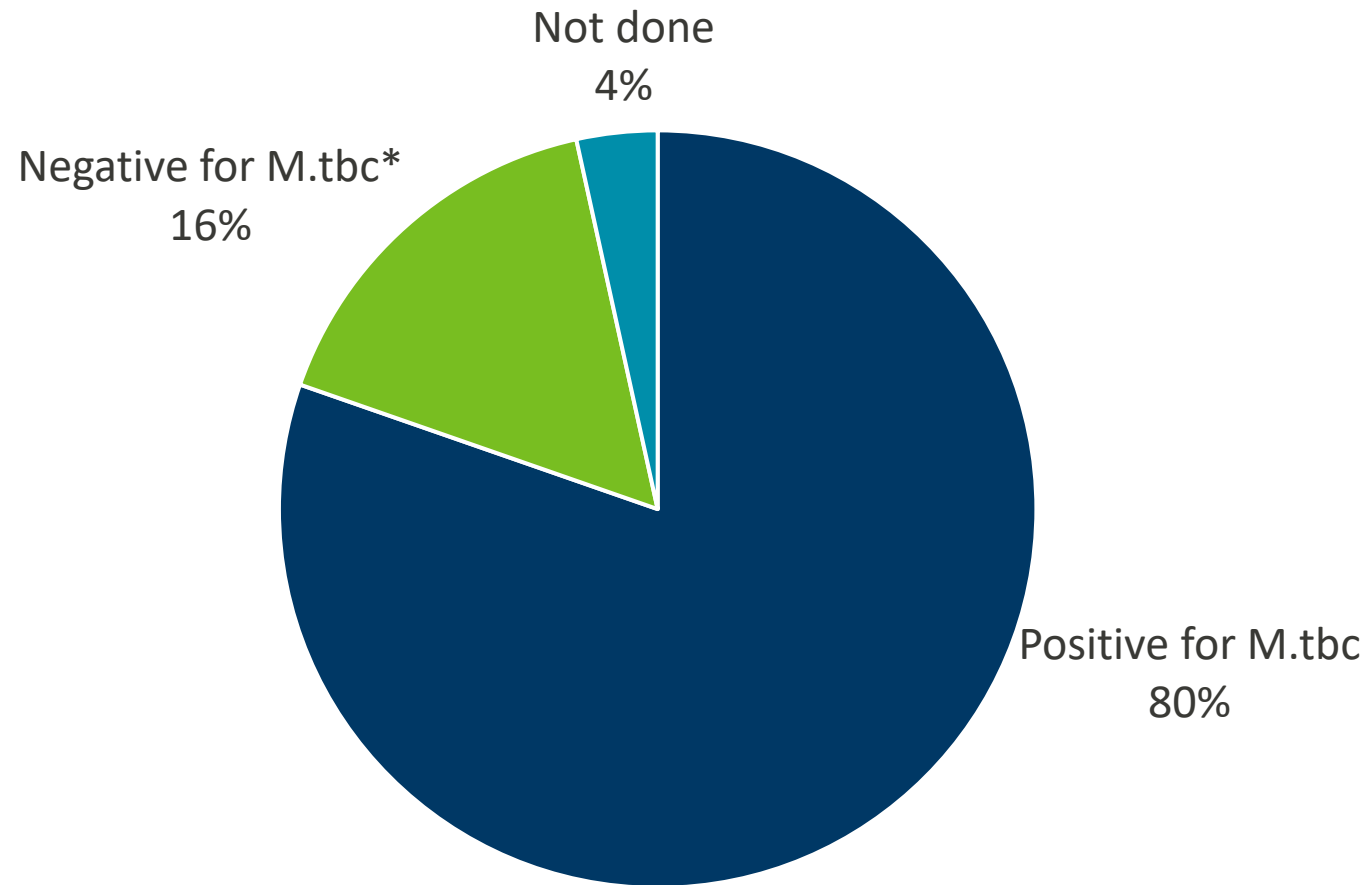
N = 783



*Based on the public health surveillance definition for TB [CDC. (2009, June) CDC Tuberculosis Surveillance Data Training: Report of Verified Case of Tuberculosis (RVCT) Instruction Manual. Atlanta, GA: U.S. Department of Health and Human Services, CDC. (Appendix A - Tuberculosis Case Definition for Public Health Surveillance)]

