

Tuberculosis in Japan: Annual Report 2022

TUBERCULOSIS IN JAPAN

ANNUAL REPORT - 2022

TUBERCULOSIS SURVEILLANCE CENTER
Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association

About the Tuberculosis Surveillance Center

The Tuberculosis Surveillance Center, located within the Department of Epidemiology and Clinical Research, the Research Institute of Tuberculosis, Japan, is committed to providing technical support for the national computerized tuberculosis surveillance system, as well as compiling annual TB report, analyzing surveillance data and disseminating findings to all those involved in TB control in Japan.

For more information, please contact:

Tuberculosis Surveillance Center
The Research Institute of Tuberculosis
Japan Anti-Tuberculosis Association
3-1-24, Matsuyama
Kiyose, Tokyo 204-8533
<https://jata-ekigaku.jp/english/tb-in-japan>

Phone: +81 (0)42 493 3090

Email: tbsur@jata.or.jp

All material in this report, excluding logos, is in the public domain and may be reproduced or copied without permission. However, citation as to source is requested.

Suggested citation: Tuberculosis Surveillance Center (2022). Tuberculosis in Japan – annual report 2022. Department of Epidemiology and Clinical Research, the Research Institute of Tuberculosis: Tokyo, Japan.

Published October 2022

Contents

About the Tuberculosis Surveillance Center	.. 2
Acknowledgement	.. 4
Notes on the report	.. 5
1. Tuberculosis case reports, 2010-2021	.. 6
2. Geographical distribution	.. 9
3. Clinical background	.. 12
4. Drug-resistant TB	.. 19
5. Foreign-born TB, 2010-2021	.. 24
6. Socio-economic characteristics	.. 30
7. Delay	.. 32
8. Latent tuberculosis infection	.. 36
9. Treatment regimen, and duration of hospitalization and treatment	.. 40
10. Treatment outcome	.. 42
Appendix I: Notes on Japan Tuberculosis Surveillance System	.. 45
Appendix II: Definitions	.. 46
Appendix III: Data quality	.. 49
Appendix IV: Supplementary tables	.. 54

Acknowledgement

This report was prepared by the Tuberculosis Surveillance Center, Department of Epidemiology and Clinical Research, the Research Institute of Tuberculosis, Japan. The authors gratefully acknowledge all those who contributed information on TB cases in Japan, including physicians, public health nurses, microbiologists and administrative staff.

Authors

Lisa Kawatsu, Saori Kasuya, Akiko Imai, Ayumu Yoshie, Kazuhiro Uchimura

Additional contributors

Kishitugu Otake, Kazue Isokado

Notes on the report

This report presents detailed data on TB case notifications made to the Japan TB Surveillance System to the end of 2021. It is largely based on the Book of TB Statistics, published by the Japan Anti-Tuberculosis Association, and available as a printed report in Japanese, however, several additional and original analyses are made for international readers.

All figures in this report are available for download as a separate slide set also at <https://jata-ekigaku.jp/english/tb-in-japan>.

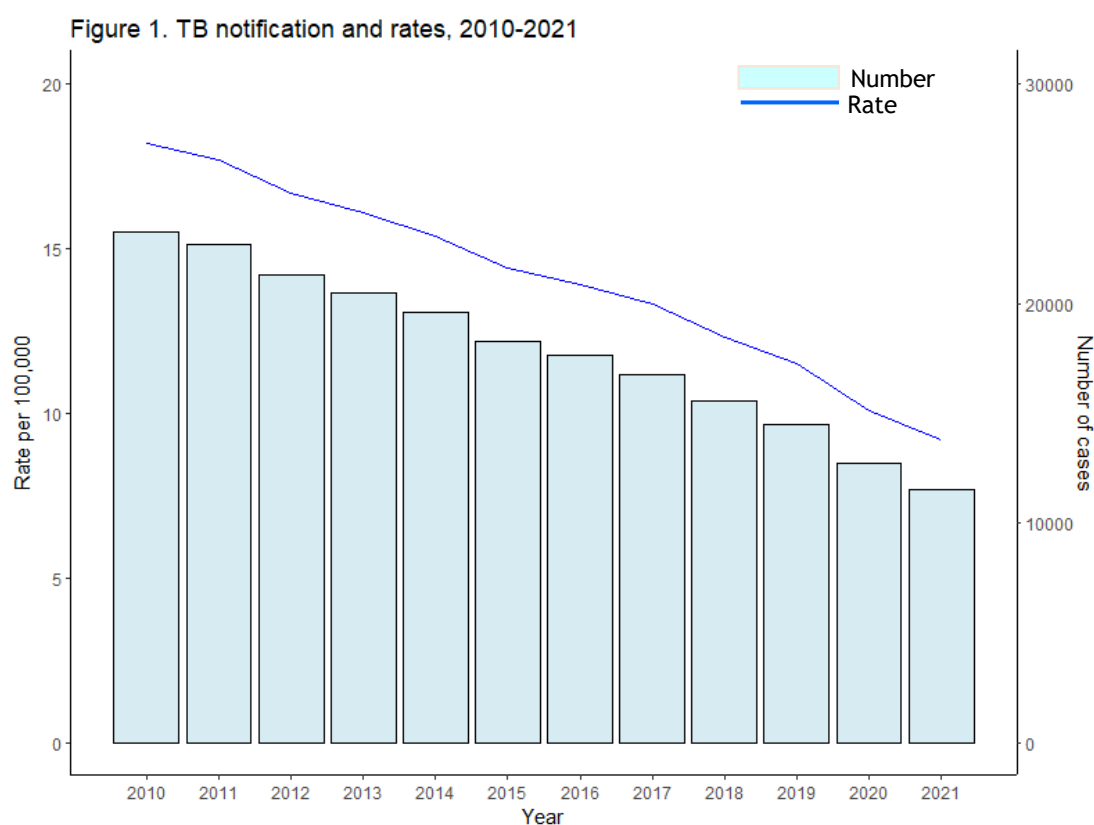
Chapter 1: Tuberculosis case report, 2010-2021

Overall numbers and rates:

In 2021, 11,519 cases of tuberculosis (TB) were newly notified, and the notification rate per 100,000 population was 9.2 for all TB. Of the 11,519 cases, pulmonary TB (PTB) accounted for 73.0% (n=8,413) and extrapulmonary TB (EPTB) cases, for 27.0% (n=3,106). Among the PTB patients, 49.1% (4,127 / 8,413) were sputum smear positive, 87.4% (7,350 / 8,413) were bacteriologically confirmed, and 12.6% (1,063 / 8,413) were clinically confirmed.

In addition, 5,140 latent tuberculosis infections (LTBI) requiring treatment were reported.

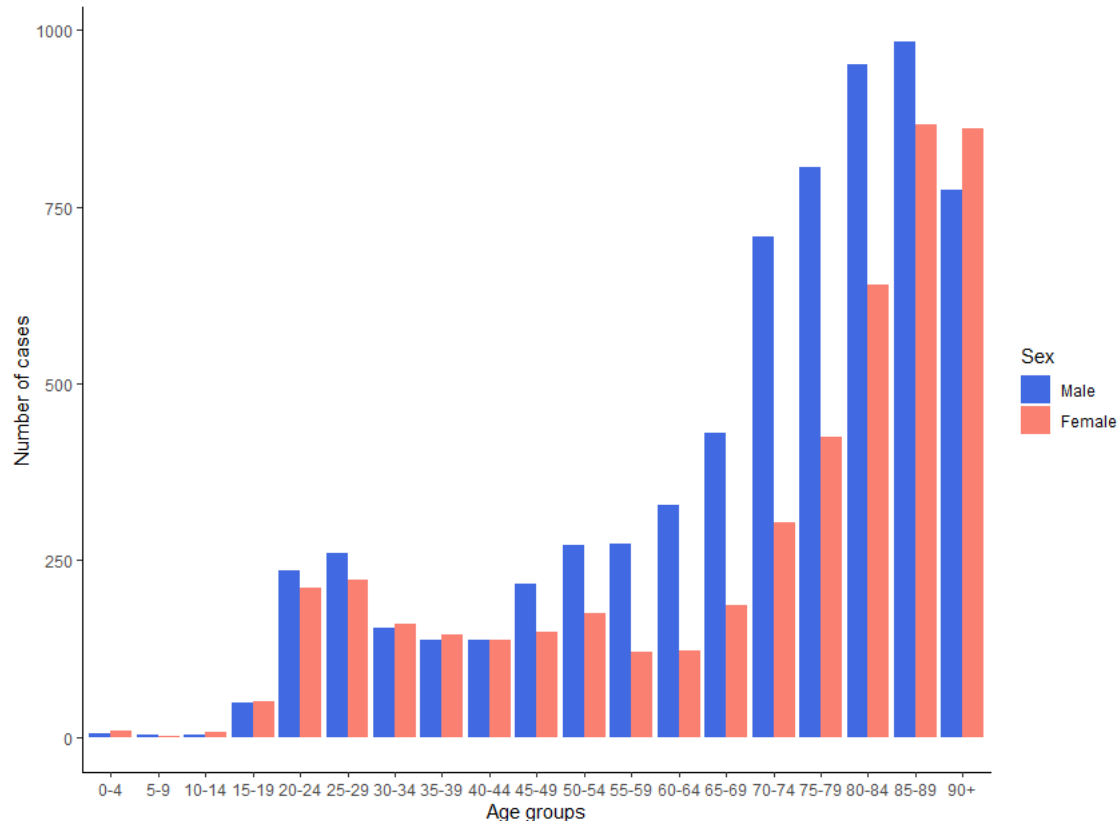
As shown in Figure 1, both the number of new cases and notification rates per 100,000 have continued to decline steadily, and this year reached the national target of below 10 per 100,000 (see also Table s1). The number of notifications for active TB decreased by 9.6%, or by 1,220 cases, from the previous year. The notification rate decreased by 8.9%.



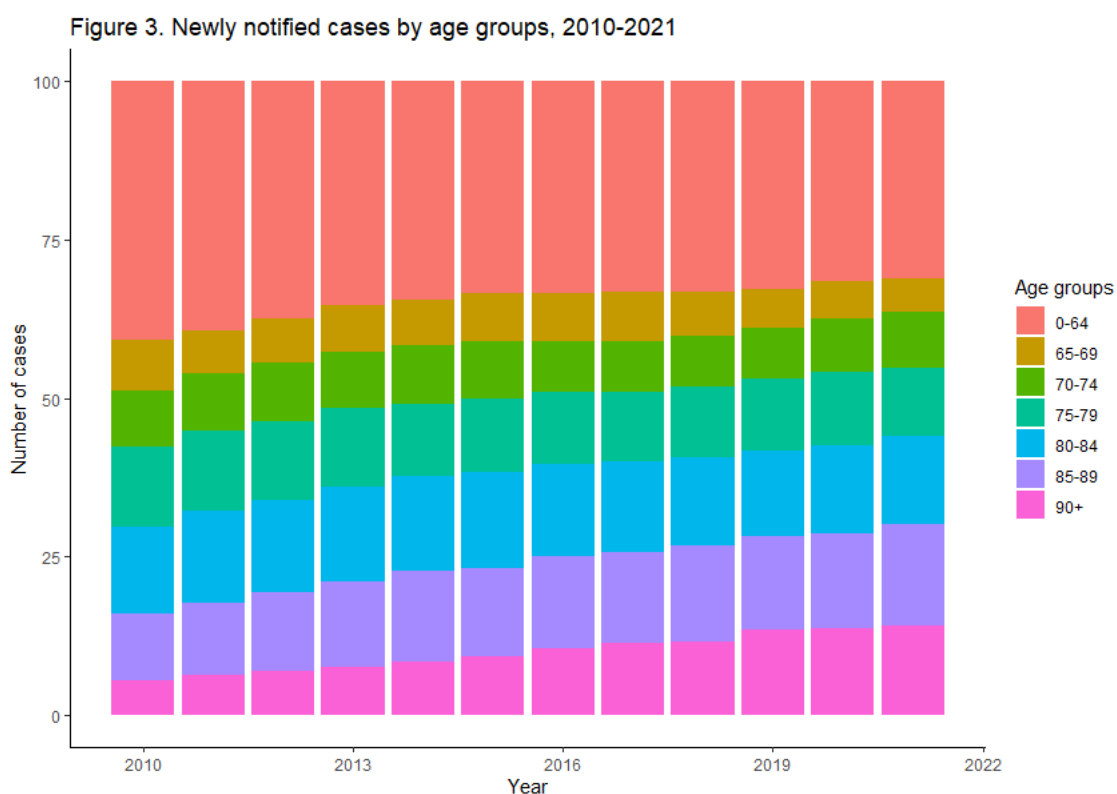
Age and sex:

In 2021, 58.4% of the notified cases were males (6,726 / 11,519) and 41.6% were females (4,793 / 11,519), with the number of males being 1.4 times higher than of females. The sex ratio increased after 45 years of age, and the number of males was 2 times greater or more, than of females in the age group 5 to 9, and 55 to 74 years. (Figure 2, see also Table s2). The average age of the notified cases was 69.5 years old (male; 69.4 years old, female; 69.7 years old), and the median was 77 years old (male; 76.0 years old, female; 79.0 years old).

Figure 2. Newly notified cases by age groups and sex, 2021



The proportion of those aged 65 years and above among the total notified TB cases was 68.9% (7,932 / 11,519), and of those aged 80 years old and above was 44.0% (5,073 / 11,519). The proportion of those aged 65 years old had rapidly increased, from 48.3 in 2000 to 59.1% in 2010, and to 68.9% in 2021, due to the aging of the Japanese population and reactivation of past infection. The increase in the proportion of those aged 90 years old and above has been dramatic, which has increased from 2.4% in 2010 to 14.2% in 2021 (Figure 3, see also Table s3).



TB among children:

In 2021, 29 cases of TB were newly notified among children aged 14 years old and below. Of these, 23 were Japan-born and 6 were foreign-born. By age-group, 14 were aged 0 to 4 years old, 5 were aged 5 to 9 years old, and 10 were aged 10 to 14 years old. The number of newly registered pediatric TB cases has decreased rapidly from 44,180 in 1965 to 18,197 in 1970, 1,893 in 1980, 518 in 1990, 220 in 2000, and to 29 in 2021.

62.1% (18 / 29) had pulmonary diseases, and 37.9% (11 / 29) had extra-pulmonary disease only. One case of miliary TB were reported.

14 had history of BCG vaccination (12 Japan-born, 2 foreign-born), 4 did not (4 Japan-born), and 11 with unknown history or no data.

Regarding the source of infection, information was available for 15 of 29 childhood cases. 11 were infected by their parents and 3 by their grandparents, and 1 by “others”.

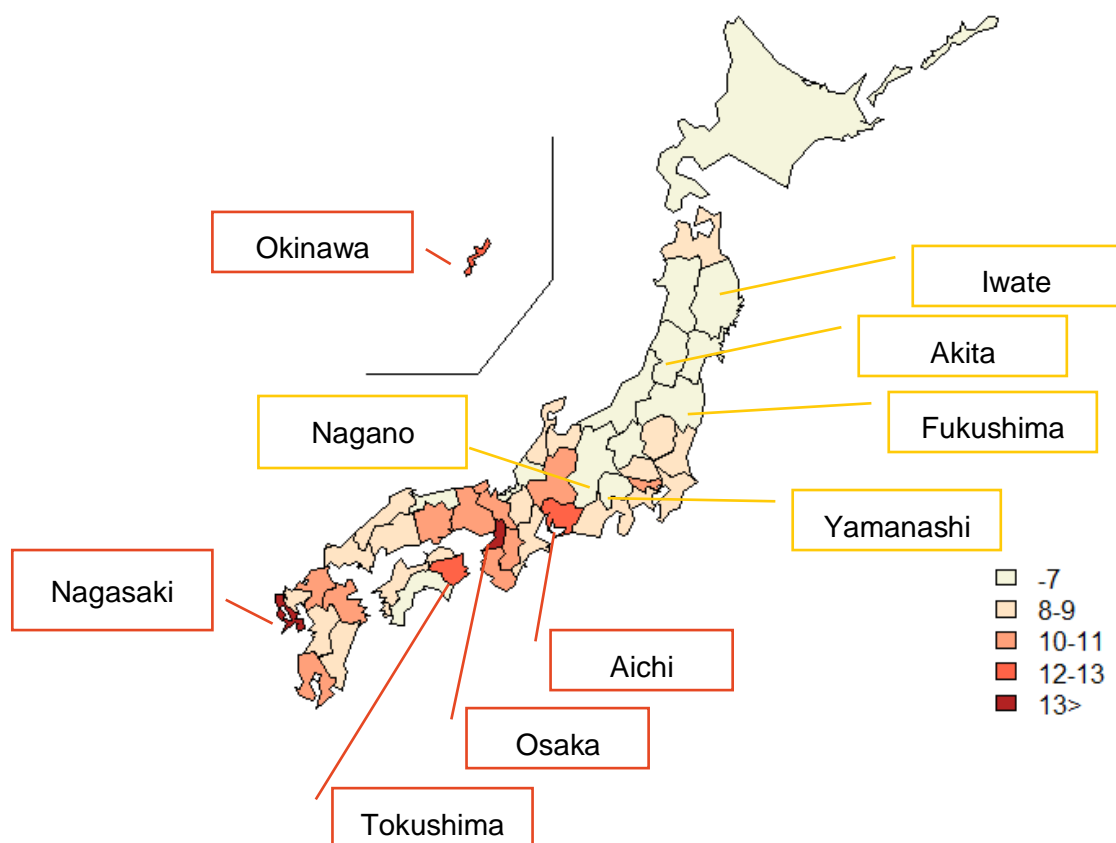
Chapter 2: Geographical distribution

Among the 47 prefectures and the 20 designated cities, the highest number of TB cases was notified from Tokyo (n=1,429), and the lowest from Yamanashi (n=35). The notification rate was the highest in Nagasaki, at 13.5 per 100,000, followed by Osaka (13.3), Tokushima (12.9), Okinawa (11.9) and Aichi (11.7). The notification rate was the lowest in Yamanashi, at 4.3 per 100,000, followed by Akita (4.9), Iwate and Nagano (5.1), and Fukushima (5.6).

