

Tuberculosis in Japan: Annual Report 2021

TUBERCULOSIS IN JAPAN

ANNUAL REPORT - 2021

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.

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Suggested citation: Tuberculosis Surveillance Center (2021). Tuberculosis in Japan – annual report 2021. Department of Epidemiology and Clinical Research, the Research Institute of Tuberculosis: Tokyo, Japan.

Published November 2021

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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.

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Notes on the report

This report presents detailed data on TB case notifications made to the Japan TB Surveillance System to the end of 2020. 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>.

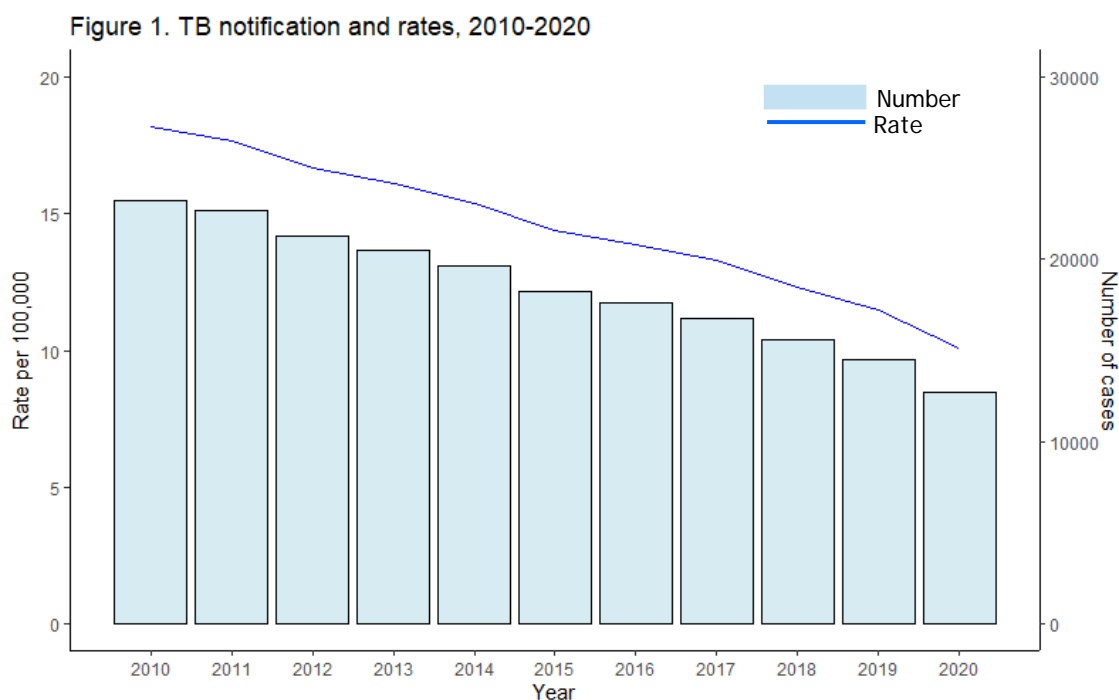
Chapter 1: Tuberculosis case report, 2010-2020

Overall numbers and rates:

In 2020, 12,739 cases of tuberculosis (TB) were newly notified, and the notification rate per 100,000 population was 10.1 for all TB. Of the 12,739 cases, pulmonary TB (PTB) accounted for 74.2% (n=9,446) and extrapulmonary TB (EPTB) cases, for 25.8% (n=3,293). Among the PTB patients, 48.9% (4,615 / 9,446) were sputum smear positive, 86.8% (8,196 / 9,446) were bacteriologically confirmed, and 13.2% (1,250 / 9,446) were clinically confirmed.

In addition, 5,575 latent tuberculosis infections (LTBI) requiring treatment were reported.

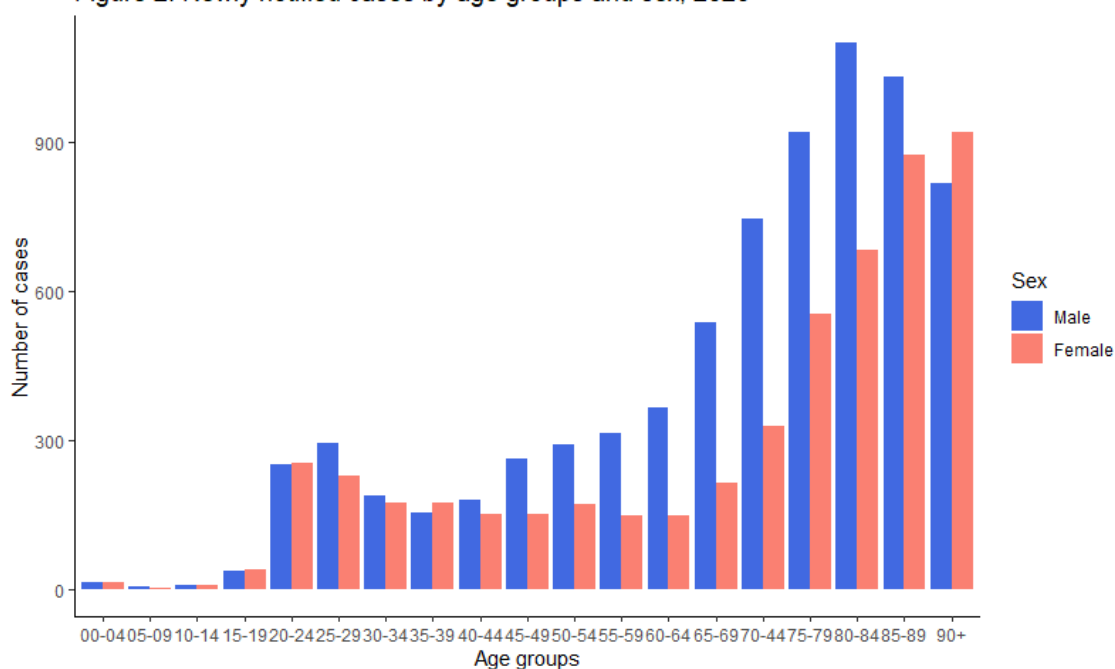
As shown in Figure 1, both the number of new cases and notification rates per 100,000 have continued to decline steadily towards the national target of below 10 per 100,000 by year 2020 (see also Table s1). The number of notifications for active TB decreased by 11.9%, or by 1,721 cases, from the previous year. The notification rate decreased by 12.2%. For both the number of notified cases and rate, it was the largest annual decrease since 2010.



Age and sex:

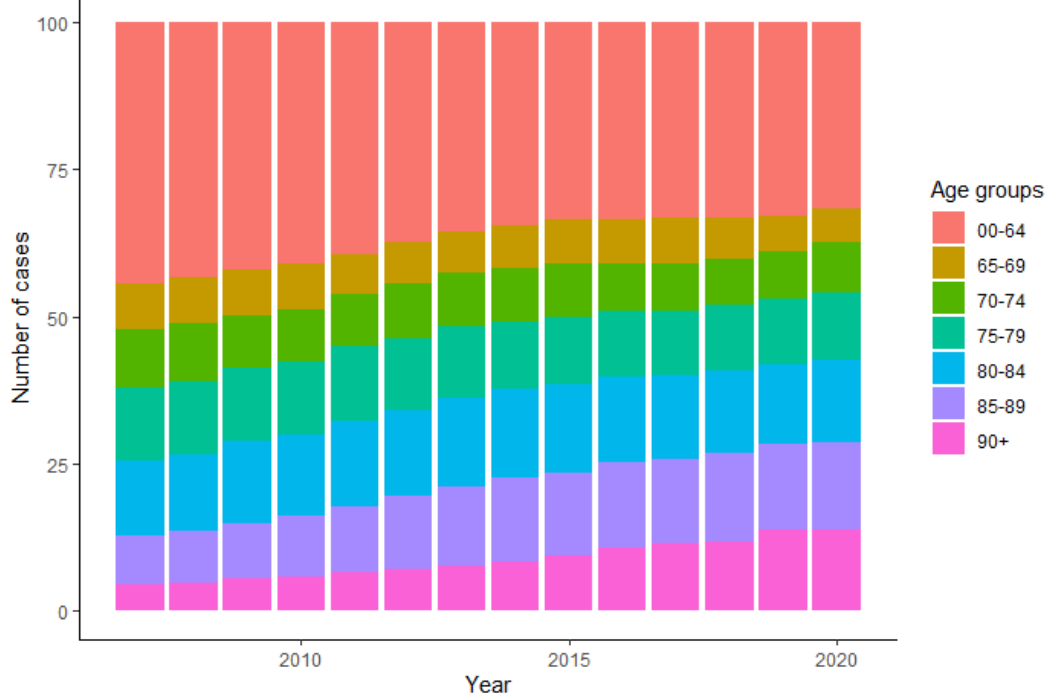
In 2020, 58.9% of the notified cases were males (7,507 / 12,739) and 41.1% were females (5,232 / 12,739), with the number of males being 1.4 times higher than of females. The sex ratio increased after 45 years of age, and the number of males was 2 times greater or more, than of females in the age group 5 to 9, and 55 to 74 years. (Figure 2, see also Table s2). The average age of the notified cases was 69 years old (male; 69 years old, female; 69 years old), and the median was 77 years old (male; 75 years old, female; 79 years old).