TB Cases by Mycobacterial Culture Result Minnesota, 2016-2020

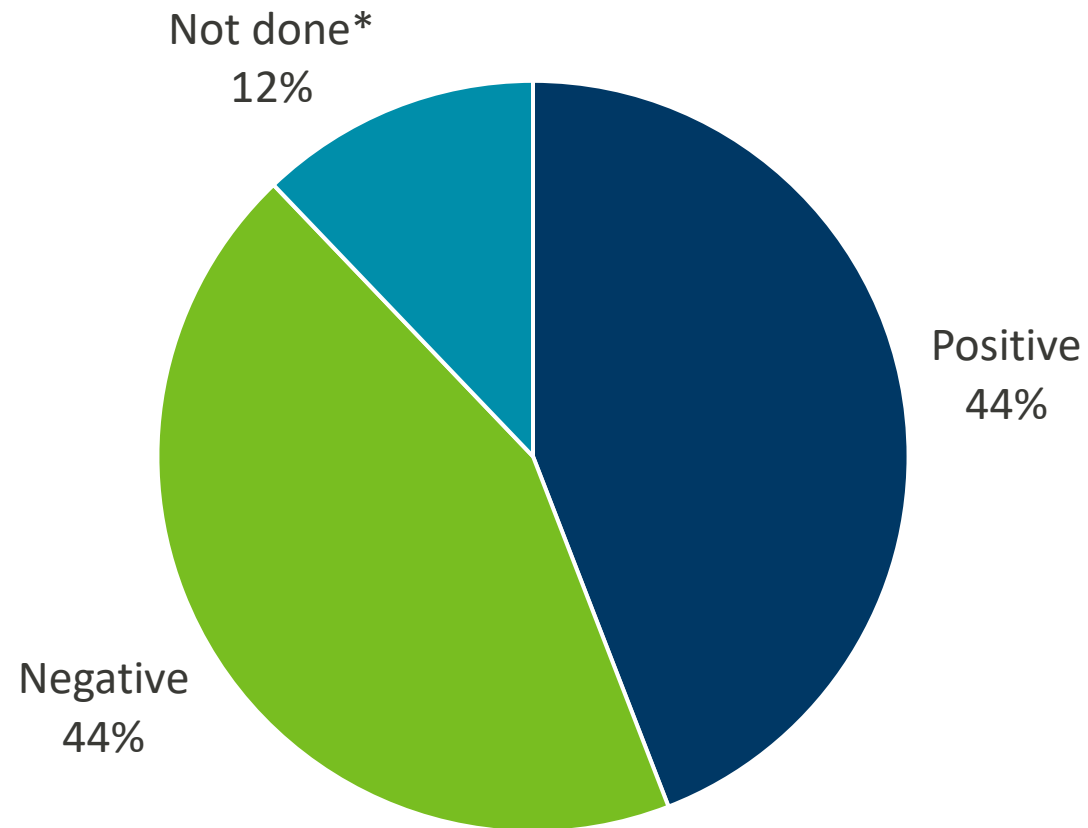
N = 783



*No growth or growth of other Mycobacterium species not part of *M.tb* complex

TB Cases with Pulmonary Involvement by Initial Sputum AFB Smear Result Minnesota, 2016-2020