Looking at the whole of Japan, the notification rates tended to be low in eastern and northeastern prefectures and high in the western prefectures.

In 37 out of 47 prefectures, the notification rate reached below 10 per 100,000 (see Map).

Map. Notification rate per 100,000 by prefectures, 2021



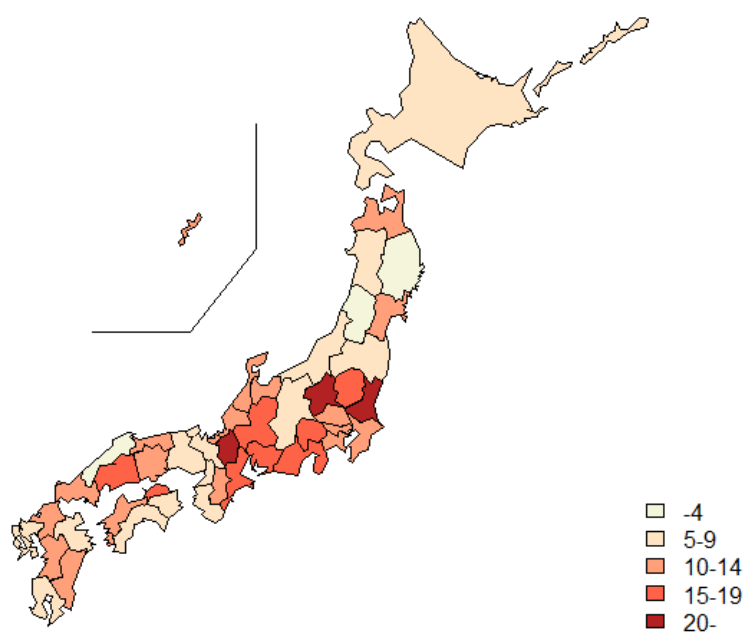
Geographical distribution of foreign-born cases:

In 2021, 1,313 foreign-born TB cases were notified (see Chapter 5 for details). Among them, the largest number of cases were notified from Tokyo (n=192), followed by Aichi (n=159), Osaka (n=84), Kanagawa (n=78) and Saitama (n=77). The proportion of foreign-born TB among all notified cases was the largest in Gunma (27.6%, n=34), followed by Shiga (22.2%, n=26), Ibaraki (20.8%, n=46), Aichi (18.1%, n=159) and Kagawa (18.1%, n=15), and tended to be higher in northern Kanto and Chubu regions. The proportion was the lowest in Shimane (1.9%, n=1) (see Map 2).

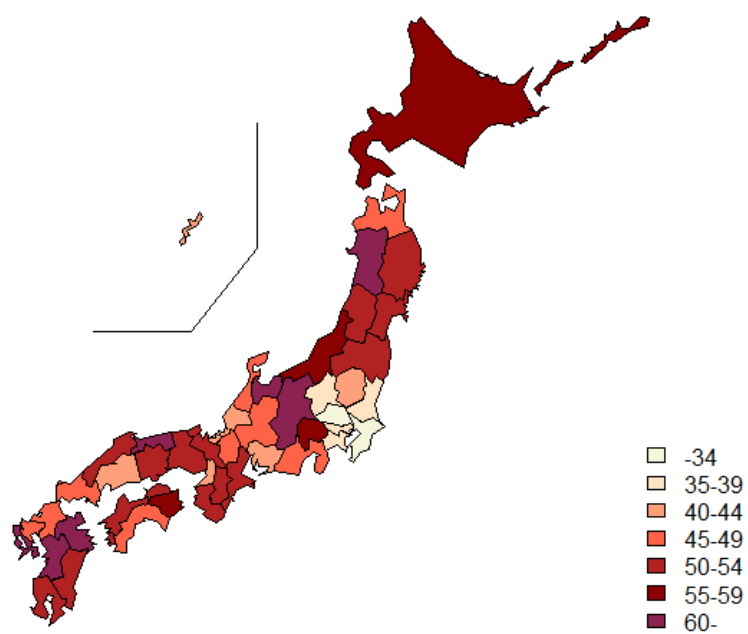
Geographical distribution of elderly cases:

Among the 47 prefectures, the proportion of those aged 80 years old and above among all notified cases was the highest in Toyama (75.0%, n=63), followed by Kumamoto (65.9%, n=83), Nagasaki (63.4%, n=111), Tottori (63.2%, n=24) and Akita (63.0%, n=29). The proportion was the lowest in Saitama (30.5%, n=188), followed by Chiba (33.3%, n=184), Tokyo (34.1%, n=488), Ibaraki (36.2%, n=80) and Kanagawa (36.6%, n=274). The proportions tended to be higher in large urban cities, such as Tokyo and Osaka (see Map3).

Map 2. Proportions of foreign-born TB cases by prefectures, 2021



Map 3. Proportions of elderly TB cases by prefectures, 2021



Chapter 3: Clinical background

Extrapulmonary disease by site¹:

In 2021, of the 11,519 cases, 8,413 were diagnosed with PTB, either with or without concomitant extrapulmonary disease, and 3,106 were diagnosed exclusively as EPTB. A total of 4,683 cases of EPTB, including both those exclusively EPTB and concomitant with PTB, were reported. The 4,683 cases of EPTB by affected organ is shown in Table 1.

The largest number of EPTB was pleurisy (n=2,168), followed by tuberculosis of other lymph nodes (n=659) and miliary tuberculosis (n=573).

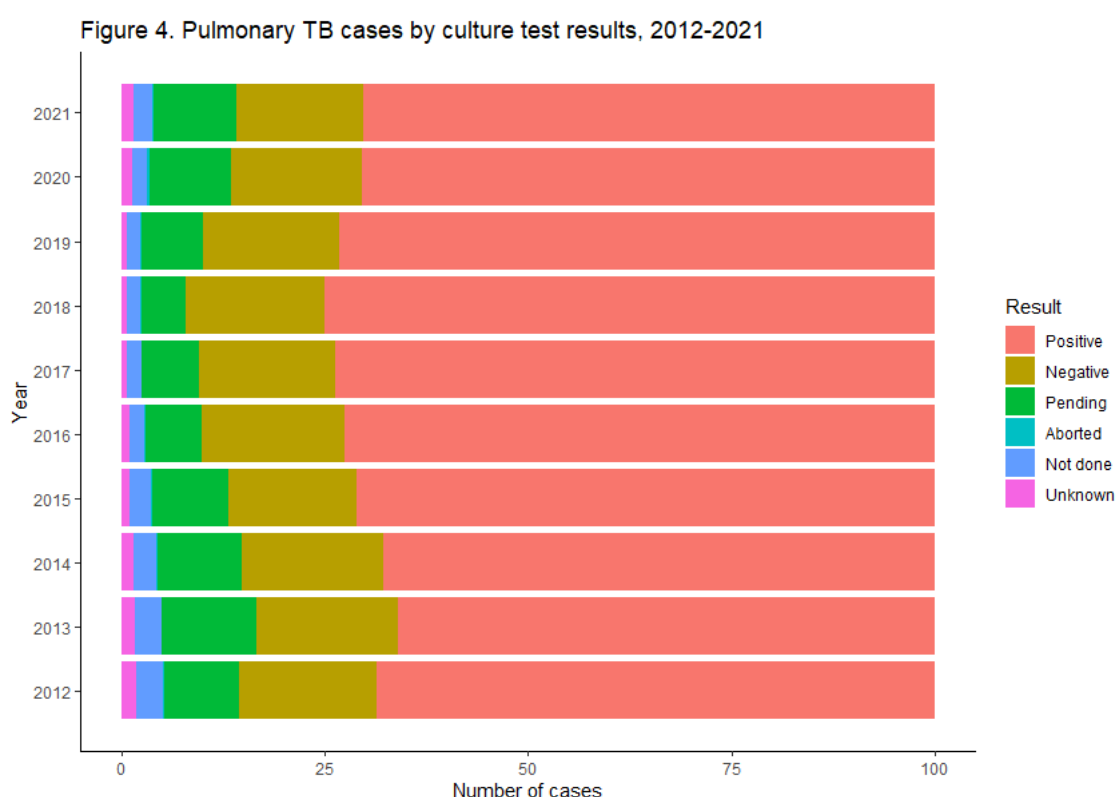
Table 1 Extrapulmonary cases by site, notified in 2021

Site	n
Bronchial	91
Pharyngeal/Laryngeal	28
Miliary	573
Pleura	2,168
Empyema	14
Hilar/Mediastinal lymph node	101
Other lymph node	659
Meningeal	100
Intestinal	186
Vertebral	145
Other joint/ Bone	103
Renal/ Urinary tract	53
Genital	13
Cutaneous	68
Ocular	30
Auricular	6
Peritoneal	142
Pericardial	57
Others	146
Total	4,683

¹ A patient diagnosed with bronchial tuberculosis is classified as a pulmonary tuberculosis under JTBS. However, it is also counted as "one case of extrapulmonary disease involving bronchi. Furthermore, when a patient is diagnosed with concomitant pulmonary and extrapulmonary disease, he or she is classified as a pulmonary tuberculosis, but each extrapulmonary site is counted.

Pulmonary TB - bacteriological confirmation:

Among the 8,413 PTB cases, results of sputum smear tests were known for 8,321 cases. Of these 54.0% (4,494 / 8,321) were sputum smear positive. Results of culture tests were known for 7,219 cases. Of these 81.8% (5,902 / 7,219) were culture positive. However, the proportion of those whose tests results were pending has gradually increased since 2019 (Figure 4, see also Table s4). Results of tests using nucleic acid amplification method was known for 7,370 cases, of whom 84.4% (6,223 / 7,370) were positive.



Tables 2.a-2.c summarize the cross tabulations of bacteriological test result of PTB cases notified in 2021. The proportions of culture positive among smear negative, of NAATs positive among smear negative, NAATs positive among culture negative and culture positive among NAATs negative were 60.8% (2,325 / 3,827), 55.3% (2,117 / 3,827), 32.3% (426 / 1,317) and 35.4% (406 / 1,147), respectively.

Table 2a PTB cases, by smear and culture test results, 2021

	Culture					Total
	Positive	Negative	Pending	Aborted	Not done /unknown	
Smear positive	3,562	201	544	4	183	4,494
Smear negative	2,325	1,113	311	7	71	3,827
Smear not done/unknown	15	3	8	0	66	92
Total	5,902	1,317	863	11	320	8,413

Table 2b. PTB cases, by smear and NAATs results, 2021

	NAATs			Total
	Positive	Negative	Not done/unknown	
Smear positive	4,080	93	321	4,494
Smear negative	2,117	1,053	657	3,827
Smear not done/unknown	26	1	65	92
Total	6,223	1,147	1043	8,413

Table 2c. PTB cases, by culture and NAATs results, 2021

	NAATs			Total
	Positive	Negative	Not done/unknown	
Culture positive	4,950	406	546	5,902
Culture negative	426	643	248	1,317
Results pending	644	75	144	863
Test aborted	5	3	3	11
Test not done/unknown	198	20	102	320
Total	6,223	1,147	1,043	8,413

Infectious TB - cases with cavities and positive sputum smear:

The proportion of those with cavities was 28.6% (2,402 / 8,413) among all PTB, 31.9% (1,628 / 5,100) for males and 23.4% (774 / 3,313) for females. The proportion of cavities among PTB by sex and age group is shown in Figure 5 (see also Table s5). The proportion of those with cavities ranged between approximately 20-30% for females, and between 20-40% for males, aged 15 years old and above. The proportions of those with cavities was especially high at approximately 40% among males aged between 40 to 60 years old and declined with age. However, the proportions of those with cavities among adult females stayed stable throughout all age groups.

The proportion of those with sputum smear positive was 49.1% (4,127 / 8,413)

among all PTB, 49.6% (2,532 / 5,100) among males and 48.1% (1,595 / 3,313) among females. The proportion of positive smear among PTB by sex and age group is shown in Figure 6 (see also Table s6). The proportion of those with positive smear tended to increase with age for both sexes.

Of the 8,413 PTB cases, the proportion of those with cavity and positive sputum smear was 20.5% (1,727 / 8,413), of those with cavity and negative sputum smear was 8.0% (675 / 8,413), and those without cavity and positive sputum smear was 28.5% (2,400 / 8,413).

Figure 5. Proportion of those with cavity among PTB by age groups and sex, 2021

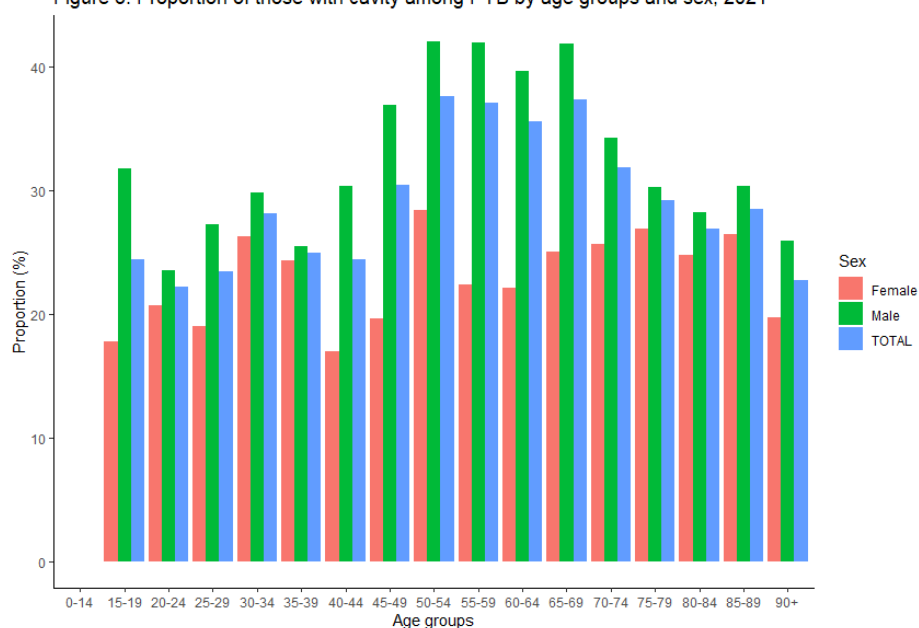
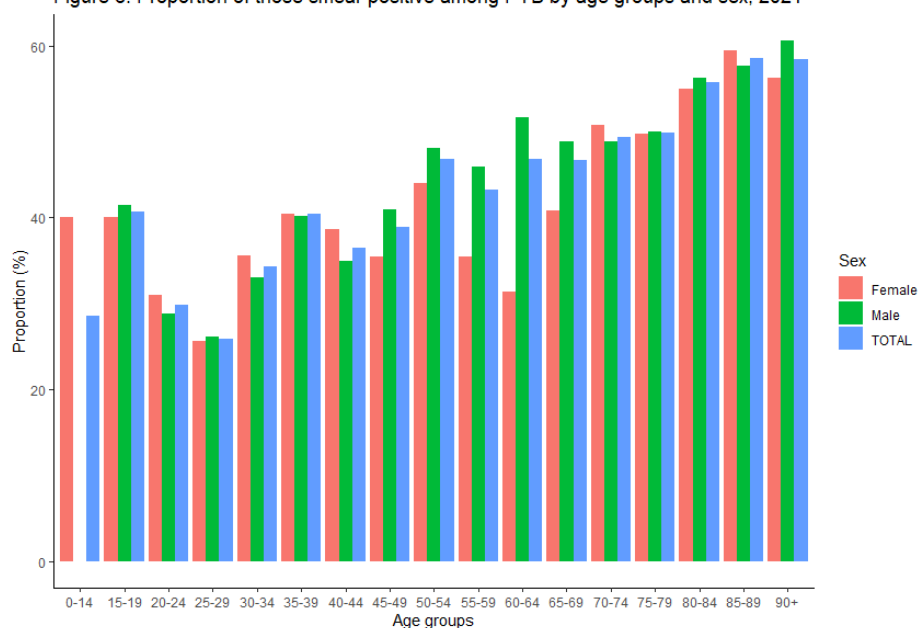


Figure 6. Proportion of those smear positive among PTB by age groups and sex, 2021