Figure 2. Newly notified cases by age groups and sex, 2020



The proportion of those aged 65 years and above among the total notified TB cases was 68.5% (n=8,723), and of those aged 80 years old and above was 42.6% (n=5,425). The proportion of those aged 65 years old had rapidly increased, from 48.3 in 2000 to 59.1% in 2010, and to 68.5% in 2020, 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 2007 to 13.7% in 2020 (Figure 3, see also Table s3).

Figure 3. Newly notified cases by age groups, 2007-2020



TB among children:

In 2020, 52 cases of TB were newly notified among children aged 14 years old and below. Of these, 43 were Japan-born and 9 were foreign-born. By age-group, 27 were aged 0 to 4 years old, 9 were aged 5 to 9 years old, and 16 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 52 in 2020.

73.1% (38 / 52) had pulmonary diseases, and 26.9% (14 / 52) had extra-pulmonary disease only. One case of miliary and one case of meningeal TB were reported.

35 had history of BCG vaccination (30 Japan-born, 5 foreign-born), 2 did not (2 Japan-born), and 15 with unknown history (11 Japan-born, 4 foreign-born).

Regarding the source of infection, information was available for 25 of 52 childhood cases. 14 were infected by their parents and 8 by their grandparents, and 3 by “others”.

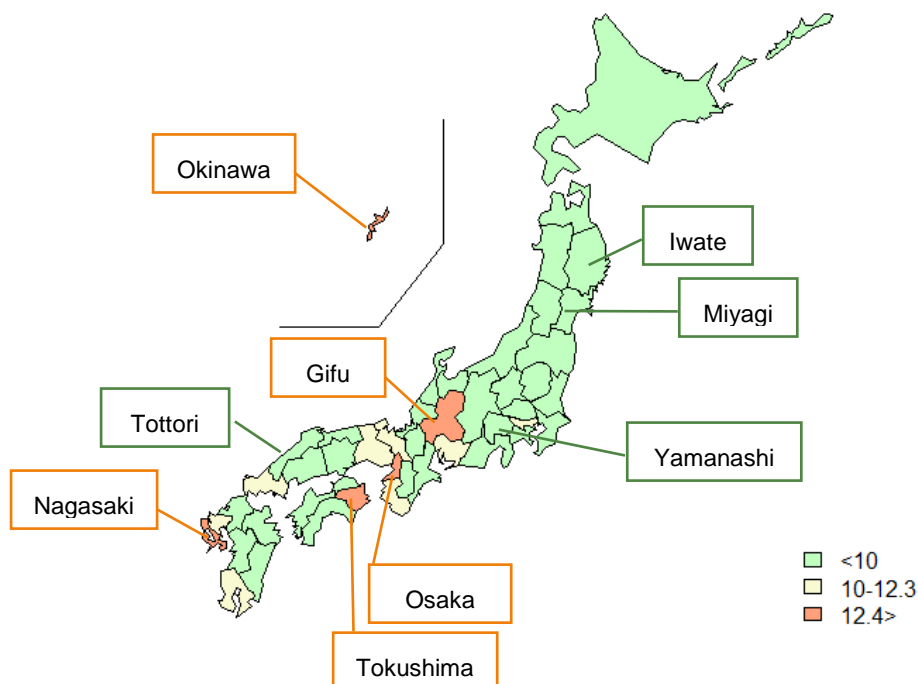
Chapter 2 : Geographical distribution

Among the 47 prefectures and the 20 designated cities, the highest number of TB cases was notified from Tokyo (n=1,589), and the lowest from Tottori (n=34). The notification rate was the highest in Osaka, at 15.8 per 100,000, followed by Tokushima (13.5), Gifu (13.4), Okinawa (12.7) and Nagasaki (12.4). The notification rate was the lowest in Miyagi and Yamanashi, at 5.9 per 100,000, followed by Iwate and Tottori (6.1), and Yamagata and Akita (6.6).

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

Map. Notification rate per 100,000, 2020



Urban-rural disparity:

Newly notified TB cases tended to be concentrated in large urban cities¹, especially those among the younger age groups.

Among all age groups, the proportion of those living in large urban cities out of total Japan-born population was 29.8%, while the proportion of TB patients notified from large urban cities out of total Japan-born TB patients was 34.6% (4,409 / 12,739). Among those aged under 39 years old, the proportion of TB patients notified from large urban cities out of total Japan-born TB patients was 39.2% (721 / 1,840).

TB notification rate per 100,000 in those areas excluding the large urban cities was 9.4, and in the large urban cities, 11.7.

¹ "Large urban cities" are defined as cities with a population of 500,000 or more, and the 23 special districts of Tokyo.

Chapter 3: Clinical background

Extrapulmonary disease by site:

In 2020, of the 12,739 cases, 9,446 were diagnosed with PTB, either with or without concomitant extrapulmonary disease, and 3,293 were diagnosed exclusively as EPTB. A total of 5,039 cases of EPTB, including both those exclusively EPTB and concomitant with PTB, were reported. The 5,039 cases of EPTB by affected organ is shown in Table 1.

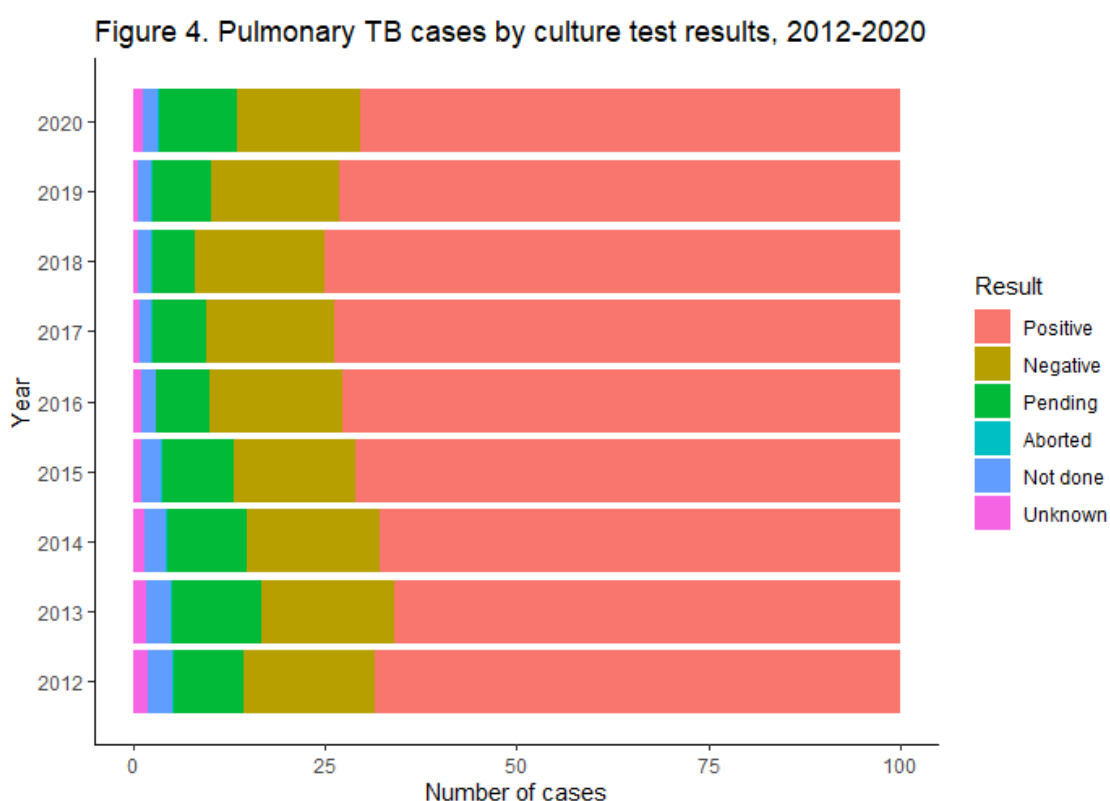
The largest number of EPTB was pleurisy (n=2,356), followed by tuberculosis of other lymph nodes (n=704) and miliary tuberculosis (n=653).