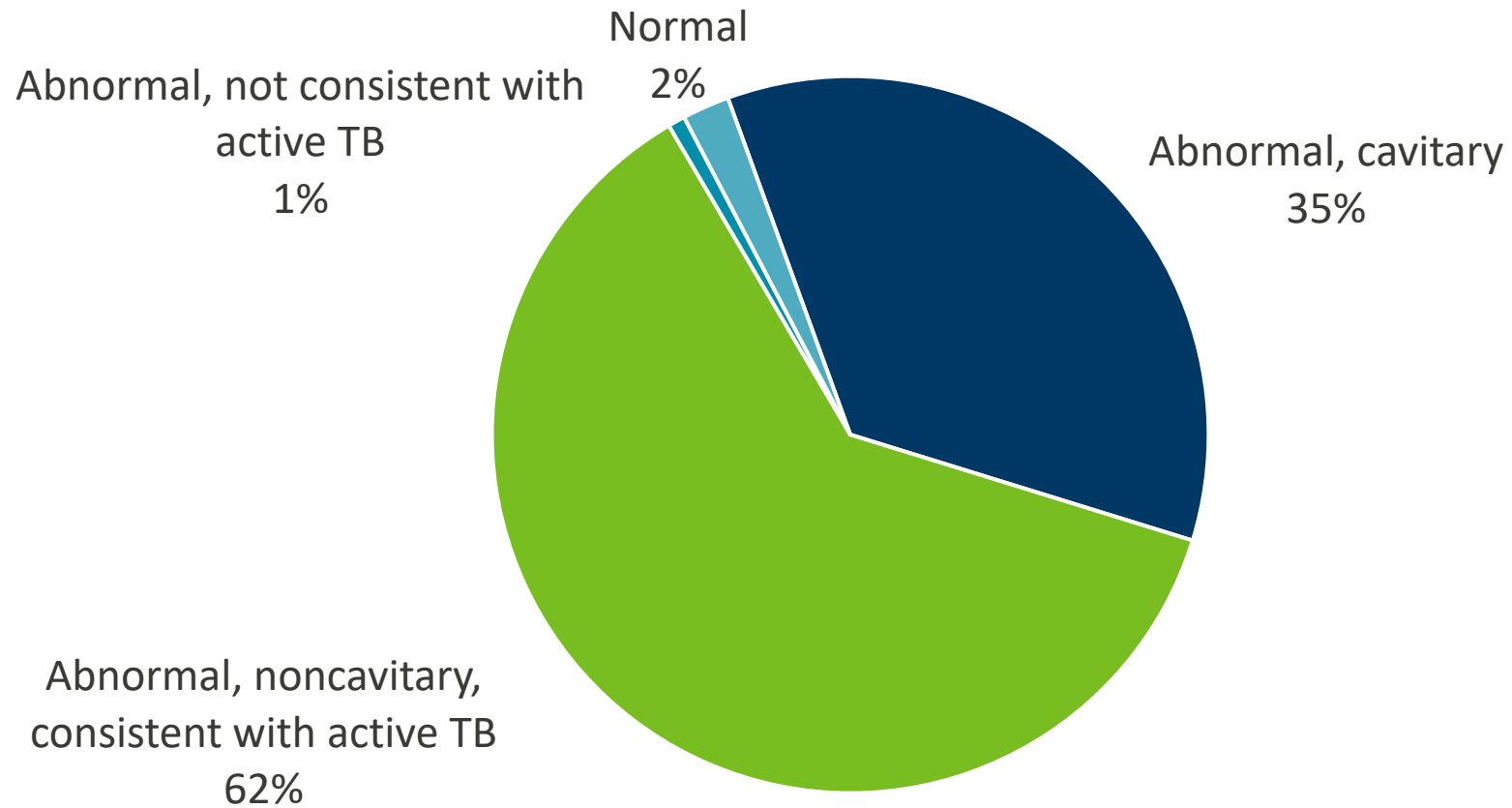
N = 519



**56% of pulmonary cases without sputum smear results were under 15 years of age*

TB Cases with Pulmonary Involvement by Chest Imaging* Result Minnesota, 2016-2020

N = 518



* From initial chest x-ray or chest CT scan

TB Cases by Drug Susceptibility Patterns and Year Minnesota, 2016-2020

Year	Cases With Susceptibility Results*	Any Drug Resistance† No. (%)	INH-Resistant** No. (%)	MDR-TB‡ No. (%)
2016	136	29 (21)	19 (14)	8 (6)
2017	141	32 (23)	22 (16)	9 (6)
2018	133	26 (20)	16 (12)	7 (5)
2019	126	17 (13)	13 (10)	6 (5)
2020	90	12 (13)	10 (11)	3 (3)
Total	626	116 (19)	80 (13)	33 (5)