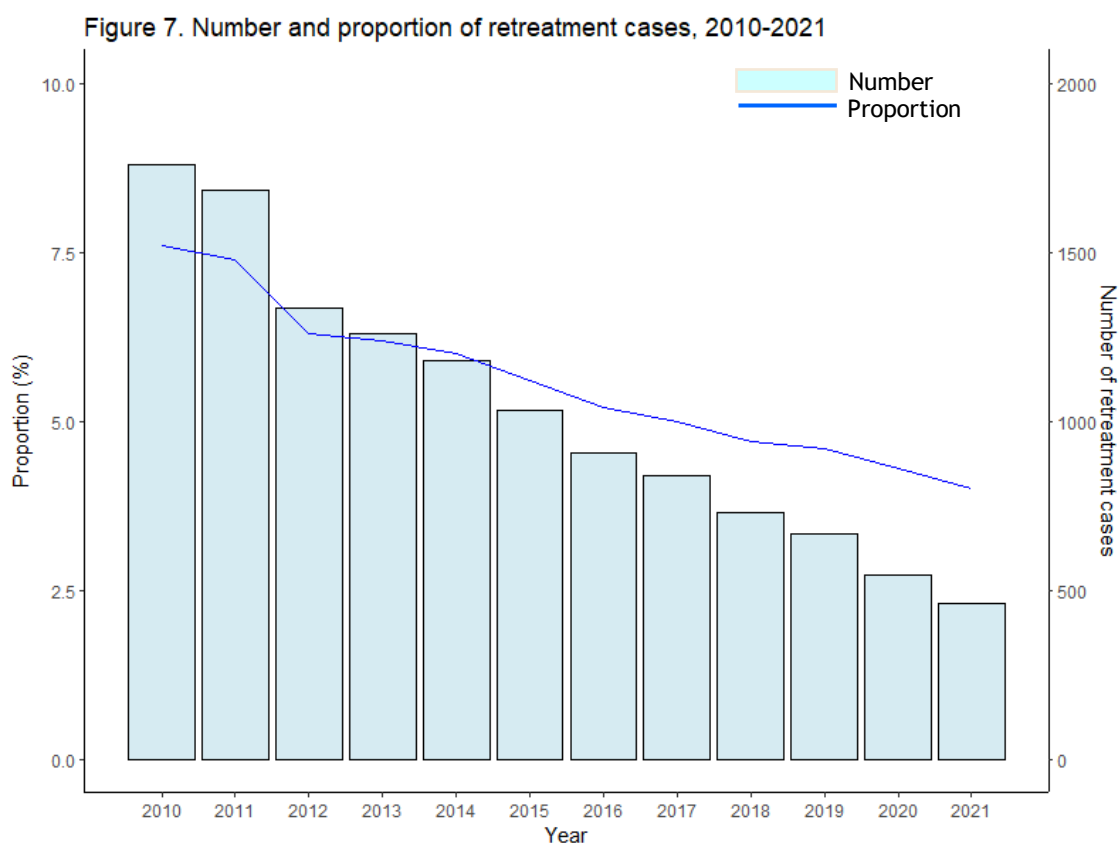
All TB, history of previous treatment:

The number of retreatment cases notified in 2021 was 460. 32.0% (147 / 460) of the retreatment cases had started their previous treatment in or after 2019, and 43.3% (199 / 460) more than 10 years ago (i.e., in or prior to 2011). Information regarding the regimen of the previous treatment was known for 72.4% (333 / 460) of all retreatment cases, with the most frequent being “treatment including Pyrazinamide (Z)” (30.4%, 140/ 460), followed by “treatment including Isoniazid (I) and Rifampicin (R)” (16.5%, 76/ 460) (Table 3).

Table 3 Regimen of the previous treatment among the retreatment cases, 2021

	n	%
Tx including Z	140	30.4
Tx including H and R	76	16.5
Other regimens	44	9.6
Tx for LTBI	73	15.9
Unknown	127	27.6
Total	460	100.0

Tx: treatment, Z: Pyrazinamide, H: Isoniazid, R: Rifampicin, LTBI: latent tuberculosis infection



2017	2,368	12,576	1,845	16,789
2018	2,210	11,630	1,750	15,590
2019	2,105	10,680	1,675	14,460
2020	1,883	9,117	1,739	12,739
2021	1,775	8,257	1,487	11,519

DM: diabetes mellitus

Of the 1,775 cases with DM, 69 (3.9%) were foreign-born, and 1,649 (92.9%) were Japan-born. While 52.2% (36 / 69) of the foreign-born cases were aged between 35 and 54, 95.3% (1,572 / 1,649) of the Japan-born cases were aged 55 and above (Table 5).

Table 5: Characteristics of cases with DM by age groups, 2021 (n=1,775)

Age groups (years)	Foreign-born	Japan-born	Unknown	Total
0-24	0	0	0	0
25-34	7	5	0	12
35-54	36	72	1	109
55+	26	1,572	56	1,654
Total	69	1,649	57	1,775

Co-morbidities; HIV/AIDS

Table 6 summarizes the newly notified TB cases by HIV status. In 2021, HIV test results were known only for 7.4% (847 / 11,519), while unknown for 92.6% (10,672 / 11,519) of the newly notified cases. Of those cases with known test results, 3.5% (30 / 847) were HIV positive and 96.5% (817 / 847) were HIV negative.

Table 6: Newly notified cases by HIV test results, 2012-2021

	HIV positive	HIV negative	HIV test not done	Unknown	Total
2012	62	3,266	4,601	13,354	21,283
2013	50	1,890	5,090	13,465	20,495
2014	45	1,627	4,970	12,973	19,615
2015	40	1,474	4,697	12,069	18,280
2016	44	1,556	4,933	11,092	17,625
2017	34	1,454	4,753	10,548	16,789
2018	44	1,251	4,757	9,538	15,590
2019	29	975	4,942	8,514	14,460
2020	31	846	4,292	7,570	12,739
2021	30	817	3,838	6,834	11,519

Of the 30 HIV positive TB cases, 50.0% (15 /30) were foreign-born and 46.7% (14 / 30) were Japan-born (Table 7).

Table 7: Characteristics of HIV positive TB patients, 2021 (n=30)

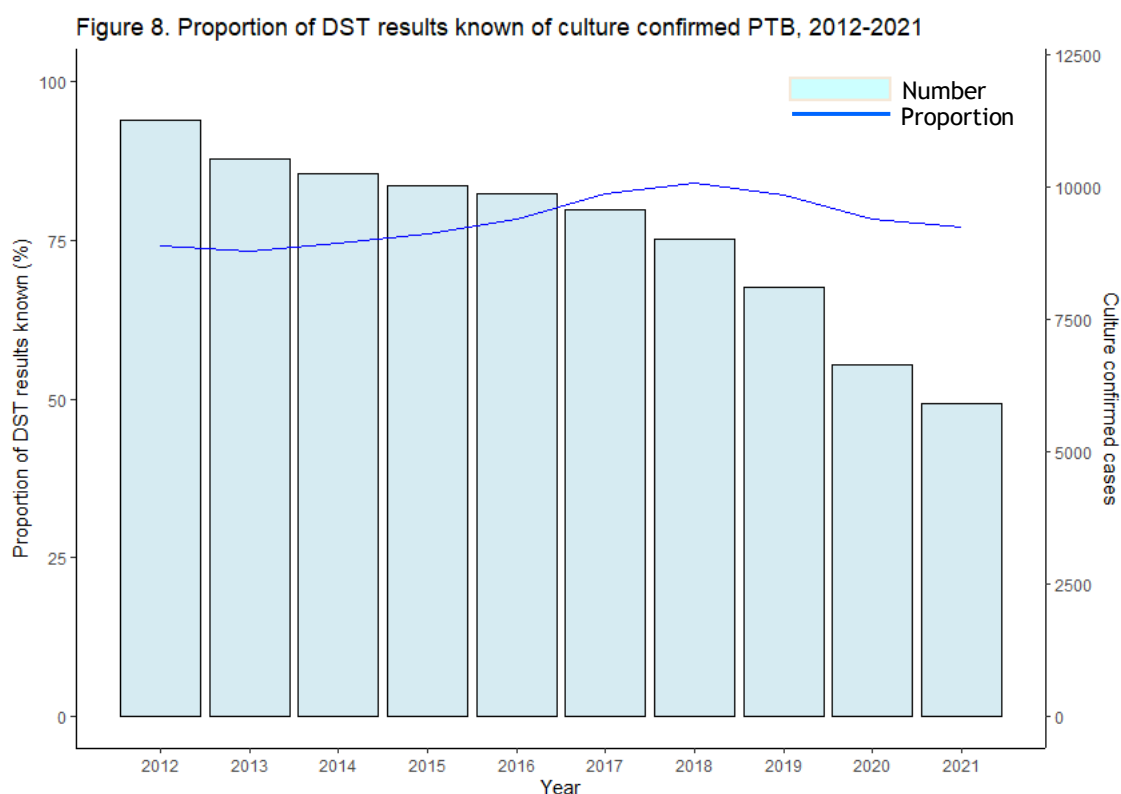
	Foreign-born	Japan-born	Unknown	Total
Male	10	12	1	23
Female	5	2	0	7
Total	15	14	1	30

Proportion of those who were not tested for HIV has increased, from 21.6% in 2012 (4,601 / 21,283) to 33.3% (3,838 / 11,519) in 2021.

Chapter 4: Drug-resistant TB

Drug susceptibility test for isoniazid and rifampicin:

Of the 5,902 culture confirmed pulmonary TB cases notified in 2021, drug susceptibility test (DST) results for both isoniazid (INH) and rifampicin (RFP) were known for 77.1% (4,551 / 5,902). The proportion of those with DST results for both isoniazid and rifampicin has been increasing, despite gradually, reaching a peak in 2018 at 84.0%. However, since then, it has declined continuously for the next two years (Figure 8, see also Table s8). It should also be noted that in Japan, currently, “drug susceptibility test results confirmed” is defined as those with DST results for INH and RFP. Those whose DST result for RFP was confirmed through Xpert MTB/RFP® but for INH is unknown, is recorded as “drug susceptibility test results unknown”.



Resistance to isoniazid and rifampicin by treatment history:

Of the 4,551 PTB cases with DST results known in 2021, 4.9% (221 / 4,551) were resistant to INH, 1.2% (56 / 4,551) were resistant to RFP, and 0.9% (41 / 4,551) were resistant to both INH and RFP (i.e., multi-drug resistant TB, MDR). Of the 221 that were resistant to INH, 180 were resistant solely to INH (i.e., INH mono-resistant). Of the 56 that were resistant to RFP, 15 were resistant solely to RFP (i.e., RFP mono-resistant).

Resistance to INH and RFP by treatment history among the 4,551 PTB cases with known DST results is summarized in Table 8. Proportions of those with resistance for both INH, RFP, and MDR were higher among retreatment than new cases.

Table 8. Resistance to INH and RFP by treatment history, 2021

	INH resistant	Of which, INH mono-resistant	RFP resistant	Of which, RFP mono-resistant	MDR
New treatment	205	169	48	12	36
n=4,335	4.7%	3.9%	1.1%	0.3%	0.8%
Retreatment	11	7	7	3	4
n=166	6.6%	4.2%	4.2%	1.8%	2.4%
Treatment history unknown	5	4	1	0	1
n=50	10.0%	8.0%	2.0%	0.0%	2.0%

INH: isoniazid, RFP: rifampicin, MDR: multidrug resistant

Figures 9a – 9b (see also Tables s9) show the trend in the proportions of those with drug resistance by treatment history.

Figure 9a. Drug resistance among PTB, new cases, 2012-2021

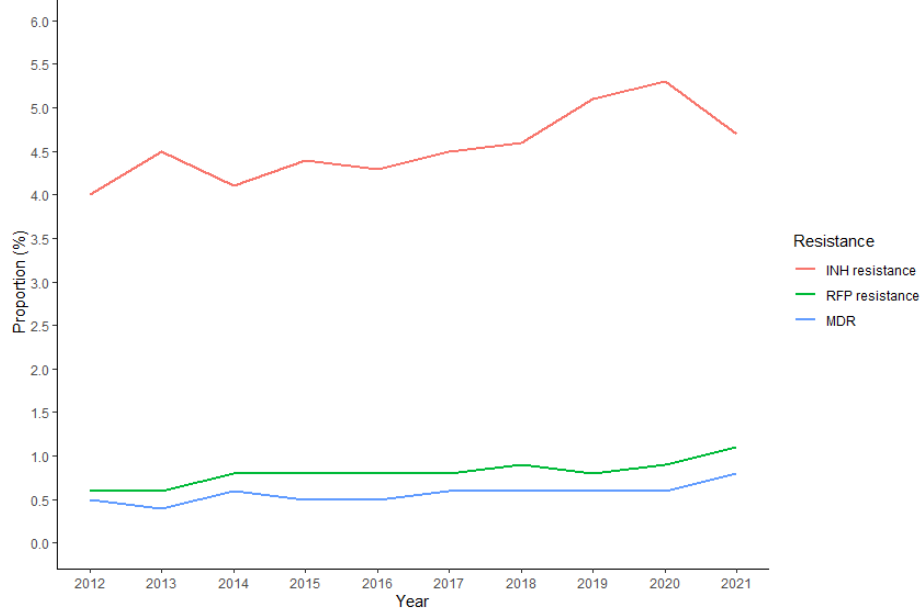
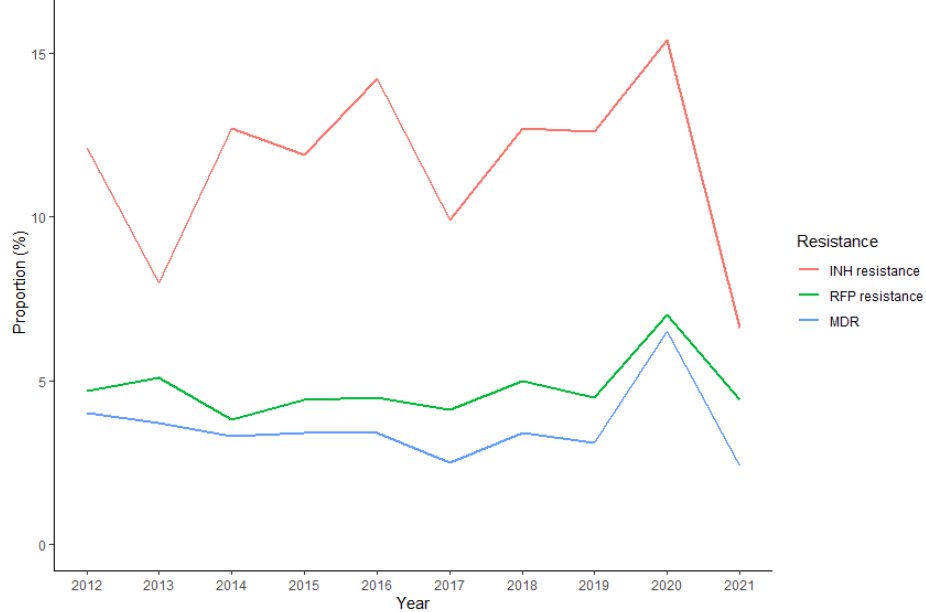


Figure 9b. Drug resistance among PTB, retreatment cases, 2012-2021



Resistance to isoniazid and rifampicin by country of birth, and age group:

Among the 5,902 culture confirmed pulmonary TB cases notified in 2021, 5,181 were Japan-born, 570 were foreign-born, and the country of birth was unknown for 151. Results of DST were known for 77.3% (4,004 / 5,181) for Japan-born, 82.1% (468 / 570) for foreign-born, and 52.3% (79 / 151) for those whose country of birth was unknown.

Table 9 summarizes resistance to INH, RFP and MDR by country of birth among the 5,181 PTB cases with known DST results.

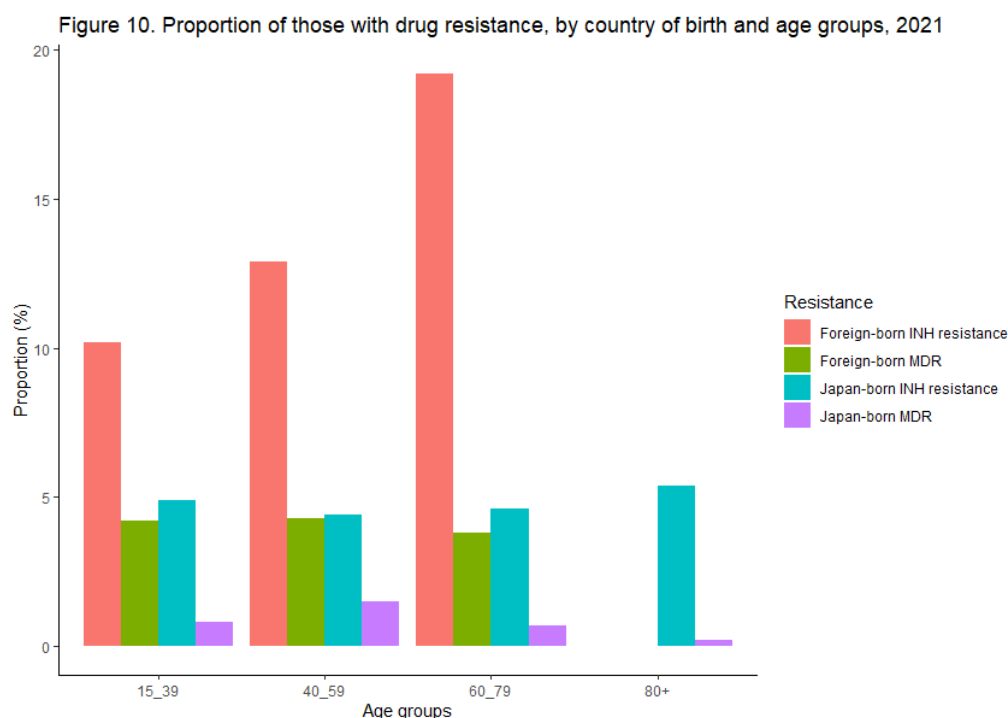
Table 9. Resistance to INH and RFP by country of birth, 2020

	INH resistant	Of which, INH mono- resistant	RFP resistant	Of which, RFP mono- resistant	MDR
Japan-born n=4,004	167	145	34	12	22
	4.2%	3.6%	0.8%	0.3%	0.5%
Foreign-born n=468	51	32	21	2	19
	10.9%	6.8%	4.5%	0.4%	4.1%
Country of birth unknown n=79	3	3	1	1	0
	3.8%	3.8%	1.3%	1.3%	0.0%

INH: isoniazid, RFP: rifampicin, MDR: multidrug resistant

Proportions of those with resistance were significantly higher among foreign-born than Japan-born cases.