Table 1 Extrapulmonary cases by site, notified in 2020

Site	n
Bronchial	93
Pharyngeal/Laryngeal	32
Miliary	653
Pleura	2,356
Empyema	30
Hilar/Mediastinal lymph node	132
Other lymph node	704
Meningeal	129
Intestinal	197
Vertebral	122
Other joint/ Bone	89
Renal/ Urinary tract	57
Genital	23
Cutaneous	61
Ocular	30
Auricular	12
Peritoneal	151
Pericardial	48
Others	120
Total	5,039

Pulmonary TB; bacteriological confirmation

Among the 9,446 PTB cases, results of sputum smear tests were known for 9,358 cases. Of these 52.7% (4,932 / 9,358) were sputum smear positive. Results of culture tests were known for 8,170 cases. Of these 81.3% (6,645 / 8,170) 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 8,317 cases, of whom 83.6% (6,952 / 8,317) were positive.



Tables 2.a-2.c summarize the cross tabulations of bacteriological test result of PTB cases notified in 2020. 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 59.4%, 54.8%, 31.9% and 35.3%, respectively.

Table 2a PTB cases, by smear and culture test results, 2020

	Culture					Total
	Positive	Negative	Pending	Aborted	Not done /unknown	
Smear positive	4,004	220	539	15	154	4,932
Smear negative	2,629	1,300	403	8	86	4,426
Smear not done/unknown	12	5	7	1	63	88
Total	6,645	1,525	949	24	303	9,446

Table 2b. PTB cases, by smear and NAATs results, 2020

	NAATs			Total
	Positive	Negative	Not done/unknown	
Smear positive	4,505	88	339	4,932
Smear negative	2,425	1,275	726	4,426
Smear not done/unknown	22	2	64	88
Total	6,952	1,365	1,129	9,446

Table 2c. PTB cases, by culture and NAATs results, 2020

	NAATs			Total
	Positive	Negative	Not done/unknown	
Culture positive	5,585	482	578	6,645
Culture negative	487	734	304	1,525
Results pending	685	124	140	949
Test aborted	17	2	5	24
Test not done/unknown	178	23	102	303
Total	6,952	1,365	1,129	9,446

Infectious TB; cases with cavities and positive sputum smear

The proportion of those with cavities was 27.7% (2,619 / 9,446) among all PTB, 30.3% (1,767 / 5,832) for males and 23.6% (852 / 3,614) 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 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 48.9% (4,615 / 9,446) among all PTB, 49.4% (2,883 / 5,832) among males and 47.9% (1,732 / 3,614) 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 9,446 PTB cases, the proportion of those with cavity and positive sputum smear was 20.1% (1,902 / 9,446) of those with cavity and negative sputum smear was 7.6% (717 / 9,446), and those without cavity and positive sputum smear was 28.7% (2,713 / 9,446).

Figure 5. Proportion of those with cavity among PTB by age groups and sex, 2020

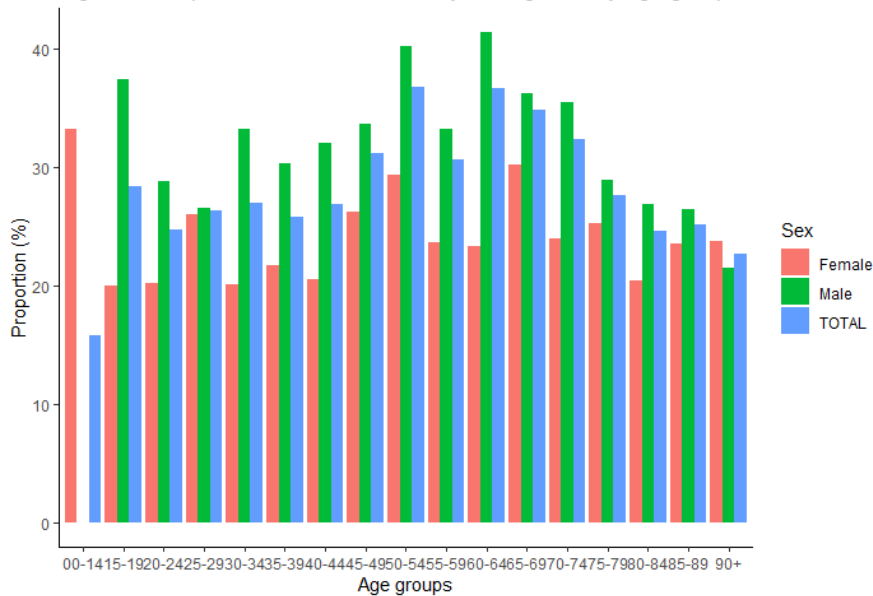
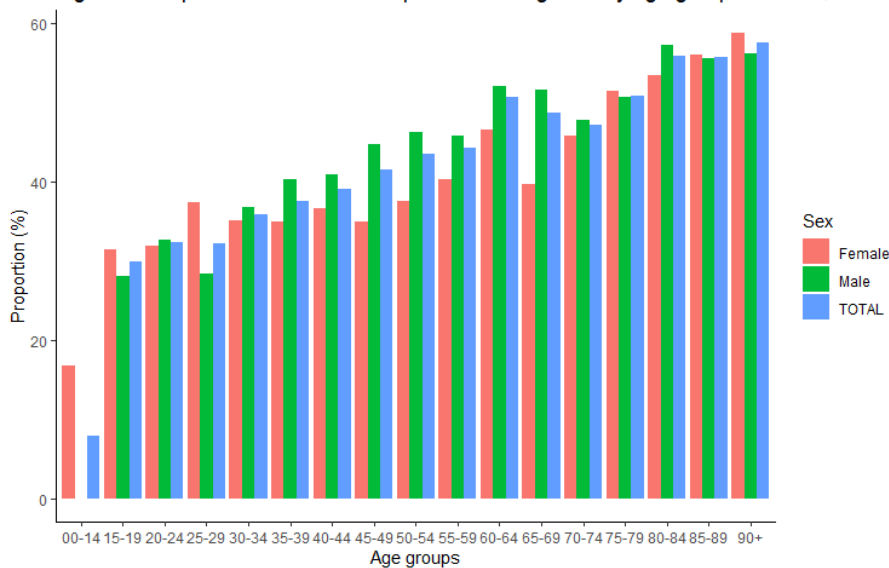


Figure 6. Proportion of those smear positive among PTB by age groups and sex, 2020



All TB, history of previous treatment:

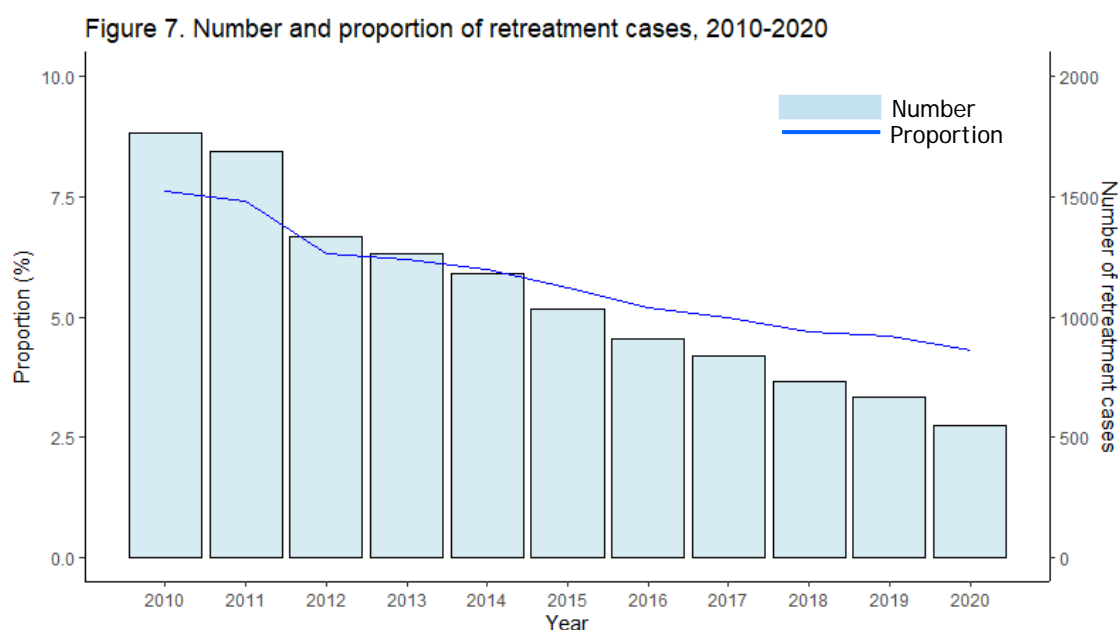
The number of retreatment cases notified in 2020 was 546. 19.8% (108 / 546) of the retreatment cases had started their previous treatment within the past 2 years, and 38.1% (208 / 546) more than 10 years ago. Information regarding the regimen of the previous treatment was known for 71.8% (392 / 546) of all retreatment cases, with the most frequent being “treatment including Pyrazinamide (Z) (34.9%, 179 / 546), followed by treatment for latent tuberculosis infection (15.2%, 83 / 546) (Table 3).