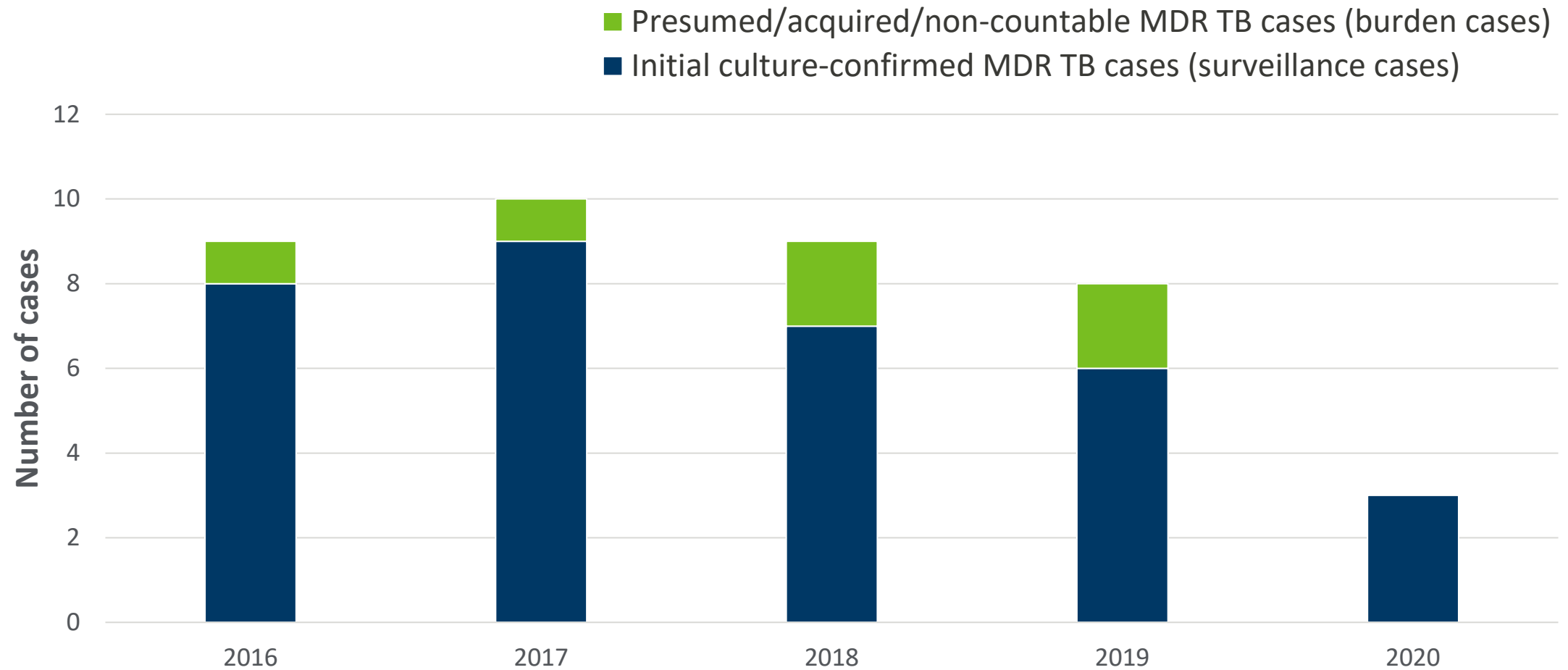
* Culture-confirmed cases with drug susceptibility results available

† Resistance to at least one first-line anti-TB drug [i.e., isoniazid (INH), rifampin (RIF), pyrazinamide (PZA), or ethambutol (EMB)]

** INH-resistant cases may also be resistant to other drugs

‡ Multi-drug resistant TB, defined as resistance to at least INH and rifampin (may also be resistant to other drugs)

Multi-drug Resistant TB (MDR TB) Minnesota, 2016-2020



TB Cases by Drug Susceptibility Patterns and Place of Birth Minnesota, 2016–2020

Place of birth	Cases With Susceptibility Results*	Any Drug Resistance† No. (%)	INH-Resistant** No. (%)	MDR-TB‡ No. (%)
Non-US-Born	554	111 (20)	75 (14)	32 (6)
US-Born	72	5 (7)	5 (7)	1 (1)
Total	626	116 (19)	80 (13)	33 (5)