Figure 10 (see also Table s10) shows the proportions of those with drug resistance by age groups and country of birth.



Resistance to streptomycin and ethambutol

For streptomycin (SM), DST results were known for 4,300 of the 4,335 culture confirmed first treatment cases, whose DST results were known for both INH and RFP. Of the 4,300 cases, 6.3% were resistant to SM (270 / 4,300). DST results were also known for 165 of the 166 culture confirmed retreatment cases, whose DST results were known for both INH and RFP. Of the 165 cases, 4.9% were resistant to SM (8 / 165).

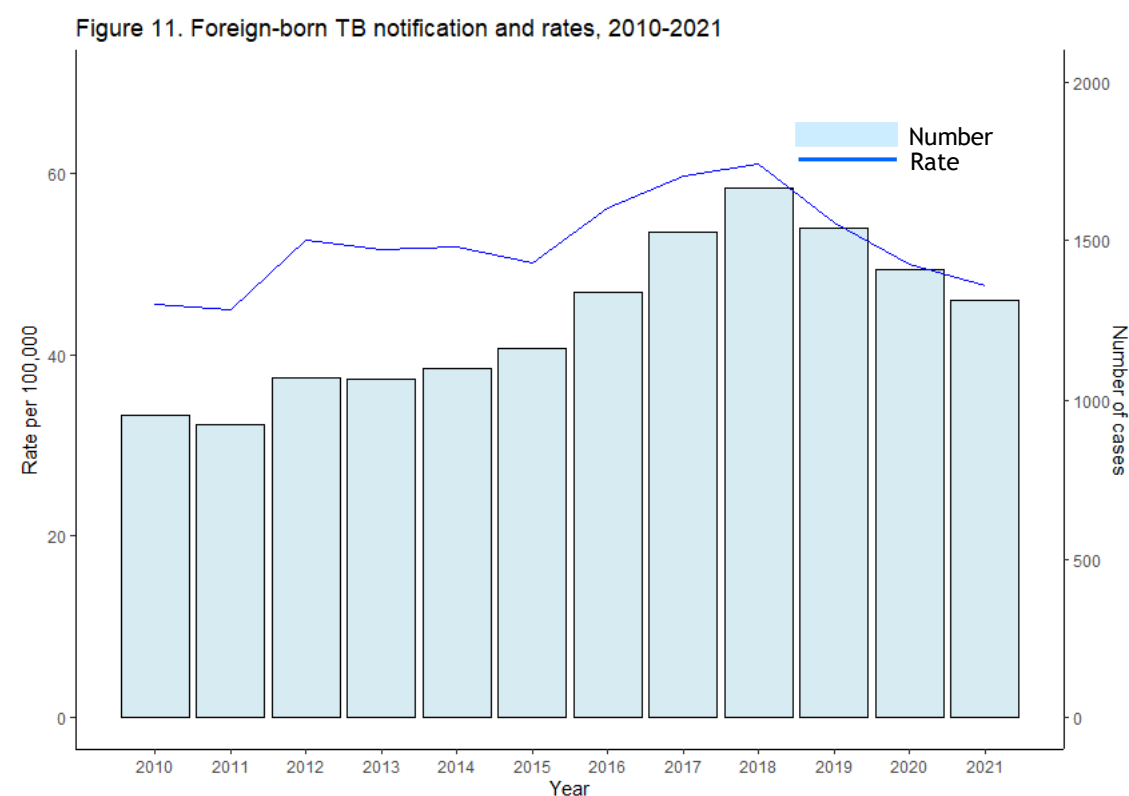
For ethambutol (EB), DST results were known for 4,326 of the 4,335 culture confirmed first treatment cases, whose DST results were known for both INH and RFP. Of the 4,326 cases, 1.6% were resistant to SM (71 / 4,326). DST results were also known for 166 of the 166 culture confirmed retreatment cases, whose DST results were known for both INH and RFP. Of the 166 cases, 3.6% were resistant to SM (6 / 166).

Chapter 5: Foreign-born TB, 2010-2021

Overall number and rates:

Information regarding place of birth (Japan-born/foreign-born) was known for 96.6% of the newly notified cases (11,122 / 11,519). Of those cases, 11.8% was born outside Japan (1,313 / 11,122). The number of foreign-born cases slightly decreased from 1,411 in the previous year to 1,313 and the rate per 100,000 similarly decreased from 48.9 in the previous year to 47.6

(Figure 11, see also Table s11). However, the proportion out of all cases continued to increase.



Age and sex:

In 2021, 49.9% of the foreign-born cases were males (655 / 1,313) and 50.1% were females (658 / 1,313). The largest number of cases were diagnosed

among those aged 25 to 34 (526 cases), followed by those aged 15 to 24 (368 cases). 80.8% (1,061 / 1,313) of foreign-born persons were aged between 15 and 44 (Table 10).

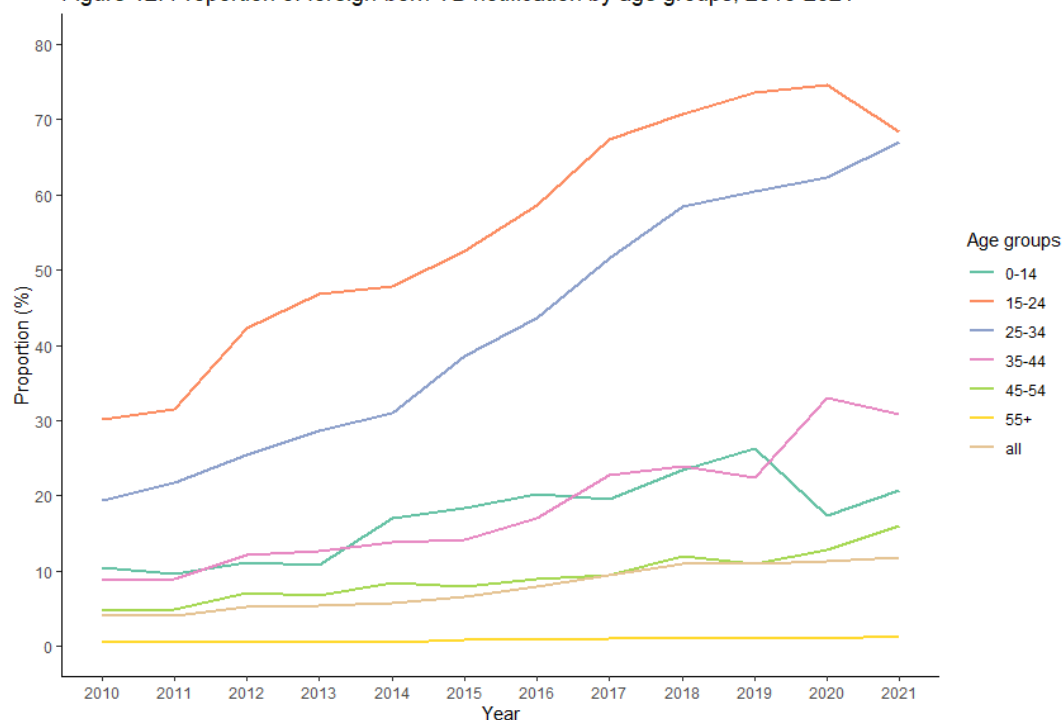
Table 10. Foreign-born TB cases* by sex and age groups, 2021

Age groups (years)	Male		Female		Total	
	n	%	n	%	n	%
0-4	0	0.0	1	0.2	1	0.1
5-14	3	0.5	2	0.3	5	0.4
15-24	200	30.5	168	25.5	368	28.0
25-34	278	42.4	248	37.7	526	40.1
35-44	69	10.5	98	14.9	167	12.7
45-54	46	7.0	81	12.3	127	9.7
55-64	24	3.7	30	4.6	54	4.1
65-74	17	2.6	7	1.1	24	1.8
75-84	12	1.8	11	1.7	23	1.8
85+	6	0.9	12	1.8	18	1.4
Total	655	100.0	658	100.0	1,313	100.0

*Note: exclude those whose country of birth is unknown

Looking at the trend, the proportion of foreign-born cases among the age group 15 to 34 years old has increased dramatically especially since 2011, while that among other age groups have increased steadily. (Figure 12, see also Table s12).

Figure 12. Proportion of foreign-born TB notification by age groups, 2010-2021



Diagnosis:

Out of the 1,313 foreign-born cases, 71.5% (939 / 1,313) were diagnosed with PTB, either with or without extrapulmonary disease. 28.5% (374 / 1,313) were diagnosed solely with extrapulmonary tuberculosis. Out of the 939 PTB cases, 77.2% (725 / 939) were bacteriologically confirmed, and 33.2% (312 / 939) were sputum smear positive. The proportion of those bacteriologically confirmed among the foreign-born cases was lower than that among the Japan-born cases by 11.5% (77.2% vs 88.7%).

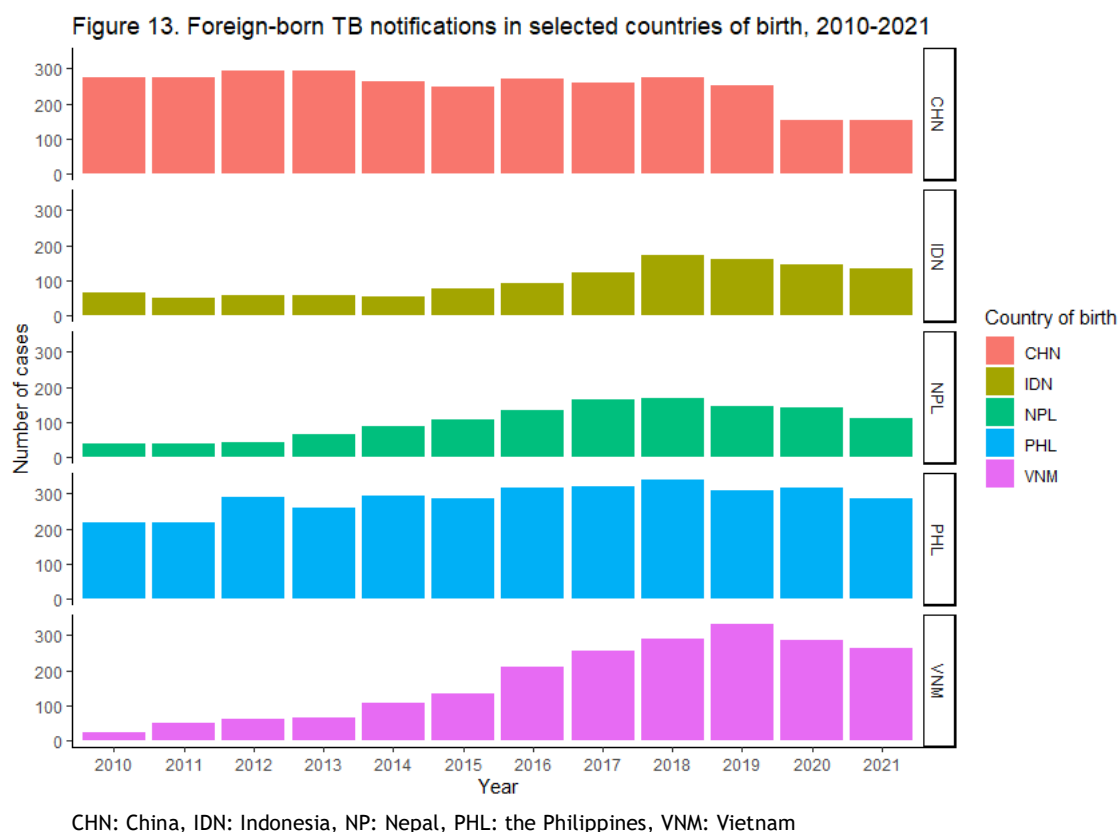
Country of birth and occupation:

Table 11 summarizes the foreign-born TB cases by major countries of birth. The Philippines was the most frequent country of birth for foreign-born cases notified in 2021 (21.6%, 284 / 1,313), followed by Vietnam (20.0%, 263 / 1,313) and China and (11.6%, 152 / 1,313). Six countries, the Philippines, Vietnam, China, Indonesia, Nepal and Myanmar accounted for 78.5% (1,031 / 1,313) of all foreign-born cases.

Table 11: Foreign-born TB cases by country of birth, 2021

Country name	Cases	Proportion (%)
The Philippines	284	21.6
Vietnam	263	20.0
China	152	11.6
Indonesia	134	10.2
Nepal	113	8.6
Myanmar	85	6.5
Unknown	75	5.7
Others	207	15.8
Total	1,313	100.0

Looking at the trend in the five most frequent countries of birth, the number of those from China has been relatively constant but declined steeply in 2020. Those from Nepal, Indonesia and Vietnam have been increasing, but those from Vietnam, Nepal and Indonesia slightly declined since 2019. Those from the Philippines have been constant (Figure 13, see also Table s13).



Regarding the job categories of foreign-born cases, the “full-time workers” (excluding healthcare workers, those working in the service industry and teachers) contributed to 41.0% (538 / 1,313), followed by “high-school and university students”, contributing to 15.3% (201 / 1,313) of all cases. However, the distribution of job categories differed considerably by country of birth (Table 12).

Table 12. Job categories of foreign-born cases, and of selected countries, 2021

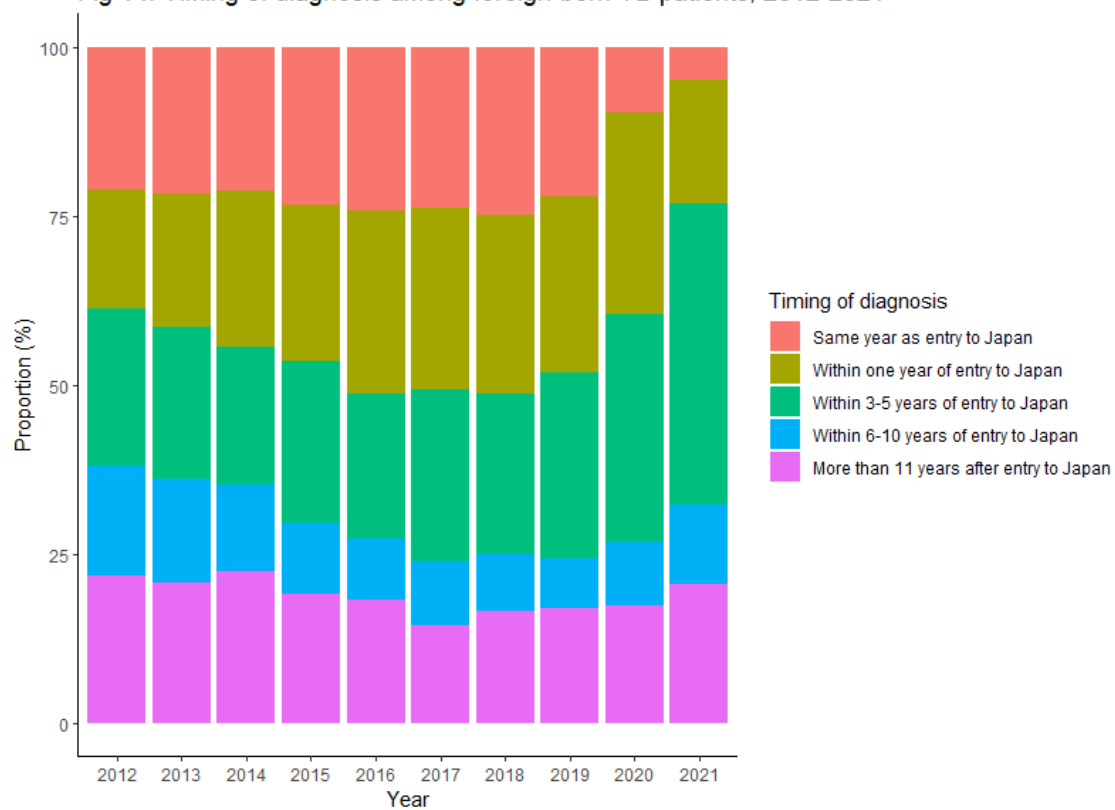
	All		Philippines		Vietnam		China		Indonesia	
	n	%	n	%	n	%	n	%	n	%
Full-time workers	538	41.0	129	45.4	137	52.1	50	32.9	59	44.0
High-school & university students	201	15.3	8	2.8	44	16.7	46	30.3	17	12.7
Unemployed	170	12.9	56	19.7	15	5.7	24	15.8	6	4.5
Unknown and others	136	10.4	26	9.2	29	11.0	7	4.6	24	17.9
Temporary workers	109	8.3	25	8.8	26	9.9	4	2.6	10	7.5
Service industry	43	3.3	7	2.5	3	1.1	6	3.9	1	0.7
Healthcare workers	55	4.2	13	4.6	6	2.3	2	1.3	13	9.7
Houseworkers	18	1.4	6	2.1	0	0.0	6	3.9	2	1.5
Self-employed	27	2.1	4	1.4	3	1.1	7	4.6	1	0.7
Other children*	6	0.5	4	1.4	0	0.0	0	0.0	1	0.7
Teachers	10	0.8	6	2.1	0	0.0	0	0.0	0	0.0
Total	1,313	100.0	284	100.0	263	100.0	152	100.0	134	100.0

*Other children: junior high school, primary school children and infants

Year of entry to Japan:

Year of entry to Japan has been collected under the JTBS since 2012. Of the 13,198 foreign-born cases notified in Japan between 2012 and 2021, year of entry was known for 64.8% (8,554 / 13,198). In 2021, of the 1,313 foreign-born cases notified, year of entry was known for 64.0% (840 / 1,313). Of which, 23.1% (194 / 840) of foreign-born cases were notified within 2 years of entering Japan (Figure 14, see also Table s14).