Table 3 Regimen of the previous treatment among the retreatment cases, 2020

	n	%
Tx including Z	179	32.8
Tx including H and R	79	14.4
Other regimens	51	9.3
Tx for LTBI	83	15.2
Unknown	154	28.2
TOTAL	546	100.0

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

Figure 7 shows the changes in the proportion of retreatment cases. The proportion of retreatment cases has continued to decline, reaching 1,762 in 2010, to 1,032 in 2015, and 546 in 2020 (see also Table s7).



Co-morbidities; diabetes mellitus

Table 4 summarizes the newly notified TB cases by diabetes mellitus (DM) status. The definition of DM under the JTBS is solely dependent on the patient's self-report. In 2020, the status of DM was known for 86.3% of the newly notified cases (11,000 / 12,739). Of those cases with known DM status, 1,883 had concomitant DM. Proportion of those with DM has continued to increase steadily.

Table 4: Newly notified cases by DM status, 2012-2020

	With DM	Without DM	Unknown	Total
2012	3,036	15,978	2,269	21,283
2013	2,964	15,010	2,521	20,495
2014	2,753	14,536	2,326	19,615
2015	2,686	13,472	2,122	18,280
2016	2,509	13,277	1,839	17,625
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

DM: diabetes mellitus

Of the 1,883 cases with DM, 55 (2.9%) were foreign-born, and 1,797 (95.4%) were Japan-born. While 40.0% (22 / 55) of the foreign-born cases were aged between 35 and 54, 93.0% (1,672 / 1,797) of the Japan-born cases were aged 55 and above (Table 5).

Table 5: Characteristics of cases with DM, 2020 (n=1,883)

Age groups	Foreign-born	Japan-born	Unknown
0-24	0	4	0
25-34	3	5	0
35-54	22	116	2
55+	30	1,672	29
Total	55	1,797	31

Co-morbidities; HIV/AIDS

Table 6 summarizes the newly notified TB cases by HIV status. In 2020, HIV test results were known only for 6.9% (877 / 12,739), while unknown for 93.1% (11,862 / 12,739) of the newly notified cases. Of those cases with known test

results, 3.5% (31 / 877) were HIV positive and 96.5% (846 / 877) were HIV negative.

Table 6: Newly notified cases by HIV test results, 2012-2020

	HIV positive	HIV negative	HIV test not done	Unknown
2012	62	3,266	4,601	13,354
2013	50	1,890	5,090	13,465
2014	45	1,627	4,970	12,973
2015	40	1,474	4,697	12,069
2016	44	1,556	4,933	11,092
2017	34	1,454	4,753	10,548
2018	44	1,251	4,757	9,538
2019	29	975	4,942	8,514
2020	31	846	4,292	7,570

Of the 31 HIV positive TB cases, 45.2% (14 / 31) were foreign-born and 54.8% (17 / 31) were Japan-born (Table 7).

Table 7: Characteristics of HIV positive TB patients, 2020 (n=31)

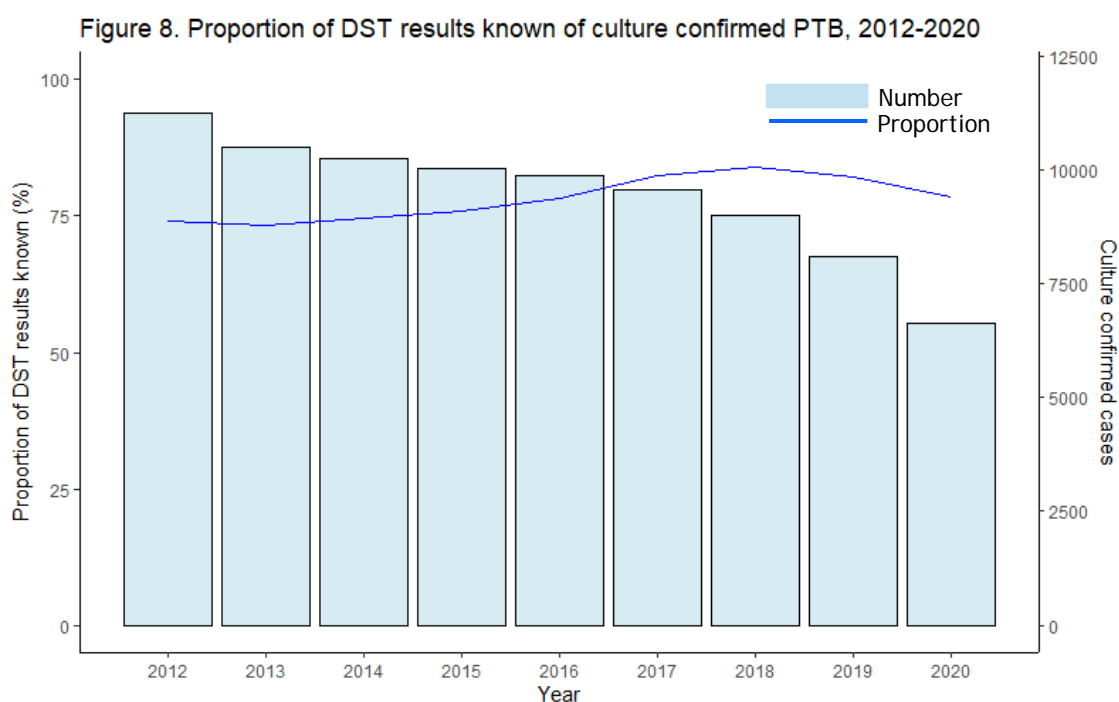
	Foreign-born	Japan-born	Unknown	Total
Male	12	16	0	28
Female	2	1	0	3
Total	14	17	0	31

Proportion of those who were not tested for HIV has been gradually increasing, from 21.6% in 2012 (4,601 / 21,283) to 33.7% (4,292 / 12,739) in 2020.

Chapter 4: Drug-resistant TB

Drug susceptibility test for isoniazid and rifampicin:

Of the 6,645 culture confirmed pulmonary TB cases notified in 2020, drug susceptibility test (DST) results for both isoniazid (INH) and rifampicin (RFP) were known for 78.4% (5,209 / 6,645). 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 5,209 PTB cases with DST results known in 2020, 5.7% (297 / 5,209) were resistant to INH, 1.2% (60 / 5,209) were resistant to RFP, and 0.9% (46 / 5,209) were resistant to both INH and RFP (i.e., multi-drug resistant TB, MDR). Of the 297 that were resistant to INH, 251 were resistant solely to INH (i.e., INH mono-resistant). Of the 60 that were resistant to RFP, 14 were resistant solely to RFP (i.e., RFP mono-resistant).

Resistance to INH and RFP by treatment history among the 5,209 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, 2020

	INH resistant	Of which, INH mono-resistant	RFP resistant	Of which, RFP mono-resistant	MDR
New treatment n=4,938	260 (5.3%)	229 (4.6%)	44 (0.6%)	13 (0.3%)	31 (0.6%)
Retreatment n=201	31 (15.4%)	18 (9.0%)	14 (7.0%)	1 (0.5%)	13 (6.5%)
Treatment history unknown n=70	6 (8.6%)	4 (5.7%)	2 (2.9%)	0 (0.0%)	2 (2.9%)

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. The proportions of resistance among new and retreatment cases had been relatively stable, however, INH resistance among new cases, and INH and RFP resistance and MDR among retreatment cases increased significantly in 2020.