* Culture-confirmed cases with drug susceptibility results available

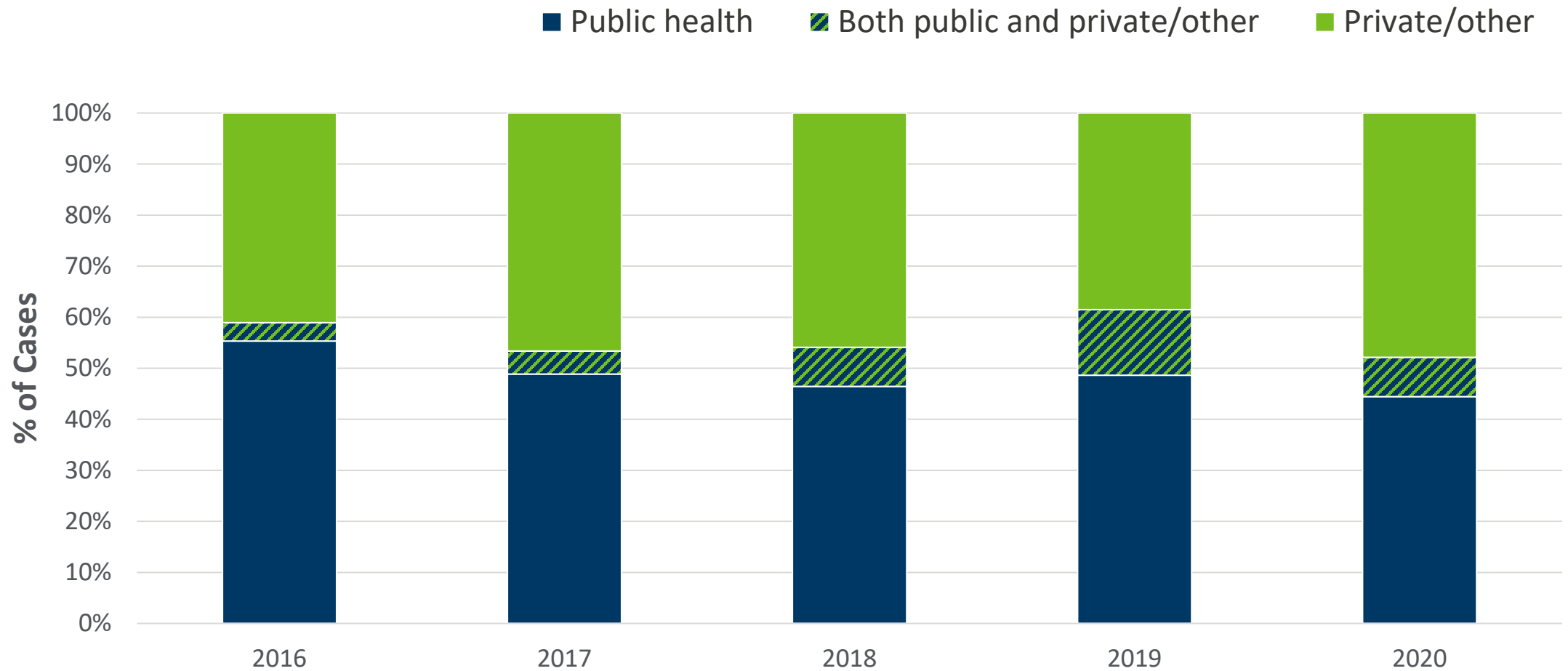
† Resistance to at least one first-line anti-TB drug [i.e., isoniazid (INH), rifampin (RIF), pyrazinamide (PZA), or ethambutol (EMB)]

** INH-resistant cases may also be resistant to other drugs

‡ Multi-drug resistant TB, defined as resistance to at least INH and rifampin

TB Cases by Type(s) of Provider*

Minnesota, 2016-2020



* Some patients are managed by multiple providers throughout disease course

TB Cases by Mode of Treatment Administration Minnesota, 2016-2020

Year	Started treatment	At least some DOT*	Completely self-administered
2016	168	98%	2%
2017	176	99%	1%
2018	170	98%	1%
2019	146	100%	0%
2020	115	99%	<1%
Total	775	99%	<1%

Type of Provider	Started treatment	At least some DOT*	Completely self-administered
Public	438	99%	<1%
Private only	336	98%	2%

* DOT = Directly Observed Therapy

Treatment Completion and Length of Therapy Among TB Cases Minnesota, 2015-2019

Year	Started Treatment*	Completed Within 12 mos.** No. (%)	Completed Overall** No. (%)
2015	125	119 (95)	122 (98)
2016	138	130 (94)	132 (96)
2017	138	132 (96)	138 (100)
2018	139	128 (92)	135 (97)
2019	114	97 (85)	102 (89)
Total	654	606 (93)	629 (96)

* Patients for whom < 12 months of therapy is indicated. This excludes patients with rifampin resistance, meningeal TB, TB in bone or skeletal system, TB in CNS, children 14 years of age or younger with disseminated TB, patients who died or moved out of US within 366 days of starting treatment.

** Treatment completion data as of 9/8/2021