Fig 14. Timing of diagnosis among foreign-born TB patients, 2012-2021



Chapter 6: Socio-economic characteristics

Occupation:

Table 13 summarizes the job categories of all TB cases notified in 2021. Since a large majority of the patients are elderly, the largest proportion of job category was unemployed (64.9%, 7,477 / 11,519), followed by “full-time workers” (14.2%, 1,639 / 11,519). Among those aged 64 years old or below, the largest proportion of job category was “full-time workers” (39.6%, 1,421 / 3,587), followed by “unemployed” (16.0%, 575 / 3,587).

Table 13. Job categories of all TB cases, 2021

All ages	n	%	Under 64 years old	n	%
Unemployed	7,477	64.9	Full-time workers	1,421	39.6
Full-time workers	1,639	14.2	Unemployed	575	16.0
Self-employed	430	3.7	High school and university students	291	8.1
Temporary workers	333	2.9	Temporary workers	219	6.1
High school and university students	292	2.5	Service industry	165	4.6
Unknown	350	3.0	Self-employed	174	4.9
Service industry	218	1.9	Other HCWs	186	5.2
Others	257	2.2	Others	155	4.3
Other HCWs	212	1.8	Unknown	152	4.2
Nurses	116	1.0	Nurses	108	3.0
Houseworkers	93	0.8	Houseworkers	55	1.5
Teachers	44	0.4	Teachers	37	1.0
Physicians	27	0.2	Infants	13	0.4
Primary and junior high school students	18	0.2	Primary and junior high school students	18	0.5
Infants	13	0.1	Physicians	18	0.5
Total	11,519	100	Total	3,587	100.0

HCW: healthcare workers

Social risk factors, 25-64 years old:

Social risk factors are defined as the following: those either currently homeless or with a history of being homeless within one year of diagnosis (“homeless”), those unemployed (“unemployed”), those receiving social welfare benefit upon diagnosis of TB (“social welfare”) and those newly applying for social welfare upon diagnosis, who include those not covered under any health insurance upon

diagnosis of TB (“newly applying for social welfare upon diagnosis”). “Homelessness”, “unemployed” and the two health insurance statuses are not mutually exclusive. The demographic characteristics of those with each social risk factor by sex, age groups and country of birth are summarized in Table 14.

Table 14. Characteristics of those with social risk factors, 2021

	Homeless		Unemployed		On social welfare upon diagnosis		Newly applying for social welfare upon diagnosis	
	n	%	n	%	n	%	n	%
Male	47	88.7	321	59.3	137	83.5	22	100.0
Female	6	11.3	220	40.7	27	16.5	0	0.0
Age group								
25-34	5	9.4	61	11.3	1	0.6	1	4.5
35-44	1	1.9	82	15.2	12	7.3	3	13.6
45-54	18	34.0	147	27.2	55	33.5	2	9.1
55-64	29	54.7	251	46.4	96	58.5	16	72.7
Country of birth								
Foreign-born	4	7.5	100	18.5	13	7.9	0	0.0
Japan-born	44	83.0	428	79.1	143	87.2	22	100.0
COB unknown	5	9.4	13	2.4	8	4.9	0	0.0
Total	53	100	541	100	164	100.0	22	100.0

COB: country of birth

Chapter 7: Delay

Symptoms upon diagnosis:

Under JTBS, symptom upon diagnosis is asked for PTB cases. Of the 8,413 PTB cases notified in 2021, 24.1% (2,025 / 8,413) reported respiratory symptoms, 26.9% (2,264 / 8,413) reported both respiratory and non-respiratory symptoms, 21.0% (1,764 / 8,413) reported non-respiratory symptoms only, and 27.1% (2,279 / 8,413) did not report any symptoms. Information regarding symptoms were unknown for 81 cases.

Delay among symptomatic pulmonary TB:

Under the JTBS, a patient delay is defined as the time between onset of symptoms and initial doctor visit being longer than 2 months, a doctor delay as the time between initial doctor visit and diagnosis being longer than 1 month, and total delay as the time between onset of symptoms and TB diagnosis being longer than 3 months.

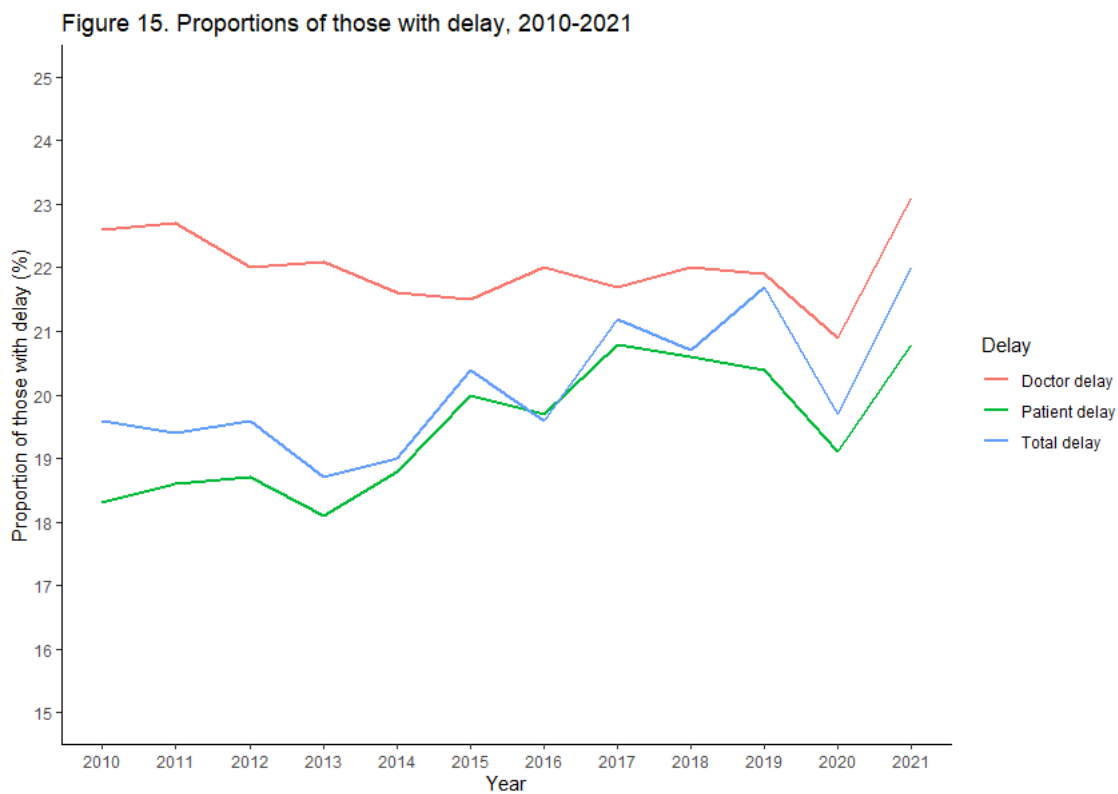
Of the 6,053 symptomatic pulmonary TB cases, information regarding patient delay was known for 63.6% (3,847 / 6,053), doctor delay for 86.9% (5,261 / 6,053), and total delay for 64.6% (3,912 / 6,053). Patient delay was observed in 20.8% (799 / 3,847), doctor delay in 23.1% (1,216 / 5,261) and total delay in 22.0% (861 / 3,912) (Table 15).

Table 15. Number and proportion of those with delay, 2021

Type of delay	Total no. symptomatic PTB	Information on delay known	Delay	
			n	%
Patient delay	6,053	3,847	799	20.8
Doctor delay	6,053	5,261	1,216	23.1
Total delay	6,053	3,912	861	22.0

PTB: pulmonary tuberculosis

The proportions of those with delay has gradually been increasing, sharply increased in 2021. The proportion of those with doctor delay has constantly been higher than patient delay (Figure 15, see also Table s15).



Characteristics of those with delay:

Characteristics of symptomatic PTB patients by delay type are summarized in Table 16.

Table 16. Proportions of those with delay among selected characteristics, 2021

	Patient delay			Doctor delay			Total delay		
	Total	With delay	Proportion of those with delay (%)	Total	With delay	Proportion of those with delay (%)	Total	With delay	Proportion of those with delay (%)
Sex									
Male	2,325	506	21.8	3,154	712	22.6	2,367	526	22.2
Female	1,522	293	19.3	2,107	504	23.9	1,545	335	21.7
Age group									
0-14	7	2	28.6	7	1	14.3	7	1	14.3
15-24	161	40	24.8	223	50	22.4	164	47	28.7
25-34	228	60	26.3	312	75	24.0	229	62	27.1
35-44	151	49	32.5	208	59	28.4	154	60	39.0
45-54	253	84	33.2	342	85	24.9	256	85	33.2
55-64	277	86	31.0	378	86	22.8	282	87	30.9
65+	2,770	478	17.3	3,791	860	22.7	2,820	519	18.4
COB all ages									
Foreign-born	347	84	24.2	491	124	25.3	351	87	24.8
Japan-born	3,406	701	20.6	4,621	1,068	23.1	3,464	764	22.1
COB unknown	94	14	14.9	149	24	16.1	97	10	10.3
COB 25-64 years									
Foreign-born	223	55	24.7	316	81	25.6	224	57	25.4
Japan-born	669	221	33.0	895	217	24.2	679	234	34.5
COB unknown	17	3	17.6	29	7	24.1	18	3	16.7
Social risk factor									
Homeless	48	11	22.9	62	11	17.7	48	10	20.8
Unemployed*	190	57	30.0	272	71	26.1	193	61	31.6
On social welfare	308	59	19.2	406	81	20.0	309	64	20.7
No insurance	20	6	30.0	28	3	10.7	20	7	35.0
Total	3,847	799	20.8	5,261	1,216	23.1	3,912	861	22.0

COB :country of birth

*Unemployed among those aged between 25 and 64

Modes of case detection:

Table 17 summarizes the modes of detection for all TB cases. Approximately half were detected at hospital setting, with symptoms.

Table 17. Modes of detection, all TB, 2021

	n	%
Hospital, with symptoms	6,320	54.9
Hospital, with other disease(s)	3,384	29.4
Routine health check	1,096	9.5
Contact investigation	282	2.4
Individual health check	195	1.7
Others	99	0.9
During follow-up	50	0.4
Unknown	60	0.5
Mass screening	33	0.3
Total	11,519	100.0

Chapter 8: Latent tuberculosis infection

Trend, by country of birth and age groups:

Notification of latent tuberculosis infection (LTBI) has been mandatory since 2006. In 2021, 5,140 cases of LTBI were newly notified. The number of new cases has reached a peak in 2011 and decreased over the next two years. It remained relatively stable since 2013, however, in 2020, the number decreased significantly compared with the previous year. Country of birth was known for 96.7% of all cases (4,972 / 5,140). The proportion of foreign-born among those cases with known country of birth has also been declining since 2018, and was 10.8% (538 / 4,972) in 2021 (Figure 16, see also Table s16).

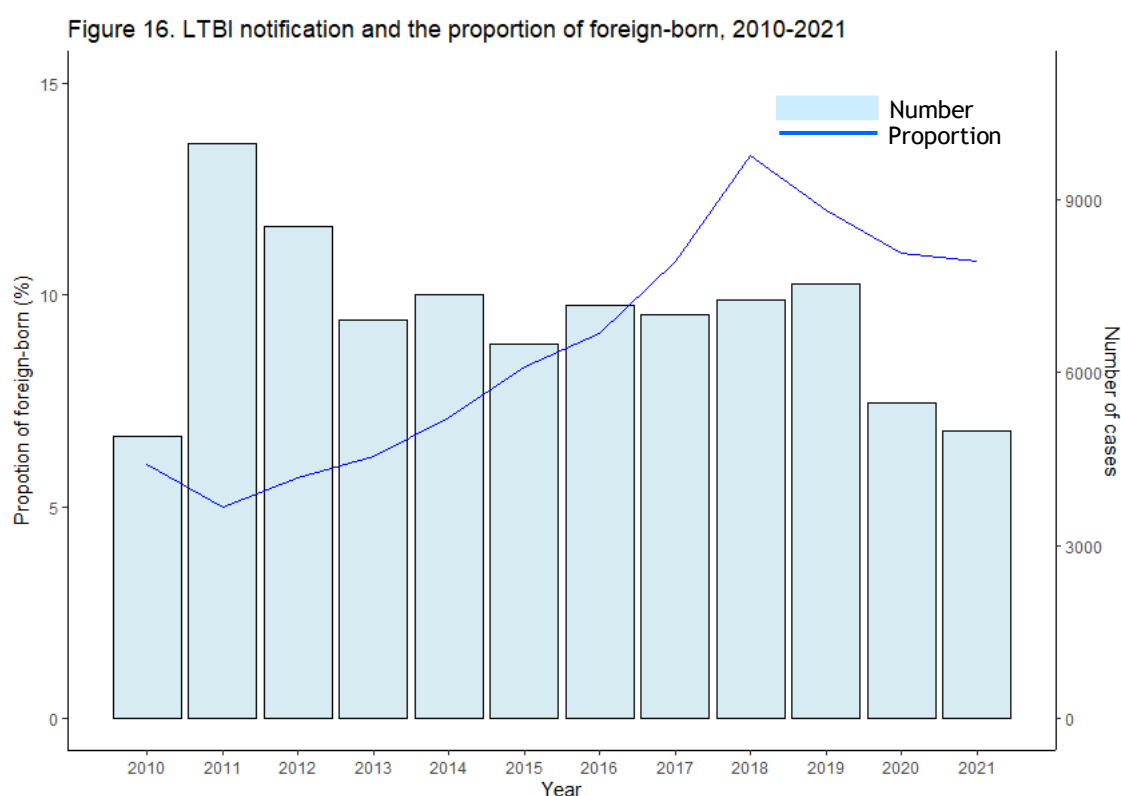


Figure 17 (see also Table s17) shows the trend of LTBI notification by age groups. The number of notifications among those aged 65 years old and above has constantly been increasing. It declined for the first time in 2020, however, it turned to increase again in 2021. For all other age groups, the notification has been declining since 2011.

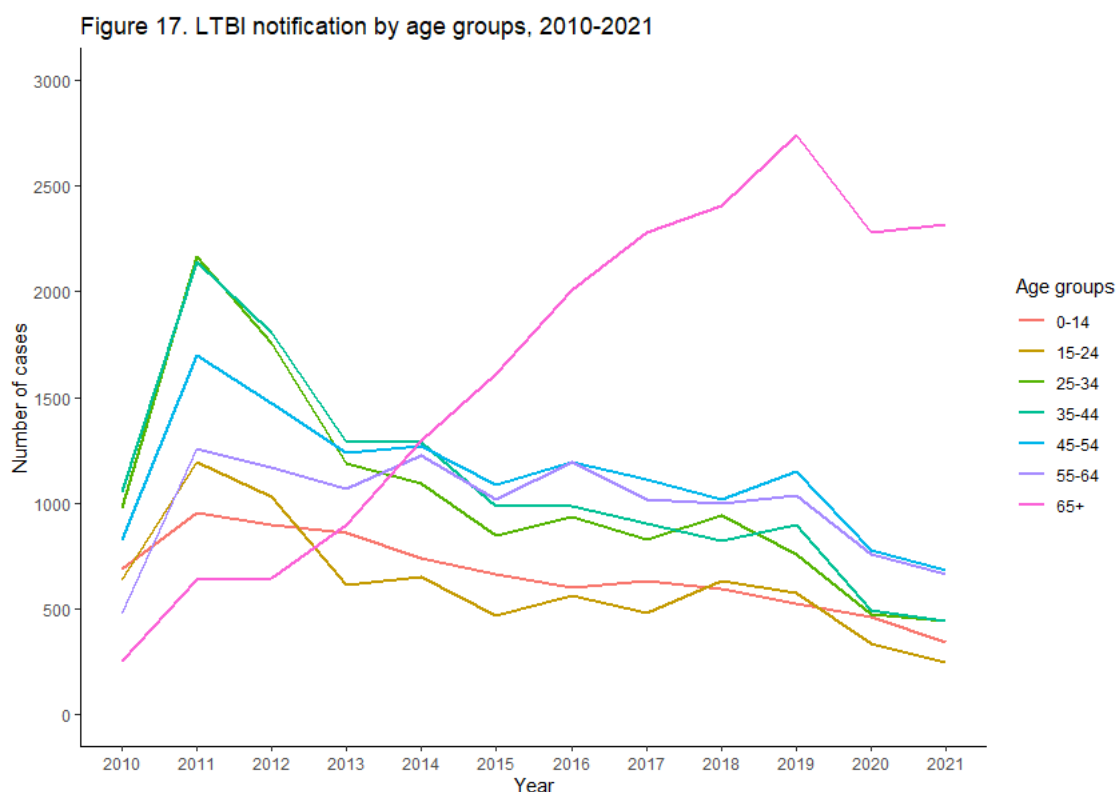


Table 18 summarizes the LTBI case notifications in 2021 by country of birth and age groups. Breaking down the cases by age groups, the largest number of cases were diagnosed among those aged 65 years and above ($n=2,320$), followed by those aged 45 and 54 years old ($n=681$). However, while 49.5% ($2,195 / 4,434$) of LTBI cases among Japan-born were aged 65 years and above, 20.8% ($112 / 538$) and 36.4% ($196 / 538$) of LTBI cases among the foreign-born were aged between 15 and 24 years old, and 25 and 34 years old, respectively.