Figure 9a. Drug resistance among PTB, new cases, 2012-2020

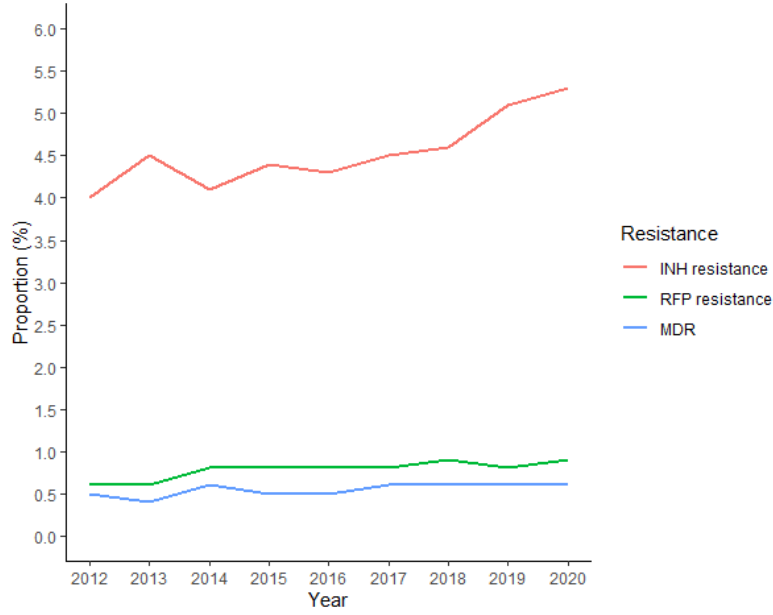
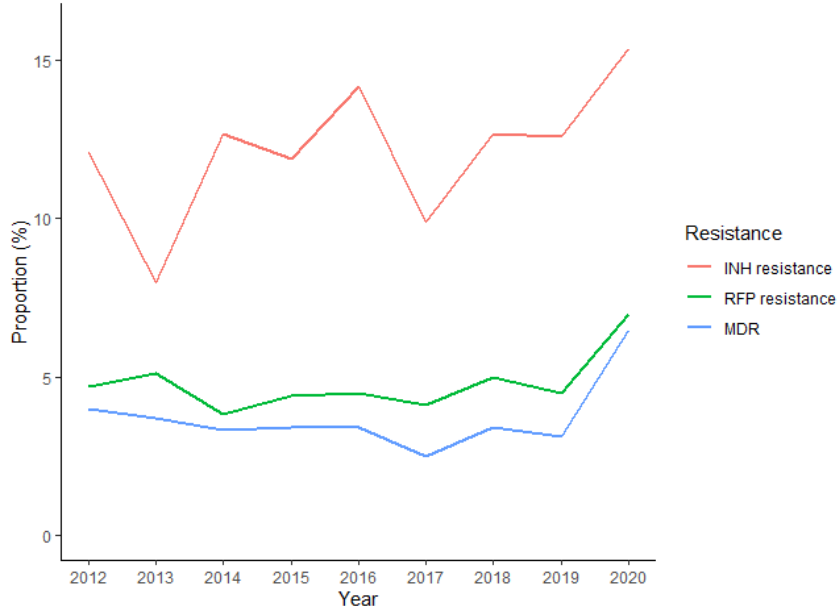


Figure 9b. Drug resistance among PTB, retreatment cases, 2012-2020



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

Among the 6,645 culture confirmed pulmonary TB cases notified in 2020, 5,902 were Japan-born, 642 were foreign-born, and the country of birth was unknown for 101. Results of DST were known for 78.3% (4,624 / 5,902) for Japan-born, 82.6% (530 / 642) for foreign-born, and 54.5% (55 / 101) for those whose country of birth was unknown.

Table 9 summarizes resistance to INH, RFP and MDR by country of birth among the 5,209 PTB cases with known DST results.

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

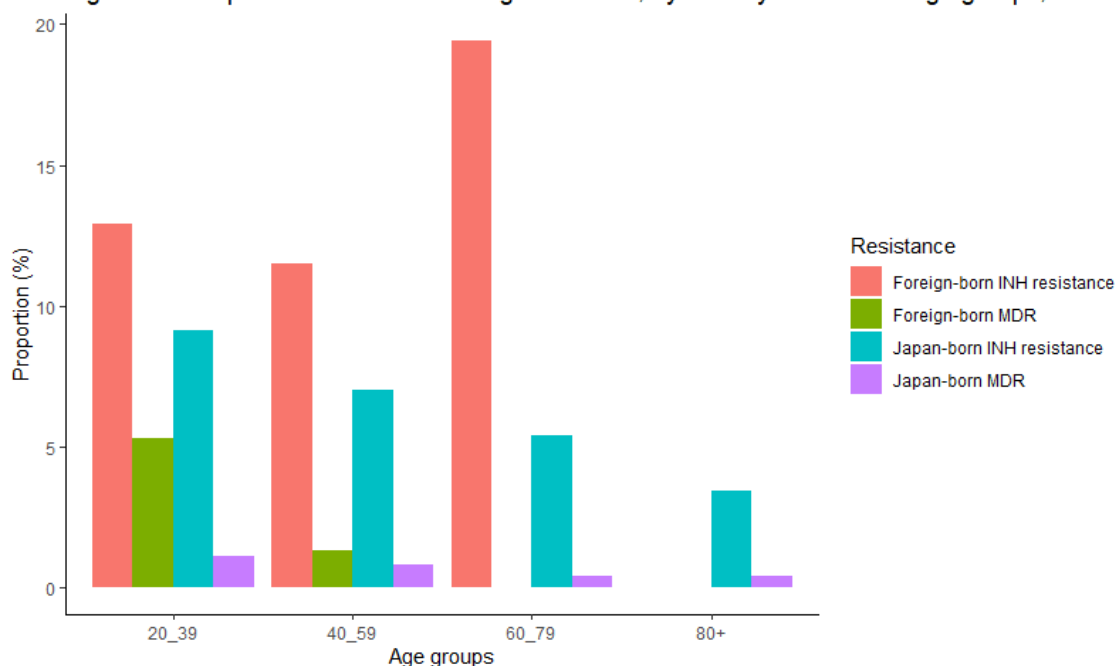
	INH resistant	Of which, INH mono-resistant	RFP resistant	Of which, RFP mono-resistant	MDR
Japan-born n=4,624	227 (4.9%)	204 (4.4%)	33 (0.7%)	10 (0.2%)	23 (0.5%)
Foreign-born n=530	68 (12.8%)	45 (8.5%)	27 (5.1%)	4 (0.8%)	13 (4.3%)
Country of birth unknown n=55	2 (3.6%)	2 (3.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

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. Among Japan-born cases, both the proportions of those with INH resistance and MDR declined with increasing age. However, among the foreign-born, the proportion of those with INH resistance was the highest among those aged 60 to 79 years old. On the other hand, the proportion of those with MDR was the highest among those aged 20 to 39 years old.

Figure 10. Proportion of those with drug resistance, by country of birth and age groups, 2020



Resistance to streptomycin and ethambutol

For streptomycin (SM), DST results were known for 4,906 of the 4,938 culture confirmed first treatment cases, whose DST results were known for both INH and RFP. Of the 4,906 cases, 6.8% were resistant to SM (332 / 4,906). DST results were also known for 197 of the 201 culture confirmed retreatment cases, whose DST results were known for both INH and RFP. Of the 197 cases, 12.2% were resistant to SM (24 / 197).

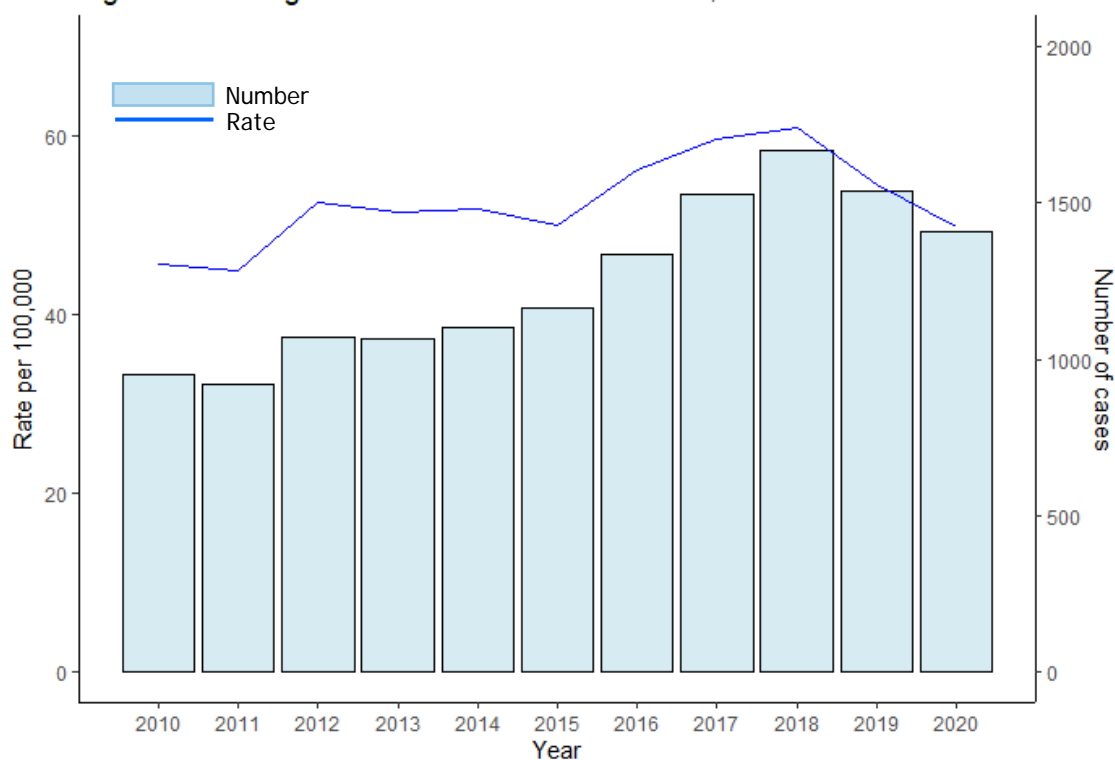
For ethambutol (EB), DST results were known for 4,924 of the 4,938 culture confirmed first treatment cases, whose DST results were known for both INH and RFP. Of the 4,924 cases, 1.3% were resistant to SM (66 / 4,924). DST results were also known for 201 of the 201 culture confirmed retreatment cases, whose DST results were known for both INH and RFP. Of the 201 cases, 4.5% were resistant to SM (9 / 201).