Table 18. LTBI notification by age and country of birth, 2021

Age groups (years)	Japan-born		Foreign-born		Country of birth unknown		Total	
	n	%	n	%	n	%	n	%
0-14	332	7.5	12	2.2	0	0.0	344	6.7
15-24	129	2.9	112	20.8	7	4.2	248	4.8
25-34	239	5.4	196	36.4	10	6.0	445	8.7
35-44	331	7.5	95	17.7	15	8.9	441	8.6
45-54	600	13.5	62	11.5	19	11.3	681	13.2
55-64	608	13.7	42	7.8	11	6.5	661	12.9
65+	2,195	49.5	19	3.5	106	63.1	2,320	45.1
Total	4,434	100.0	538	100.0	168	100.0	5,140	100.0

Mode of detection:

44.6% (2,294 / 5,140) of the notified LTBI cases were detected upon contact investigation (Table 19). Contact investigation was the major mode of detection for both Japan-born and foreign-born LTBI cases. However, aside from the contact investigation, the proportion of those detected in hospital settings was significantly higher among the Japan-born cases, whereas the proportion of those detected via routine health check was higher among the foreign-born cases.

Table 19. LTBI notification by modes of detection and country of birth, 2021

	Japan-born		Foreign-born		Country of birth unknown		Total	
	n	%	n	%	n	%	n	%
Contact investigation	1852	41.8	377	70.1	65	38.7	2,294	44.6
Hospital, with other disease(s)	1540	34.7	59	11.0	73	43.5	1,672	32.5
Hospital, with symptoms	532	12.0	30	5.6	16	9.5	578	11.2
Routine health check	249	5.6	47	8.7	6	3.6	302	5.9
Others	143	3.2	5	0.9	2	1.2	150	2.9
Individual health check	68	1.5	13	2.4	2	1.2	83	1.6
Mass screening	25	0.6	6	1.1	3	1.8	34	0.7
Unknown	25	0.6	1	0.2	1	0.6	27	0.5
Total	4,434	100.0	538	100.0	168	100.0	5,140	100.0

Treatment outcome:

Of the 5,575 LTBI cases that were notified in 2020, treatment outcome was available for 5,524 cohort at the end of one year. Table 20 summarize the treatment outcome of the 5,524 LTBI cases, by country of birth. The proportion of treatment success (cured and completed) was higher among the Japan-born than foreign-born patients (84.2% vs 81.5%), largely due to the higher proportion of transferred out among the latter (0.7% vs 5.5%).

Table 20. Treatment outcome LTBI cases notified in 2020

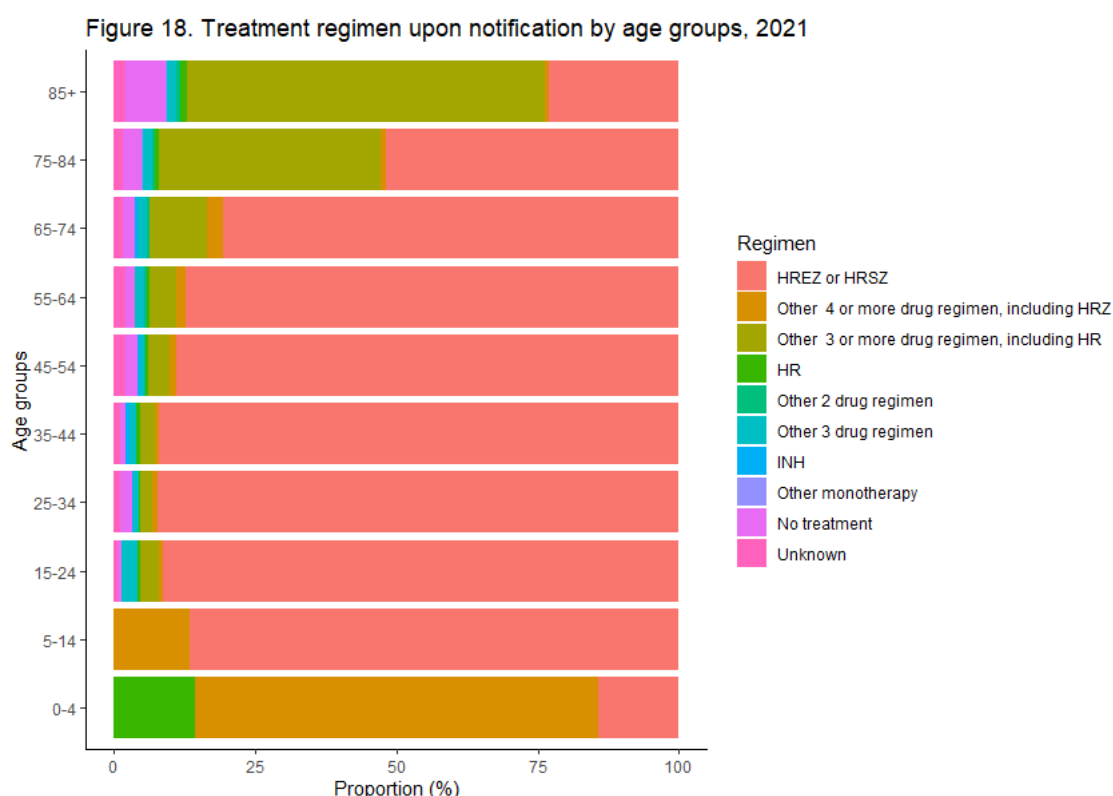
	Japan-born		Foreign-born		Country of birth unknown		Total	
	n	%	n	%	n	%	n	%
Treatment completed	4,056	84.2	489	81.5	88	82.2	4,633	83.9
Died	154	3.2	5	0.8	5	4.7	164	3.0
LTFU	367	7.6	30	0.6	5	0.1	402	8.3
Transferred out	34	0.7	33	5.5	1	0.9	68	1.2
Still on treatment	181	3.8	38	6.3	6	5.6	225	4.1
Unknown	25	0.5	5	0.8	2	1.9	32	0.6
Total	4,817	100.0	600	100.0	107	100.0	5,524	100.0

LTFU: lost to follow-up

Chapter 9: Treatment regimen and duration of hospitalization and treatment

TB regimen upon notification:

JTBS collects the regimen with which the treatment was started upon notification. In practice, the regimen could change at any time during the treatment period – however, such change is not reported to the JTBS. Figure 18 (see also Table s18) shows the regimen upon notification by age groups. Among all age groups, 59.0% of all notified TB cases (6,797 / 11,519) began treatment with INH, RFP, PZA and either EB or SM, 1.3% (153 / 11,519) with other 4 or more drug regimen including HRZ, and 31.2% (3,596 / 11,519) with other 3 or more drug regimen including HR.



The proportion of those receiving regimen with PZA tended to decrease with age, especially above those aged 75 years old.

Duration of hospitalization:

In Japan, sputum smear positive PTB cases must be hospitalized under the Infectious Diseases Control Law, until negative conversion. Among the 12,641 cases notified in 2020 and whose treatment outcome was known, data on duration of hospitalization in days was available for 5,644 cases. Table 21 summarizes the duration of hospitalization by patient category. Sputum smear PTB cases had the longest duration of hospitalization, followed by extrapulmonary TB cases. This is partially attributable to the fact that a larger proportion of EPTB is diagnosed among the elderly cases, who may require prolonged hospitalization.

Table 21. Duration of hospitalization by patient category, 2020 (n=5,644)

	Median (days)	Mean (SD) (days)
Sputum smear PTB, new	63	73.8 (± 52.8)
Sputum smear PTB, retreatment	64	74.1 (± 42.9)
Other bacteriologically confirmed PTB	44	61.2 (± 57.0)
Clinically confirmed PTB	30	48.0 (± 55.0)
EPTB	45	64.2 (± 64.7)

PTB: pulmonary tuberculosis, EPTB: extrapulmonary tuberculosis

Overall treatment duration:

Among the 12,641 cases notified in 2020 and whose treatment outcome was known, 2,564 and 5,676 cases had either “cured” or “completed treatment”, respectively. Among the 8,240 cases with treatment success, data on treatment duration was available for 8,051 cases. Table 23 summarizes the duration of hospitalization by patient category. Again, sputum smear PTB cases had the longest treatment duration, followed by EPTB cases.

Table 23. Treatment duration, by patient category (n=8,051)

	Median (days)	Mean (SD) (days)
Sputum smear PTB, new	274	270.8 (± 86.2)
Sputum smear PTB, retreatment	281	313.7 (± 108.1)
Other bacteriologically confirmed PTB	246	253.3 (± 83.0)
Clinically confirmed PTB	192	236.0 (± 80.8)
EPTB	272	268.8 (± 88.6)

PTB: pulmonary tuberculosis, EPTB: extrapulmonary tuberculosis

Chapter 10: Treatment outcome

Non-MDR cohort:

In 2020, a total of 12,693 non-MDR cases were reported. Treatment outcome at the end of 12 months was available for 99.2% (12,586 / 12,693) and is summarized in Table 24. The overall treatment success ("cured" and "completed") was 65.4% (8,225 / 12,586), with slightly higher success rate among females compared with males (66.6% vs 64.4%).

Table 24. Treatment outcomes at 12 months for drug sensitive cases notified in 2020, by sex

Tx outcome	Male		Female		Total	
	n	%	n	%	n	%
Cured	1,523	20.5	1,035	20.0	2,558	20.3
Completed	3,257	43.9	2,410	46.6	5,667	45.0
Died	1,864	25.1	1,149	22.2	3,013	23.9
Failed	6	0.1	8	0.2	14	0.1
LTFU	134	1.8	88	1.7	222	1.8
Transferred-out	155	2.1	121	2.3	276	2.2
Still on tx	453	6.1	356	6.9	809	6.4
Not evaluated	20	0.3	7	0.1	27	0.2
Total	7,412	100.0	5,174	100.0	12,586	100.0

Tx: treatment, LTFU: lost to follow-up

Treatment outcome by age groups is summarized in Table 25. While the treatment success rate among those aged 64 years old and younger has reached 82.6% (3,267 / 3,953), it declined sharply with age. The decline in the treatment success rate was largely attributable to the increase in the proportion of those who have died, which was as high as 53.9% (929 / 1,725) among those aged 90 years and above.

Table 25. Treatment outcomes at 12 months for drug sensitive cases notified in 2020, by age groups

	0-64		65-69		70-74		75-79		80-84		85-89		90+	
Tx outcome	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Cured	934	23.6	180	24.1	249	23.5	333	22.8	315	17.9	317	16.9	230	13.3
Completed	2,333	59.0	393	52.7	540	51.0	660	45.1	715	40.6	619	32.9	407	23.6
Died	107	2.7	106	14.2	178	16.8	331	22.6	566	32.2	796	42.3	929	53.9
Failed	4	0.1	0	0.0	2	0.2	0	0.0	1	0.1	3	0.2	4	0.2
LTFU	68	1.7	17	2.3	25	2.4	27	1.8	35	2.0	23	1.2	27	1.6
Transferred-out	188	4.8	10	1.3	11	1.0	9	0.6	17	1.0	20	1.1	21	1.2
Still on tx	306	7.7	38	5.1	51	4.8	100	6.8	108	6.1	101	5.4	105	6.1
Not evaluated	13	0.3	2	0.3	3	0.3	3	0.2	2	0.1	2	0.1	2	0.1
Total	3,953	100.0	746	100.0	1,059	100.0	1,463	100.0	1,759	100.0	1,881	100.0	1,725	100.0

Tx: treatment, LTFU: lost to follow-up

Treatment outcome by country of birth is summarized in Table 26. Since the majority of the foreign-born cases are in the younger age groups, the comparison was made among those aged 64 years and below.

Table 26. Treatment outcomes at 12 months for drug sensitive cases notified in 2020, by country of birth

	Japan-born		Foreign-born		Country of birth unknown		Total	
Tx outcome	n	%	n	%	n	%	n	%
Cured	673	26.2	249	18.6	12	26.7	934	23.6
Completed	1,519	59.2	794	59.3	20	44.4	2,333	59.0
Died	100	3.9	5	0.4	2	4.4	107	2.7
Failed	3	0.1	1	0.1	0	0.0	4	0.1
LTFU	47	1.8	20	1.5	1	2.2	68	1.7
Transferred-out	52	2.0	133	9.9	3	6.7	188	4.8
Still on tx	169	6.6	130	9.7	7	15.6	306	7.7
Not evaluated	5	0.2	8	0.6	0	0.0	13	0.3
Total	2,568	100.0	1,340	100.0	45	100.0	3,953	100.0

Tx: treatment, LTFU: lost to follow-up

MDR cohort:

Treatment outcome of MDR-TB cases notified in 2018 is summarized in Table 27 (n=49). The overall treatment success rate was 57.1% (28 / 49).

Table 27. Treatment outcomes for MDR-TB cases notified in 2018

Tx outcomes	n	%
Treatment success	28	57.1
Died	10	20.4
Failed	0	0.0
LTFU	2	4.1
Transferred-out	6	12.2
Still on tx	1	2.0
Not evaluated	2	4.1
Total	49	100.0

Tx: treatment, LTFU: lost to follow-up

HIV positive cohort:

Treatment outcome of HIV positive cases notified in 2020 is summarized in Table 28 (n=31). The overall treatment success rate was 51.6% (16 / 31).

Table 28. Treatment outcomes at 12 months for HIV positive drug sensitive cases notified in 2020

Tx outcomes	n	%
Cured	5	16.1
Completed	11	35.5
Died	1	3.2
Failed	0	0.0
LTFU	1	3.2
Transferred-out	6	19.4
Still on tx	7	22.6
Not evaluated	0	0.0
Total	31	100.0

Tx: treatment, LTFU: lost to follow-up

Appendix I: Notes on TB surveillance system in Japan

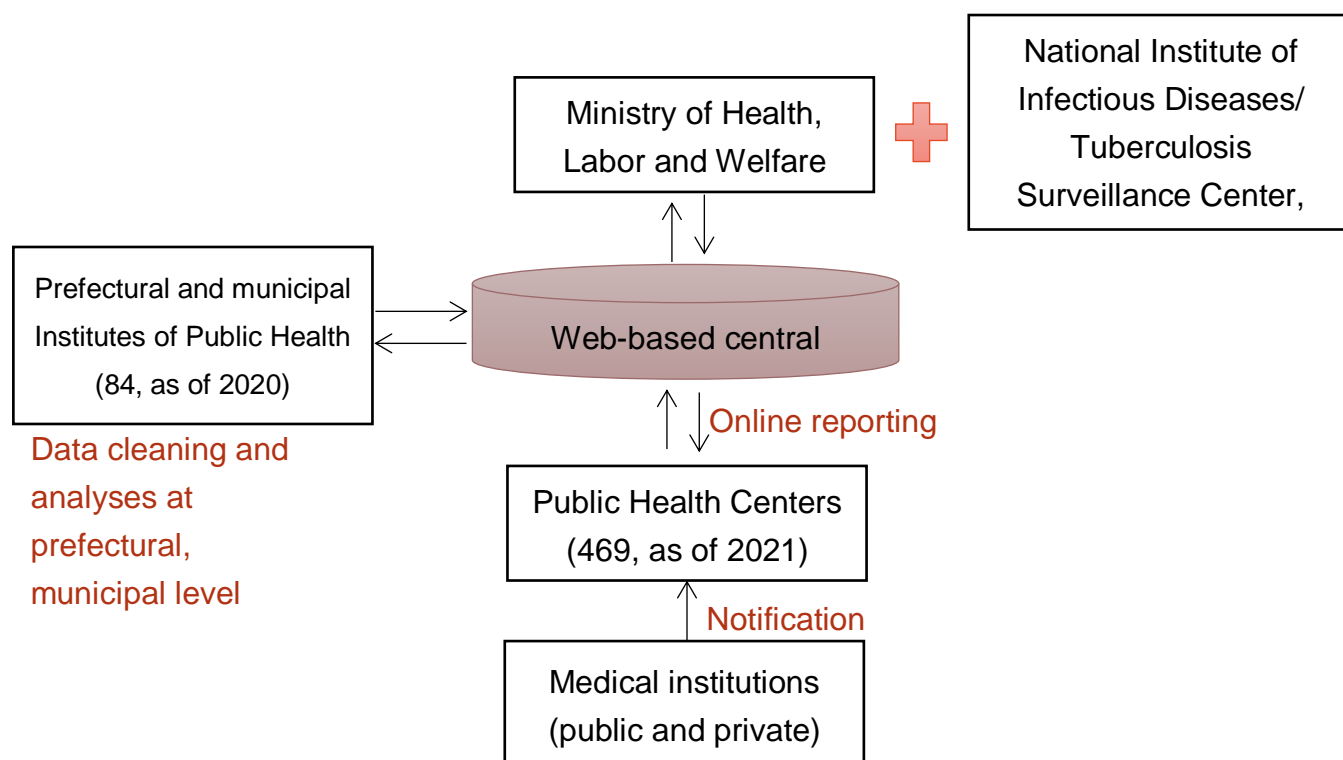
Both TB and LTBI (those diagnosed as being infected but not with active TB, and who were judged as requiring preventive therapy) are notifiable diseases under the Infectious Diseases Control Law. All physicians who diagnose TB or LTBI are requested to report to the local public health centers as soon as it is possible.

Local public health centers (PHCs), which are local government authorities responsible for public health in Japan, are responsible for compiling the reports and reporting to the Ministry of Health, Labour and Welfare of Japan.

Japan introduced the first nationwide computerized TB surveillance system, the Japan Tuberculosis Surveillance (JTBS) in 1987. The data, once entered into JTBS, is updated every month, and major findings are published annually, and also made available on-line, in Japanese. Treatment outcome is reported for the cohort notified in the previous year.

Simplified flowchart of TB

Data cleaning and analyses at national level,
Dissemination and publication of analysis
results



Appendix II: Definitions

Notification rates:

Notification rate per 100,000 is calculated using the population estimates from the annual “Current Population Estimates” as of October 1st each year (Statistics Bureau, Ministry of Internal Affairs and Communications, Japan), unless in the year of population census. The population census is conducted every five year, and in the year of census the notification rates are calculated using the data from the census.

Notification rate among the foreign-born was calculated using the population estimates of foreign residents from the “Foreign residents’ statistics” at the end of each year (Immigration Bureau, Ministry of Justice, Japan).

Terms of definitions and reporting years:

The overall trend is analyzed from 2010, unless otherwise noted as below:

Country of birth

Information regarding nationality (either “Japanese” or “non-Japanese”) was added to JTBS in 1998, and country name and the year of entry (either “within five years”, or “more than five years” or “unknown”) in 2007. In 2012, the category of nationality was changed to country of birth (either “Japan-born”, “foreign-born” or “unknown”), and the year of entry to the exact year of entry to Japan. In this report, the trend since 2007 is analyzed, however, the “foreign-born” includes those classified as “non-Japanese” prior to 2007. As for the time between entry to Japan and TB notification, trend since 2012 is analyzed.

Occupation

Service industry refers to those whose work involves face-to-face interactions with an unspecified large number of customers.

Other healthcare workers include co-medical workers, including care workers of elderly institutions.

Teachers include teachers of nursery and kindergarten school, primary, secondary, high-schools and universities, as well as of private classes and schools of non-compulsory education.

Full-and part-time employed refers to those with stable income other than service industry, healthcare workers, and teachers, and, and is differentiated from temporary employed (including day laborers) whose income is irregular.

Houseworkers refer to housewives and househusbands, and not paid workers e.g. maids.

Unemployed include all those without regular and/or irregular job, including the elderly who has retired.

HIV/DM

Information regarding HIV co-infection and DM was added to JTBS in 2007. HIV and DM data are self-reported, and are not matched with other database in any way. Information regarding HIV had been entered as “HIV positive”, “HIV negative” and “unknown” until 2011. Since 2012, a new category of “HIV test not done” was added. Information regarding DM is entered as “with DM”, “without DM” and “unknown”. Both for HIV and DM, the trend since 2012 is analyzed.

Mode of detection

Regular screening refers to mandatory screening conducted at schools, workplaces and other institutions including social welfare institutions and prison institutions.

Other mass investigation refers to mass screening programs organized by local authorities, targeting specific high-risk population groups such as homeless and foreign-born students.

At hospital setting refers to a case whereby he or she is diagnosed while seeking medical attention for TB symptoms, for diseases other than TB, or during medical examination while being hospitalized for diseases other than TB.

During follow-up for TB refers to a case whereby he or she is diagnosed during the two-year follow-up after completing treatment for TB/LTBI.

Treatment outcomes of drug susceptible TB

The definitions of the treatment outcomes for active TB are in line with latest definitions of the WHO. Due to the system restructuring of JTBS as mentioned earlier, the treatment outcomes for the 2019 cohort are evaluated differently from the cohort from the previous years. The outcomes are not directly comparable, and thus the trends are not analyzed.

LTBI

Information regarding LTBI was added to JTBS in 2006. However, due to questionable accuracy of the data reported in 2006, trend since 2007 is analyzed.

Treatment outcomes of LTBI

Completed treatment: An LTBI patient who has undergone treatment of sufficient duration as recommended by the Japanese guideline of LTBI treatment (i.e. 6 or 9 months of INH, or 4 or 6 months of RFP)

Died: An LTBI patient who has died from any cause during treatment.

Lost to follow-up: An LTBI patient whose treatment was interrupted and not restarted.

Transferred out: An LTBI patient who has moved out of the catchment area of a public health center during treatment, and whose final treatment outcome could not be identified by the public health center.

Still on treatment: An LTBI patient who is still on treatment at month 12.

Not evaluated: An LTBI patient whose treatment outcome could not be evaluated by the public health center.

Appendix III: Data quality

Data quality is ensured via the system's automatic verification program, as well as regular meetings at local levels attended by staffs from hospitals and PHCs. Periodic refresher trainings on data entry are also provided to PHC nurses as well as administrative staff across the nation.

Data capture rate for selected variables is summarized in Table iii.a. The capture rate was defined and calculated for each variable as follows:

$$\text{Country of birth: } \frac{\text{All active TB} - \text{country of birth unknown}}{\text{All active TB}} \times 100$$

$$\text{Occupation: } \frac{\text{All active TB} - \text{occupation unknown}}{\text{All active TB}} \times 100$$

$$\text{Homelessness: } \frac{\text{All active TB} - (\text{homeless unknown} + \text{no data entered})}{\text{All active TB}} \times 100$$

$$\text{Treatment history: } \frac{\text{All active TB} - \text{treatment history unknown}}{\text{All active TB}} \times 100$$

$$\text{Previous treatment regimen: } \frac{\text{All active retreatment TB} - \text{regimen unknown}}{\text{All active retreatment TB}} \times 100$$

$$\text{Total delay: } \frac{\text{All symptomatic PTB} - \text{delay unknown}}{\text{All symptomatic PTB}} \times 100$$

$$\text{DM: } \frac{\text{All active TB} - \text{DM unknown}}{\text{All active TB}} \times 100$$

$$\text{HIV status: } \frac{(\text{HIV positive} + \text{HIV negative})}{\text{All active TB}} \times 100$$

$$\text{HIV testing status: } \frac{(\text{HIV positive} + \text{HIV negative} + \text{test not done})}{\text{All active TB}} \times 100$$

$$\text{Culture known TB: } \frac{(\text{Culture positive} + \text{Culture negative})}{\text{All active TB}} \times 100$$

$$\text{Culture known PTB: } \frac{(\text{Culture positive} + \text{Culture negative})}{\text{All active PTB}} \times 100$$

$$\text{DST known TB } \frac{(\text{INH negative} + \text{positive}) + (\text{RFP negative} + \text{positive})}{\text{All culture positive TB}} \times 100$$

$$\text{DST known PTB: } \frac{(\text{INH negative} + \text{positive}) + (\text{RFP negative} + \text{positive})}{\text{All culture positive PTB}} \times 100$$

The denominators are summarized in Table iii.b.

Table iii.a
Data capture rate,
2021

Prefecture	Country of birth	Occupation	Homeless-ness	Treatment history	Previous treatment regimen	Total delay
1	97.6	98.8	21.5	99.4	62.5	70.2
2	99.0	96.2	19.0	97.1	83.3	58.2
3	100.0	98.4	60.7	96.7	75.0	60.0
4	99.3	97.4	46.1	100.0	40.0	43.9
5	100.0	100.0	50.0	100.0	100.0	48.7
6	100.0	96.7	50.0	95.0	66.7	38.0
7	100.0	99.0	58.4	98.0	83.3	63.6
8	97.3	98.6	38.5	97.3	75.0	34.1
9	100.0	97.4	27.8	99.3	42.9	79.1
10	99.2	99.2	52.8	100.0	100.0	93.4
11	87.7	89.4	50.0	96.9	60.0	34.4
12	99.1	95.5	66.4	99.5	66.7	63.3
13	98.5	96.5	63.0	99.2	79.3	70.5
14	90.6	96.0	23.1	99.2	70.4	40.6
15	89.6	99.3	52.8	100.0	40.0	79.2
16	100.0	97.6	50.0	100.0	100.0	45.8
17	99.0	100.0	37.1	96.9	33.3	80.5
18	96.1	100.0	62.7	100.0	25.0	88.2
19	100.0	94.3	71.4	97.1	100.0	7.1
20	100.0	98.1	26.9	99.0	66.7	37.0
21	100.0	99.1	41.1	98.6	75.0	60.0
22	99.0	96.9	33.3	99.3	83.3	46.3
23	99.8	98.5	81.5	99.8	88.9	74.7
24	97.3	95.9	35.1	98.6	50.0	43.8
25	98.3	98.3	24.8	100.0	87.5	25.0
26	89.7	98.9	80.1	98.9	100.0	80.4
27	99.1	96.5	39.1	98.6	80.6	90.8
28	98.6	98.8	61.1	99.0	66.7	77.4
29	99.2	95.9	67.8	99.2	57.1	65.7
30	100.0	100.0	69.7	100.0	100.0	97.1
31	97.4	97.4	18.4	100.0	NA	25.8
32	100.0	100.0	50.0	98.1	NA	55.8
33	100.0	97.3	12.0	100.0	33.3	69.3
34	84.1	95.0	29.7	98.7	72.7	40.3
35	99.2	99.2	39.5	98.3	100.0	62.8
36	97.8	96.7	19.6	100.0	33.3	32.4
37	97.6	98.8	55.4	98.8	NA	43.2
38	96.4	99.1	43.6	100.0	83.3	72.7
39	75.0	93.8	27.1	100.0	75.0	62.2
40	97.8	96.3	37.4	98.9	77.8	61.8
41	88.9	95.8	18.1	98.6	50.0	47.8
42	77.7	98.9	29.1	98.3	33.3	55.1
43	93.7	99.2	42.9	96.8	80.0	29.6
44	98.3	94.9	48.7	100.0	75.0	88.6
45	100.0	100.0	29.5	96.6	57.1	59.2
46	98.8	99.4	46.6	96.9	44.4	49.2
47	100.0	99.4	70.9	99.4	70.0	93.9
Total	96.6	97.0	48.2	98.9	72.4	63.8

Tuberculosis in Japan: Annual Report 2022

(cont.)

Prefecture	DM	HIV status	HIV testing status	Culture known TB	Culture known PTB	DST known TB	DST known PTB
1	77.0	7.8	60.9	69.0	73.3	42.5	41.9
2	58.1	2.9	47.6	65.7	72.7	54.3	54.5
3	85.2	3.3	44.3	59.0	64.0	39.3	38.5
4	91.4	0.0	32.2	91.4	92.3	81.2	82.0
5	91.3	0.0	23.9	82.6	85.7	32.4	37.0
6	75.0	0.0	13.3	65.0	71.1	13.3	15.4
7	75.2	0.0	65.3	78.2	81.1	54.4	57.1
8	83.3	2.3	59.3	78.7	84.8	41.9	43.6
9	92.1	17.2	47.0	93.4	99.1	96.6	100.0
10	86.2	3.3	53.7	97.6	98.9	94.8	96.2
11	79.5	3.2	23.5	72.6	75.7	60.4	61.1
12	90.8	2.4	42.3	88.8	90.8	85.0	85.0
13	92.2	43.2	63.1	93.1	96.9	94.8	96.3
14	76.5	2.4	22.6	69.7	70.4	66.3	68.7
15	77.8	3.5	65.3	70.8	77.9	37.8	40.8
16	84.5	0.0	35.7	77.4	75.0	60.0	62.1
17	85.6	2.1	34.0	94.8	94.5	89.3	91.9
18	98.0	3.9	13.7	80.4	78.9	90.0	91.3
19	91.4	0.0	94.3	68.6	66.7	40.0	41.7
20	66.3	1.9	28.8	64.4	67.1	42.9	46.2
21	85.0	1.4	28.0	70.6	78.6	58.3	58.7
22	75.9	0.3	26.5	74.9	78.2	66.7	67.7
23	93.3	2.8	35.7	95.9	97.9	90.3	92.9
24	75.7	6.1	35.1	76.4	79.8	44.2	42.3
25	93.2	1.7	41.0	75.2	81.2	43.6	47.6
26	86.7	0.4	18.5	89.3	92.6	82.2	82.8
27	92.5	2.2	50.0	91.5	93.2	93.1	94.0
28	87.2	3.2	40.3	93.5	96.6	90.0	89.7
29	90.1	3.3	29.8	96.7	98.9	89.3	88.2
30	89.9	0.0	68.5	97.8	100.0	97.3	98.5
31	71.1	0.0	26.3	34.2	33.3	33.3	42.9
32	87.0	0.0	5.6	64.8	58.3	65.5	65.0
33	92.9	0.0	41.5	83.1	84.0	36.2	35.3
34	77.0	0.4	23.4	70.3	77.9	58.3	57.6
35	97.5	0.8	31.9	70.6	77.4	52.2	56.5
36	85.9	1.1	18.5	65.2	64.2	32.6	36.1
37	75.9	0.0	9.6	81.9	81.0	61.7	63.2
38	96.4	0.0	60.9	79.1	90.1	52.9	56.9
39	91.7	2.1	29.2	66.7	67.6	29.6	31.8
40	90.8	1.3	15.0	81.3	88.4	68.3	69.7
41	77.8	0.0	9.7	65.3	66.7	44.4	39.3
42	94.3	0.0	34.9	47.4	48.3	46.8	47.8
43	92.9	0.0	78.6	61.1	69.9	63.6	67.3
44	96.6	0.0	98.3	96.6	98.8	87.2	89.2
45	90.9	0.0	30.7	83.0	89.3	74.5	80.6
46	91.9	0.0	37.3	77.0	80.3	67.3	67.4
47	95.4	0.6	39.4	59.4	63.6	30.7	30.8
Total	87.1	7.4	40.7	82.3	85.8	75.6	77.1

Table iii.b
Denominators used
to calculate the
capture rate, 2021

Prefecture	Active TB	Total PTB	Active TB, retreatment cases	Symptomatic PTB	Culture positive PTB	Culture positive TB
1	335	243	8	275	136	160
2	105	77	6	79	44	46
3	61	50	4	45	26	28
4	152	117	5	114	89	101
5	46	35	2	39	27	34
6	60	45	3	50	26	30
7	101	74	6	77	49	57
8	221	151	8	173	101	129
9	151	117	7	129	101	119
10	123	93	2	106	78	96
11	616	440	20	465	265	323
12	553	411	21	403	286	341
13	1,429	1,094	58	949	839	965
14	748	544	27	532	316	386
15	144	104	10	125	71	82
16	84	52	4	72	29	40
17	97	73	6	82	62	75
18	51	38	4	34	23	30
19	35	21	1	28	12	15
20	104	76	3	73	39	49
21	214	154	4	145	104	115
22	291	216	18	214	133	156
23	880	628	45	672	507	616
24	148	109	6	112	71	86
25	117	69	8	68	42	55
26	271	176	5	224	145	174
27	1,171	908	36	865	703	795
28	586	437	21	483	369	428
29	121	91	7	99	76	84
30	89	71	2	70	65	73
31	38	30	1	31	7	9
32	54	36	1	43	20	29
33	183	125	3	140	85	105
34	239	163	11	181	92	108
35	119	93	5	78	62	69
36	92	67	3	71	36	43
37	83	58	0	74	38	47
38	110	81	6	88	58	70
39	48	34	4	45	22	27
40	535	388	27	380	267	303
41	72	51	4	46	28	36
42	175	116	3	147	46	62
43	126	73	5	108	49	66
44	117	83	4	88	65	78
45	88	56	7	71	36	47
46	161	127	9	132	92	98
47	175	118	10	132	65	75
Total	11,519	8,413	460	8,657	5,902	6,960

Appendix IV: Supplementary tables

Table s1. Number and rate of all active TB notifications, 2010-2021

	No.cases	Percentage change in cases	Notification rate per 100,000	Percentage change in rate
2010	23,261	NA	18.2	NA
2011	22,681	2.5	17.7	2.8
2012	21,283	6.2	16.7	5.7
2013	20,495	3.7	16.1	3.6
2014	19,615	4.3	15.4	4.4
2015	18,280	6.8	14.4	6.5
2016	17,625	3.6	13.9	3.5
2017	16,789	4.7	13.3	4.3
2018	15,590	7.1	12.3	7.5
2019	14,460	7.2	11.5	6.5
2020	12,739	11.9	10.1	12.2
2021	11,519	9.6	9.2	8.9

Table s2. Number of TB notifications by age group and sex, 2021

Age groups (years)	Total	Male	Female
	n	n	n
0-4	14	5	9
5-9	5	4	1
10-14	10	3	7
15-19	98	48	50
20-24	447	235	212
25-29	483	260	223
30-34	315	154	161
35-39	282	137	145
40-44	274	137	137
45-49	366	217	149
50-54	447	271	176
55-59	394	274	120
60-64	452	329	123
65-69	618	431	187
70-74	1,011	707	304
75-79	1,230	806	424
80-84	1,591	952	639
85-89	1,849	983	866
90+	1,633	773	860
Total	11,519	6,726	4,793