Chapter 5: Foreign-born TB, 2010-2020

Overall number and rates:

Information regarding place of birth (Japan-born/foreign-born) was known for 98.1% of the newly notified cases (12,491 / 12,739). Of those cases, 11.3% was born outside Japan (1,411/ 12,491). The number of foreign-born cases slightly decreased from 1,541 in the previous year to 1,411, and the rate per 100,000 similarly decreased from 52.5 in the previous year to 48.9 (Figure 11, see also Table s11). However, the proportion out of all cases continued to increase.

Figure 11. Foreign-born TB notification and rates, 2010-2020



Age and sex:

In 2020, 49.0% of the foreign-born cases were males (692 / 1,411) and 51.0% were females (719 / 1,411). The largest number of cases were diagnosed among those aged 25 to 34 (546 cases), followed by those aged 15 to 24 (428

cases). 84.2% (1,188 / 1,411) of foreign-born persons were aged between 15 and 44 (Table 10).

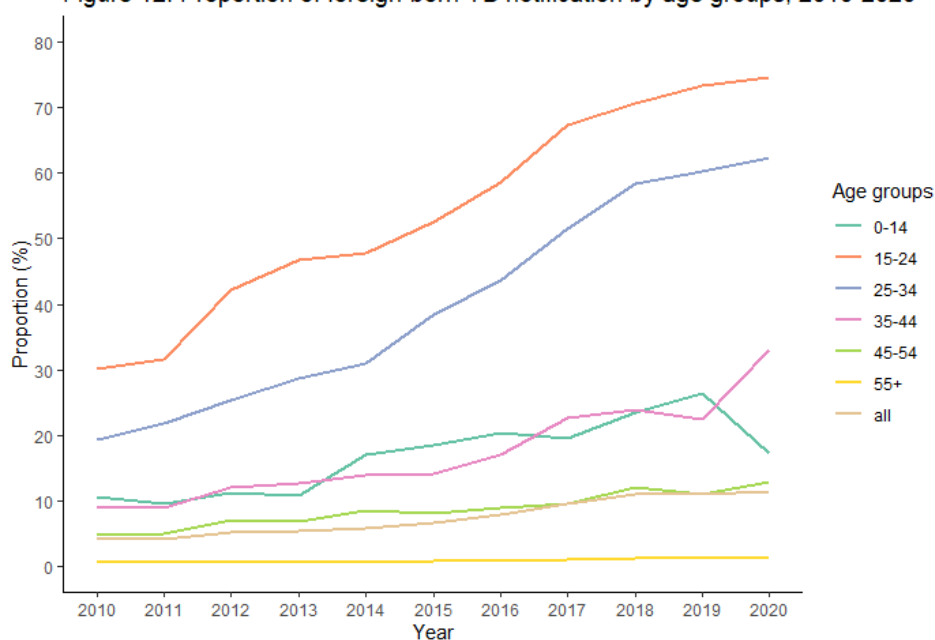
Table 10. Foreign-born TB cases* by sex and age groups, 2020

Age groups	Total		Male		Female	
	n	%	n	%	n	%
0-04	2	0.1	0	0.0	2	0.3
5-14	7	0.5	7	1.0	0	0.0
15-24	428	30.3	224	32.4	204	28.4
25-34	546	38.7	297	42.9	249	34.6
35-44	214	15.2	78	11.3	136	18.9
45-54	110	7.8	33	4.8	77	10.7
55-64	54	3.8	26	3.8	28	3.9
65-74	25	1.8	15	2.2	10	1.4
75-84	17	1.2	8	1.2	9	1.3
85+	8	0.6	4	0.6	4	0.6
Total	1,411	100.0	692	100.0	719	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. Compared with the previous year, the proportion of foreign-born cases among age group 35 to 44 years old increased sharply, while that among age group 0 to 14 years old declined (Figure 12, see also Table s12).

Figure 12. Proportion of foreign-born TB notification by age groups, 2010-2020



Diagnosis:

Out of the 1,411 foreign-born cases, 71.6% (1,010 / 1,411) were diagnosed with PTB, either with or without extrapulmonary disease. 28.4% (401 / 1,411) were diagnosed solely with extrapulmonary tuberculosis. Out of the 1,010 PTB cases, 77.2% (780 / 1,010) were bacteriologically confirmed, and 35.1% (355 / 1,010) 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 10.6% (77.2% vs 87.8%).

Country of birth and occupation:

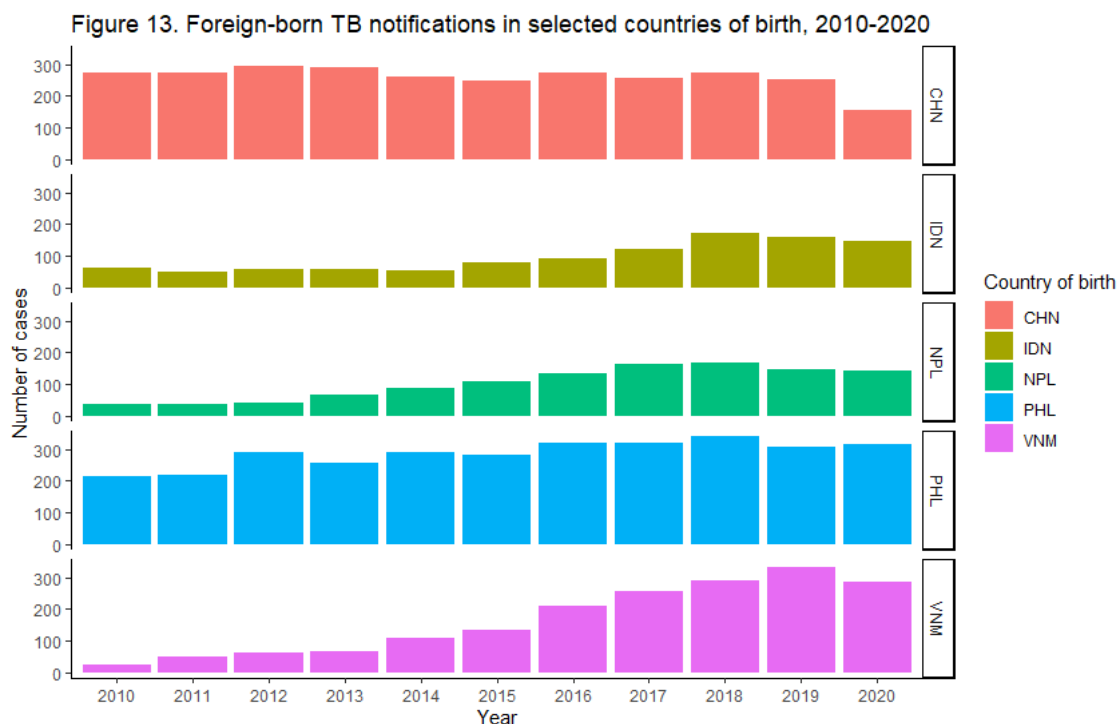
Table 11 summarizes the foreign-born TB cases by major countries of birth. The Philippines was the most frequent country of birth for foreign-born cases notified in 2020 (22.3%, 315 / 1,411), followed by Vietnam and China (20.3%, 287 / 1,411 and 10.8%, 152 / 1,411). Six countries, the Philippines, Vietnam, China, Indonesia, Nepal and Myanmar accounted for 80.2% (1,132 / 1,411) of all foreign-born cases.

Table 11: Foreign-born TB cases by country of birth, 2020

Country name	Cases	Proportion (%)
The Philippines	315	22.3
Vietnam	287	20.3
China	152	10.8
Indonesia	147	10.4
Nepal	143	10.1
Myanmar	88	6.2
Unknown	59	4.2
Others	220	15.6
Total	1,411	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 Nepal and Indonesia slightly declined since 2019, and those from Vietnam in

2020. Those from the Philippines have been constant (Figure 13, see also Table s13).



CHN: China, IDN: Indonesia, NP: Nepal, PHL: the Philippines, VNM: Vietnam

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 40.8% (576 / 1,411), followed by “high-school and university students”, contributing to 17.3% (244 / 1,411) of all cases. However, the distribution of job categories differed considerably by country of birth (Table 12).

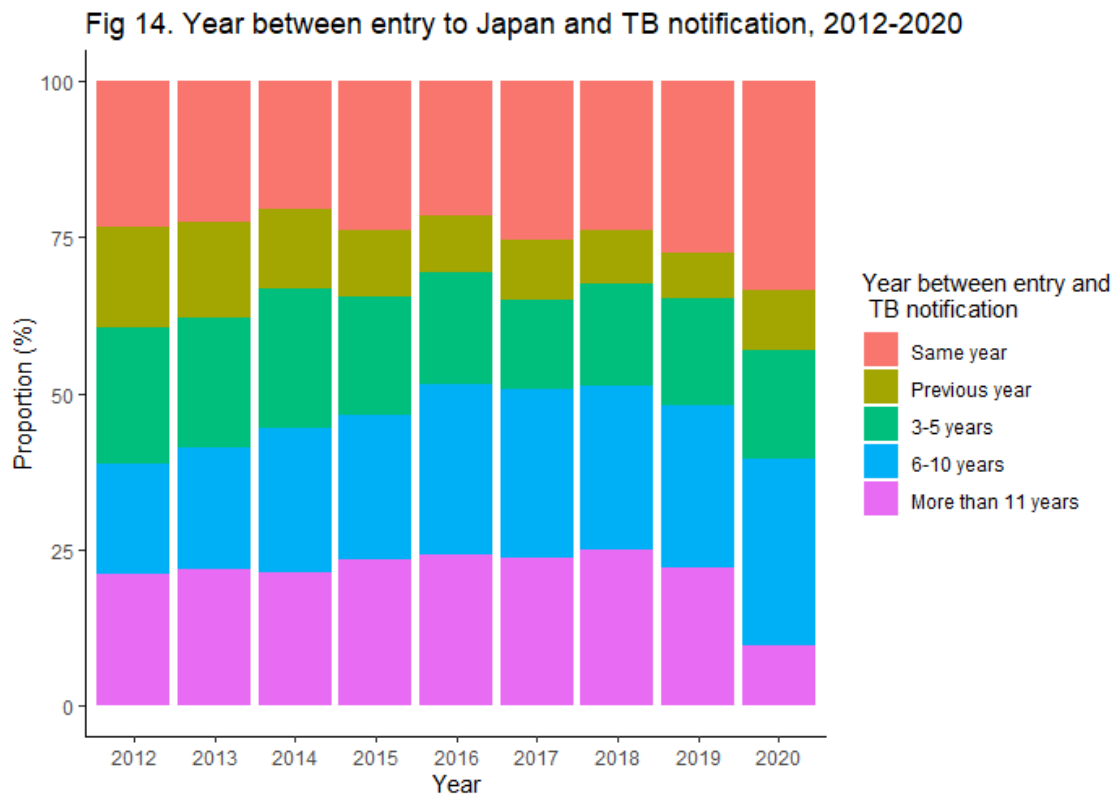
Table 12. Job categories of foreign-born cases, and of selected countries, 2020

	All		Philippines		Vietnam		China		Indonesia	
	n	%	n	%	n	%	n	%	n	%
Full-time workers	576	40.8	127	40.3	149	51.9	41	27.0	73	49.7
High-school & university students	244	17.3	16	5.1	71	24.7	36	23.7	17	11.6
Unemployed	188	13.3	62	19.7	14	4.9	34	22.4	8	5.4
Unknown and others	125	8.9	28	8.9	24	8.4	9	5.9	20	13.6
Temporary workers	105	7.4	37	11.7	16	5.6	7	4.6	12	8.2
Service industry	68	4.8	14	4.4	4	1.4	13	8.6	2	1.4
Healthcare workers	44	3.1	14	4.4	5	1.7	3	2.0	12	8.2
Houseworkers	26	1.8	9	2.9	2	0.7	5	3.3	2	1.4
Self-employed	18	1.3	3	1.0	0	0.0	3	2.0	1	0.7
Other children*	9	0.6	1	0.3	1	0.3	1	0.7	0	0.0
Teachers	8	0.6	4	1.3	1	0.3	0	0.0	0	0.0
Total	1,411	100.0	315	100.0	287	100.0	152	100.0	147	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 11,885 foreign-born cases notified in Japan between 2012 and 2020, year of entry was known for 64.9% (7,714 / 11,885). In 2020, of the 1,411 foreign-born cases notified, year of entry was known for 64.8% (915 / 1,411). Of which, 39.6% (362 / 915) of foreign-born cases were notified within 2 years of entering Japan (Figure 14, see also Table s14).



Chapter 6: Socio-economic characteristics

Occupation:

Table 13 summarizes the job categories of all TB cases notified in 2020. Since a large majority of the patients are elderly, the largest proportion of job category was unemployed (64.8%, 8,258 / 12,739), followed by “full-time workers” (14.8% (1,887 / 12,739). Among those aged 64 years old or below, the largest proportion of job category was “full-time workers” (40.3%, 1,617 / 4,016), followed by “unemployed” (15.8%, 634 / 4,016).

Table 13. Job categories of all TB cases, 2020

All ages	n	%	Under 64 years old	n	%
Total	12,739	100.0	Total	4,016	100.0
Unemployed	8,258	64.8	Full-time workers	1,617	40.3
Full-time workers	1,887	14.8	Unemployed	634	15.8
Self-employed	484	3.8	High school and university students	315	7.8
Temporary workers	368	2.9	Temporary workers	252	6.3
High school and university students	316	2.5	Service industry	236	5.9
Unknown	302	2.4	Self-employed	202	5.0
Service industry	294	2.3	Other HCWs	200	5.0
Others	237	1.9	Others	148	3.7
Other HCWs	223	1.8	Unknown	125	3.1
Nurses	123	1.0	Nurses	117	2.9
Houseworkers	121	0.9	Houseworkers	59	1.5
Teachers	43	0.3	Teachers	39	1.0
Physicians	33	0.3	Infants	25	0.6
Primary and junior high school students	25	0.2	Primary and junior high school students	24	0.6
Infants	25	0.2	Physicians	23	0.6

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 not covered under any health insurance upon diagnosis of TB, including those who are “eligible” but being able

to pay the premiums and therefore been suspended (“no insurance”). “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, 2020

	Homeless		Unemployed		On social welfare		No insurance	
	n	%	n	%	n	%	n	%
Total	47	100.0	603	100.0	179	100.0	16	100.0
Male	43	91.5	342	56.7	147	82.1	16	100.0
Female	4	8.5	261	43.3	32	17.9	0	0.0
Age group								
25-34	9	19.1	81	13.4	6	3.4	0	0.0
35-44	4	8.5	93	15.4	21	11.7	3	18.8
45-54	14	29.8	148	24.5	47	26.3	3	18.8
55-64	20	42.6	281	46.6	105	58.7	10	62.5
Country of birth								
Foreign-born	7	14.9	132	21.9	9	5.0	0	0.0
Japan-born	38	80.9	462	76.6	163	91.1	16	100.0
COB unknown	2	4.3	9	1.5	7	3.9	0	0.0

COB: country of birth

Chapter 7: Delay

Symptoms upon diagnosis:

Under JTBS, symptom upon diagnosis is asked for PTB cases. Of the 9,446 PTB cases notified in 2020, 25.0% (2,365 / 9,446) reported respiratory symptoms, 27.1% (2,560 / 9,446) reported both respiratory and non-respiratory symptoms, 19.9% (1,882 / 9,446) reported non-respiratory symptoms only, and 27.3% (2,578 / 9,446) did not report any symptoms. Information regarding symptoms were unknown for 61 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.