Table s3. Newly notified cases by age groups, 1987-2021

	0-64	65-69	70-74	75-79	80-84	85-89	90+
1987	35,690	5,549	5,831	4,954	2,979	1,202	291
1988	33,783	5,497	5,445	4,937	2,984	1,351	360
1989	32,694	5,548	5,241	4,934	3,037	1,303	355
1990	31,108	5,585	5,227	4,945	3,265	1,298	393
1991	30,018	5,655	5,053	4,895	3,231	1,364	396
1992	28,740	5,545	4,868	4,577	3,412	1,397	417
1993	27,362	5,589	4,828	4,480	3,237	1,518	423
1994	25,307	5,390	4,785	4,030	3,190	1,448	440
1995	24,441	4,963	4,667	3,984	3,148	1,433	442
1996	24,220	4,769	4,614	3,858	3,093	1,474	444
1997	23,293	4,718	4,845	4,195	3,280	1,817	567
1998	22,217	4,450	4,696	3,945	3,197	1,834	694
1999	22,838	3,707	4,409	5,178	4,699	3,548	2,271
2000	20,349	3,780	4,613	4,232	3,262	2,200	948
2001	18,020	3,407	3,916	3,985	3,083	2,127	951
2002	16,300	2,906	3,692	3,938	3,057	2,049	886
2003	15,243	2,809	3,365	3,928	3,136	2,088	1,069
2004	14,256	2,422	3,060	3,773	3,074	2,035	1,116
2005	13,361	2,244	2,823	3,509	3,206	2,051	1,125
2006	12,004	1,991	2,724	3,385	3,090	2,060	1,130
2007	11,222	1,967	2,523	3,136	3,282	2,060	1,121
2008	10,716	1,935	2,485	3,039	3,226	2,209	1,150
2009	10,159	1,890	2,160	2,988	3,380	2,320	1,273
2010	9,516	1,826	2,092	2,908	3,194	2,429	1,296
2011	8,925	1,552	2,014	2,861	3,305	2,592	1,432
2012	7,976	1,475	1,984	2,611	3,100	2,653	1,484
2013	7,268	1,470	1,852	2,507	3,082	2,774	1,542
2014	6,792	1,399	1,806	2,222	2,949	2,804	1,643
2015	6,114	1,401	1,636	2,121	2,756	2,561	1,691
2016	5,883	1,341	1,406	2,001	2,579	2,559	1,856
2017	5,593	1,283	1,353	1,834	2,408	2,414	1,904
2018	5,193	1,062	1,253	1,742	2,170	2,364	1,806
2019	4,758	864	1,172	1,638	1,951	2,110	1,967
2020	4,016	751	1,074	1,473	1,781	1,905	1,739
2021	3,587	618	1,011	1,230	1,591	1,849	1,633

Table s4. Pulmonary TB cases by culture test results, 2012-2021

	Positive	Negative	Pending	Aborted	Not done	Unknown
2012	11,261	2,797	1,503	22	537	312
2013	10,523	2,788	1,850	25	503	283
2014	10,259	2,650	1,554	23	418	245
2015	10,035	2,225	1,318	14	385	146
2016	9,878	2,377	938	14	260	141
2017	9,580	2,184	906	18	218	105
2018	9,016	2,054	653	21	208	81
2019	8,110	1,858	846	24	177	79
2020	6,645	1,525	949	24	174	129
2021	5,902	1,317	863	11	193	127

Table s5. Proportion of those with cavity among pulmonary TB cases by age groups and sex, 2021

Age groups (years)	Male		Female		Total	
	No. with cavity	% with cavity	No. with cavity	% with cavity	No. with cavity	% with cavity
0-4	0	0.0	0	0.0	0	0.0
5-9	0	0.0	1	0.0	1	0.0
10-14	0	0.0	5	0.0	5	0.0
15-19	12	31.7	7	17.8	19	24.4
20-24	59	23.5	38	20.7	97	22.2
25-29	61	27.2	44	19.0	105	23.4
30-34	49	29.8	27	26.3	76	28.1
35-39	36	25.5	28	24.3	64	24.9
40-44	44	30.3	23	17.0	67	24.4
45-49	70	36.9	27	19.6	97	30.4
50-54	95	42.0	32	28.4	127	37.6
55-59	86	41.9	23	22.4	109	37.0
60-64	121	39.6	24	22.1	145	35.5
65-69	165	41.8	42	25.0	207	37.3
70-74	210	34.2	54	25.6	264	31.8
75-79	204	30.2	90	26.9	294	29.2
80-84	221	28.2	92	24.8	313	26.9
85-89	200	30.3	136	26.4	336	28.5
90+	134	25.9	159	19.7	293	22.7
Total	1767	31.9	852	23.4	2619	28.6

Table s6. Proportion of those with smear positive among pulmonary TB cases by age groups and sex, 2021

Age groups (years)	Male		Female		Total	
	No. sputum smear positive	% sputum smear positive	No. sputum smear positive	% sputum smear positive	No. sputum smear positive	% sputum smear positive
0-4	0	0	0	0	0	0.0
5-9	0	0	0	0.0	0	0.0
10-14	0	0	2	40.0	2	28.6
15-19	17	41.5	18	40.0	35	40.7
20-24	54	28.9	54	31.0	108	29.9
25-29	51	26.2	43	25.6	94	25.9
30-34	41	33.1	42	35.6	83	34.3
35-39	41	40.2	45	40.5	86	40.4
40-44	38	34.9	34	38.6	72	36.5
45-49	72	40.9	38	35.5	110	38.9
50-54	111	48.1	48	44.0	159	46.8
55-59	105	45.9	27	35.5	132	43.3
60-64	142	51.6	27	31.4	169	46.8
65-69	161	48.8	49	40.8	210	46.7
70-74	255	48.9	99	50.8	354	49.4
75-79	305	50.0	135	49.8	440	49.9
80-84	372	56.2	231	55.0	603	55.7
85-89	411	57.6	360	59.4	771	58.5
90+	356	60.6	343	56.3	699	58.4
Total	2,532	49.6	1,595	48.1	4,127	49.1

Table s7. Number of new, retreatment and history of treatment unknown cases, 2010-2021

	New	Retreatment	Unknown	Total
2010	21,029	1,762	470	23,261
2011	20,479	1,687	515	22,681
2012	19,577	1,335	371	21,283
2013	18,944	1,262	289	20,495
2014	18,157	1,179	279	19,615
2015	17,037	1,032	211	18,280
2016	16,481	908	236	17,625
2017	15,734	839	216	16,789
2018	14,661	732	197	15,590
2019	13,606	667	187	14,460
2020	12,024	546	169	12,739
2021	10,930	460	129	11,519

Table s8. Proportion of drug susceptibility test results known of culture confirmed pulmonary TB, 2012- 2021

	Culture confirmed PTB	Of which, DST results known	Proportion (%)
2012	11,261	8,347	74.1
2013	10,523	7,701	73.2
2014	10,259	7,645	74.5
2015	10,035	7,630	76.0
2016	9,878	7,732	78.3
2017	9,580	7,891	82.4
2018	9,016	7,570	84.0
2019	8,110	6,658	82.1
2020	6,645	5,209	78.4
2021	5,902	4,551	77.1

PTB: pulmonary tuberculosis, DST: drug susceptibility test

Table s9a. Drug resistance among pulmonary TB, new cases, 2012-2021

INH resistance				
	Resistant	Not resistant	Total	% resistant
2012	310	7,367	7,677	4.0
2013	326	6,840	7,166	4.5
2014	288	6,816	7,104	4.1
2015	317	6,818	7,135	4.4
2016	316	6,962	7,278	4.3
2017	338	7,096	7,434	4.5
2018	331	6,840	7,171	4.6
2019	319	5,969	6,288	5.1
2020	260	4,678	4,938	5.3
2021	205	4,130	4,335	4.7

RFP resistance				
	Resistant	Not resistant	Total	% resistant
2012	46	7,631	7,677	0.6
2013	42	7,124	7,166	0.6
2014	58	7,046	7,104	0.8
2015	58	7,077	7,135	0.8
2016	56	7,222	7,278	0.8
2017	62	7,372	7,434	0.8
2018	68	7,103	7,171	0.9
2019	52	6,236	6,288	0.8
2020	44	4,894	4,938	0.9
2021	48	4,287	4,335	1.1

MDR				
	Resistant	Not resistant	Total	% resistant
2012	38	7,639	7,639	0.5
2013	31	7,135	7,135	0.4
2014	40	7,064	7,064	0.6
2015	33	7,102	7,102	0.5
2016	37	7,241	7,241	0.5
2017	41	7,393	7,393	0.6
2018	41	7,130	7,130	0.6
2019	35	6,253	6,253	0.6
2020	31	4,907	4,907	0.6
2021	36	4,299	4,335	0.8

INH: isoniazid, RFP: rifampicin, MDR: multidrug resistance

Table s9b. Drug resistance among pulmonary TB, retreatment cases, 2012-2021

INH resistance				
	Resistant	Not resistant	Total	% resistant
2012	67	487	554	12.1
2013	35	400	435	8.0
2014	57	392	449	12.7
2015	49	363	412	11.9
2016	51	307	358	14.2
2017	36	326	362	9.9
2018	41	282	323	12.7
2019	36	250	286	12.6
2020	31	170	201	15.4
2021	11	155	166	6.6

RFP resistance				
	resistant	not resistant	total	% resistant
2012	26	528	554	4.7
2013	22	413	435	5.1
2014	17	432	449	3.8
2015	18	394	412	4.4
2016	16	342	358	4.5
2017	15	347	362	4.1
2018	16	307	323	5.0
2019	13	273	286	4.5
2020	14	187	201	7.0
2021	7	159	166	4.2

MDR				
	resistant	not resistant	total	% resistant
2012	22	532	554	4.0
2013	16	419	435	3.7
2014	15	434	449	3.3
2015	14	398	412	3.4
2016	12	346	358	3.4
2017	9	353	362	2.5
2018	11	312	323	3.4
2019	9	277	286	3.1
2020	13	188	201	6.5
2021	4	162	166	2.4

INH: isoniazid, RFP: rifampicin, MDR: multidrug resistance

Table s10. Proportions of those with drug resistance, by country of birth and age groups, 2021

Age groups (years)	Japan-born					Foreign-born				
	DST confirmed PTB	INH resistant	% INH resistant	MDR	% MDR	DST confirmed PTB	INH resistant	% INH resistant	MDR	% MDR
15-39	265	13	4.9	2	0.8	361	37	10.2	15	4.2
40-59	526	23	4.4	8	1.5	61	9	14.8	3	4.9
60-79	1278	59	4.6	9	0.7	26	5	19.2	1	3.8
80+	1928	72	3.7	3	0.2	11	0	0.0	0	0.0

DST: drug susceptibility test, PTB: pulmonary tuberculosis, INH: isoniazid, MDR: multidrug resistance

Table s11. Foreign-born TB notifications and rates, 2010-2021

	No. of cases	No. of foreign-born population	Rate per 100,000
2010	952	2,087,261	45.6
2011	921	2,047,349	45.0
2012	1,069	2,033,656	52.6
2013	1,064	2,066,445	51.5
2014	1,101	2,121,831	51.9
2015	1,164	2,323,189	50.1
2016	1,338	2,382,822	56.2
2017	1,530	2,561,848	59.7
2018	1,667	2,731,093	61.0
2019	1,541	2,933,137	52.5
2020	1,411	2,887,116	48.9
2021	1,313	2,760,635	47.6

Source: Population of foreign-born residents. Foreign residents' statistics, Ministry of Justice
http://www.moj.go.jp/housei/toukei/toukei_ichiran_touroku.html

Table s12. Proportions of foreign-born TB notification by age groups, 2010-2021

	Total		0-14		15-24		25-34		35-44		45-54		55+	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
2010	952	4.2	9	10.5	274	30.1	341	19.4	165	8.8	82	4.7	81	0.5
2011	921	4.1	8	9.6	245	31.5	343	21.7	161	8.9	85	4.9	79	0.5
2012	1,069	5.2	7	11.1	304	42.2	357	25.4	196	12.1	106	7.1	99	0.6
2013	1,064	5.4	7	10.8	319	46.8	361	28.7	177	12.6	97	6.8	103	0.7
2014	1,101	5.8	8	17.0	339	47.9	376	31.0	180	13.9	115	8.4	83	0.6
2015	1,164	6.6	9	18.4	353	52.6	423	38.5	174	14.1	101	8.0	104	0.8
2016	1,338	7.9	12	20.3	471	58.6	478	43.6	175	17.1	107	8.9	95	0.8
2017	1,530	9.5	11	19.6	503	67.3	565	51.6	219	22.7	114	9.5	118	1.0
2018	1,667	10.9	12	23.5	571	70.8	625	58.4	200	23.9	139	12.2	120	1.1
2019	1,541	10.9	10	26.3	554	73.5	549	60.4	186	22.5	117	10.9	125	1.2
2020	1,411	11.3	9	17.3	428	74.6	546	62.3	214	33.0	110	12.8	104	1.1
2021	1,313	11.8	6	20.7	368	68.4	526	67.1	167	30.8	127	16.1	119	1.4

Table s13. Foreign-born TB notifications in selected country of birth, 2010-2021

	China	the Philippines	Nepal	Vietnam	Indonesia
2010	273	216	39	24	64
2011	273	218	38	52	49
2012	294	290	42	63	57
2013	292	256	65	68	57
2014	259	292	88	109	53
2015	249	284	108	135	78
2016	272	318	135	212	90
2017	258	321	164	257	121
2018	274	340	170	289	171
2019	253	308	146	331	160
2020	152	315	143	287	147
2021	152	284	113	264	134

Table s14. Foreign-born TB notifications by year of entry to Japan, 2012-2021

	Same year	Previous year	3-5 years	6-10 years	More than 10 years	Year of entry unknown	Total
2012	135	115	150	105	140	424	1,069
2013	147	133	152	104	141	387	1,064
2014	143	156	138	86	151	427	1,101
2015	168	165	172	76	137	446	1,164
2016	201	228	179	76	152	502	1,338
2017	230	261	247	93	140	559	1,530
2018	291	310	281	99	193	493	1,667
2019	244	288	304	80	188	437	1,541
2020	88	274	307	87	159	496	1,411
2021	40	154	374	100	172	473	1,313

Table s15. Proportions of those with delay, 2010-2021

	Patient delay			Doctor delay			Total delay		
	Total	n	%	Total	n	%	Total	n	%
2010	8,940	1,637	18.3	13,094	2,958	22.6	9,022	1,770	19.6
2011	8,763	1,629	18.6	12,540	2,843	22.7	8,837	1,717	19.4
2012	8,177	1,532	18.7	11,302	2,481	22.0	8,226	1,613	19.6
2013	7,854	1,419	18.1	10,889	2,403	22.1	7,906	1,482	18.7
2014	6,901	1,297	18.8	10,156	2,198	21.6	6,967	1,325	19.0
2015	6,678	1,335	20.0	9,688	2,087	21.5	6,721	1,373	20.4
2016	6,703	1,323	19.7	9,213	2,024	22.0	6,754	1,322	19.6
2017	6,295	1,312	20.8	8,602	1,870	21.7	6,328	1,342	21.2
2018	6,253	1,289	20.6	7,979	1,752	22.0	6,293	1,301	20.7
2019	5,458	1,112	20.4	7,273	1,585	21.9	5,491	1,191	21.7
2020	4,449	848	19.1	6,111	1,278	20.9	4,489	883	19.7
2021	3,847	799	20.8	5,261	1,216	23.1	3,912	861	22.0

*Note: total excluding those cases without data on delay

Table s16. LTBI notifications by country of birth, 2010-2021

	Total no. cases	Of which Japan-born	Of which foreign-born	Of which COB unknown
2010	4,930	4,587	293	50
2011	10,046	9,464	493	89
2012	8,771	8,037	487	247
2013	7,147	6,474	425	248
2014	7,562	6,823	523	216
2015	6,675	5,940	540	195
2016	7,477	6,499	650	328
2017	7,255	6,244	757	254
2018	7,414	6,293	963	158
2019	7,684	6,610	905	169
2020	5,575	4,862	599	114
2021	5,140	4,434	538	168

COB: country of birth

Table s17. LTBI notification by age groups, 2010-2021

	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
2010	692	641	981	1,053	828	484	251	4,930
2011	957	1,191	2,164	2,141	1,696	1,260	637	10,046
2012	895	1,029	1,755	1,806	1,469	1,170	647	8,771
2013	858	614	1,185	1,287	1,237	1,071	895	7,147
2014	740	652	1,093	1,288	1,268	1,228	1,293	7,562
2015	661	466	848	988	1,086	1,017	1,609	6,675
2016	598	565	938	984	1,191	1,194	2,007	7,477
2017	631	480	829	906	1,111	1,018	2,280	7,255
2018	597	633	939	821	1,019	1,001	2,404	7,414
2019	526	573	760	897	1,151	1,034	2,743	7,684
2020	459	338	474	492	775	757	2,280	5,575
2021	344	248	445	441	681	661	2,320	5,140

Table s18. Treatment regimen upon notification by age groups, 2021

	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Total
HREZ or HRSZ	2	13	497	737	512	723	738	1,313	1,460	802	6,797
Other 4 or more drug regimen, including HRZ	10	2	5	7	3	9	14	46	31	26	153
Other 3 or more drug regimen, including HR	0	0	17	16	15	32	40	165	1,106	2,205	3,596
HR	2	0	3	2	4	3	5	2	18	40	79
Other 2 drug regimen	0	0	0	0	0	2	3	8	14	22	49
Other 3 drug regimen	0	0	15	9	7	6	15	26	45	56	179
INH	0	0	0	1	3	3	0	7	3	6	23
Other monotherapy	0	0	0	0	0	0	0	0	3	5	8
No treatment	0	0	4	17	6	18	13	35	98	250	441
Unknown	0	0	4	9	6	17	18	27	43	70	194
Total	14	15	545	798	556	813	846	1,629	2,821	3,482	11,519

H: isoniazid, R: rifampicin, E: ethambutol, Z: pyrazinamide, S: streptomycin