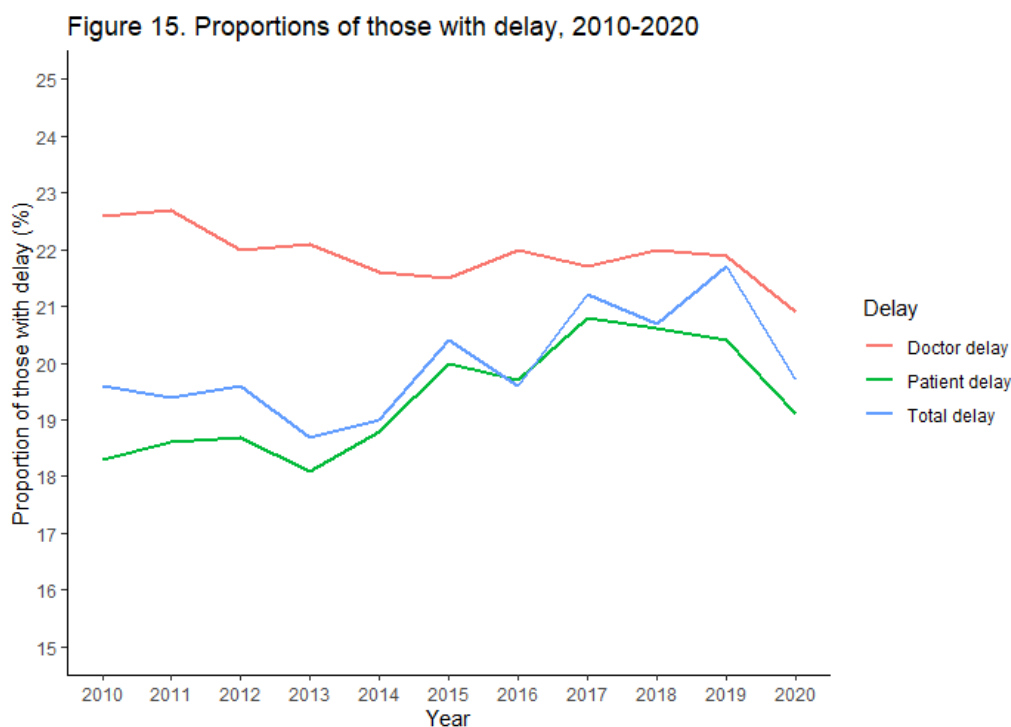
Of the 6,807 symptomatic pulmonary TB cases, information regarding patient delay was known for 65.4% (4,449 / 6,807), doctor delay for 89.8% (6,111 / 6,807), and total delay for 69.5% (4,489 / 6,807). Patient delay was observed in 19.1% (848 / 4,449), doctor delay in 20.9% (1,278 / 6,111) and total delay in 19.7% (883 / 4,489) (Table 15).

Table 15. Number and proportion of those with delay, 2020

Type of delay	Total no. symptomatic PTB	Information on delay known	Delay	
			n	%
Patient delay	6,807	4,449	848	19.1
Doctor delay	6,807	6,111	1,278	20.9
Total delay	6,807	4,489	883	19.7

PTB: pulmonary tuberculosis

The proportions of those with delay has gradually been increasing, however they declined in 2020. 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. Proportions of those with patient delay was higher among males compared with females, while vice versa for doctor delay. As for the age groups, proportions of those with patient delay was the highest among those aged 15 to 24 years old. Proportion of patient delay was higher among the foreign-born compared with the Japan-born when compared with all age groups - however, the proportion of patient delay among those aged between 25 and 64 years old was higher among Japan than foreign-born patients.

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Table 16. Proportions of those with delay among selected characteristics, 2020

	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 (%)
Total	4,449	848	19.1	6,111	1,278	20.9	4,489	883	19.7
Sex									
Male	2,731	535	19.6	3,775	781	20.7	2,756	554	20.1
Female	1,718	313	18.2	2,336	497	21.3	1,733	329	19.0
Age group									
0-14	6	1	16.7	11	3	27.3	6	0	0.0
15-24	167	56	33.5	232	46	19.8	171	47	27.5
25-34	267	52	19.5	375	75	20.0	270	61	22.6
35-44	197	36	18.3	279	64	22.9	202	44	21.8
45-54	271	75	27.7	368	64	17.4	271	70	25.8
55-64	326	91	27.9	460	96	20.9	329	90	27.4
65+	3,215	537	16.7	4,386	930	21.2	3,240	571	17.6
COB all ages									
Foreign-born	402	100	24.9	560	114	20.4	409	93	22.7
Japan-born	3,997	744	18.6	5,455	1,149	21.1	4,030	788	19.6
COB unknown	50	4	8.0	96	15	15.6	50	2	4.0
COB 25-64 years									
Foreign-born	265	57	21.5	373	78	20.9	269	58	21.6
Japan-born	791	195	24.7	1,094	218	19.9	798	206	25.8
COB unknown	5	2	40.0	15	3	20.0	5	1	20.0
Social risk factor									
Homeless	46	6	13.0	69	13	18.8	47	7	14.9
Unemployed*	239	62	25.9	317	48	15.1	241	54	22.4
On social welfare	352	72	20.5	464	93	20.0	354	72	20.3
No insurance	13	3	23.1	18	0	0.0	13	1	7.7

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, 2020

	n	%
Total	12,739	100.0
Hospital, with symptoms	7,096	55.7
Hospital, with other disease(s)	3,685	28.9
Routine health check	1,104	8.7
Contact investigation	389	3.1
Individual health check	207	1.6
Others	124	1.0
During follow-up	64	0.5
Unknown	50	0.4
Mass screening	20	0.2

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 2020, 5,575 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 98.0% of all cases (5,461 / 5,575). The proportion of foreign-born among those cases with known country of birth has also been declining since 2018, and was 11.0% (599 / 5,461) in 2020 (Figure 16, see also Table s16).

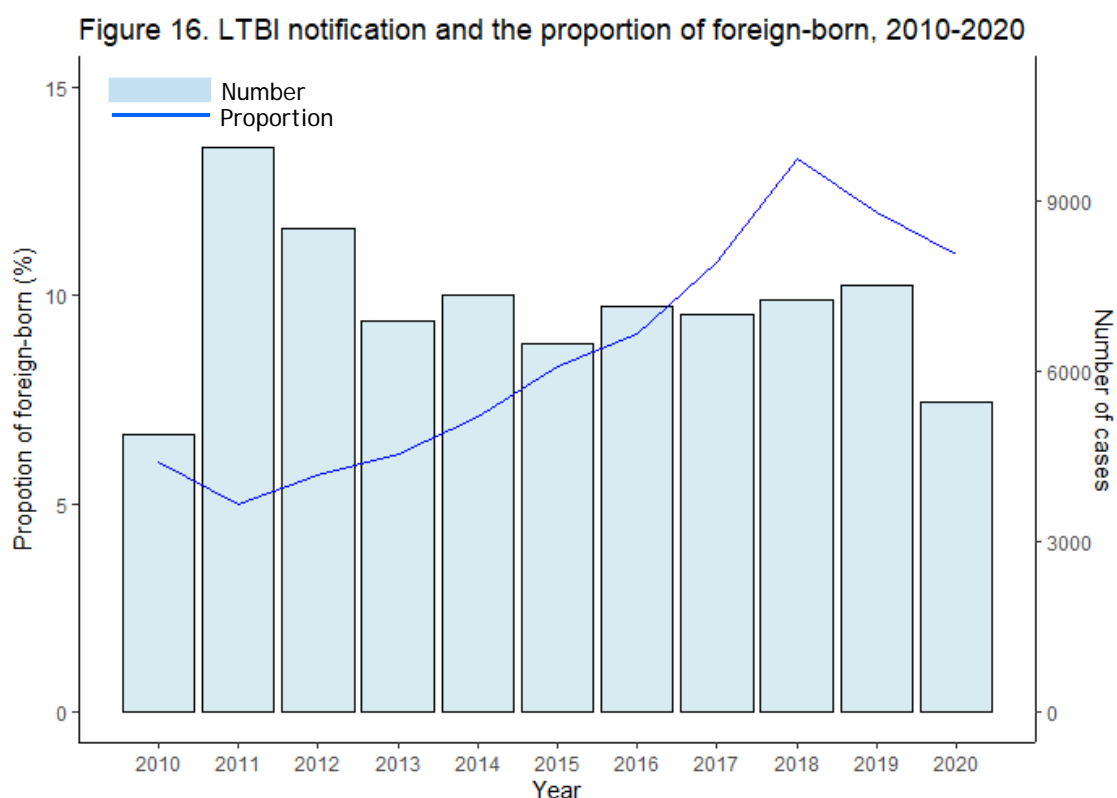


Figure 17 (see also Table s17) shows the trend of LTBI notification by age groups. The number of notifications among those aged 65 years old and above has constantly been increasing, but it declined for the first time in 2020. For all other age groups, the notification has been declining since 2011.

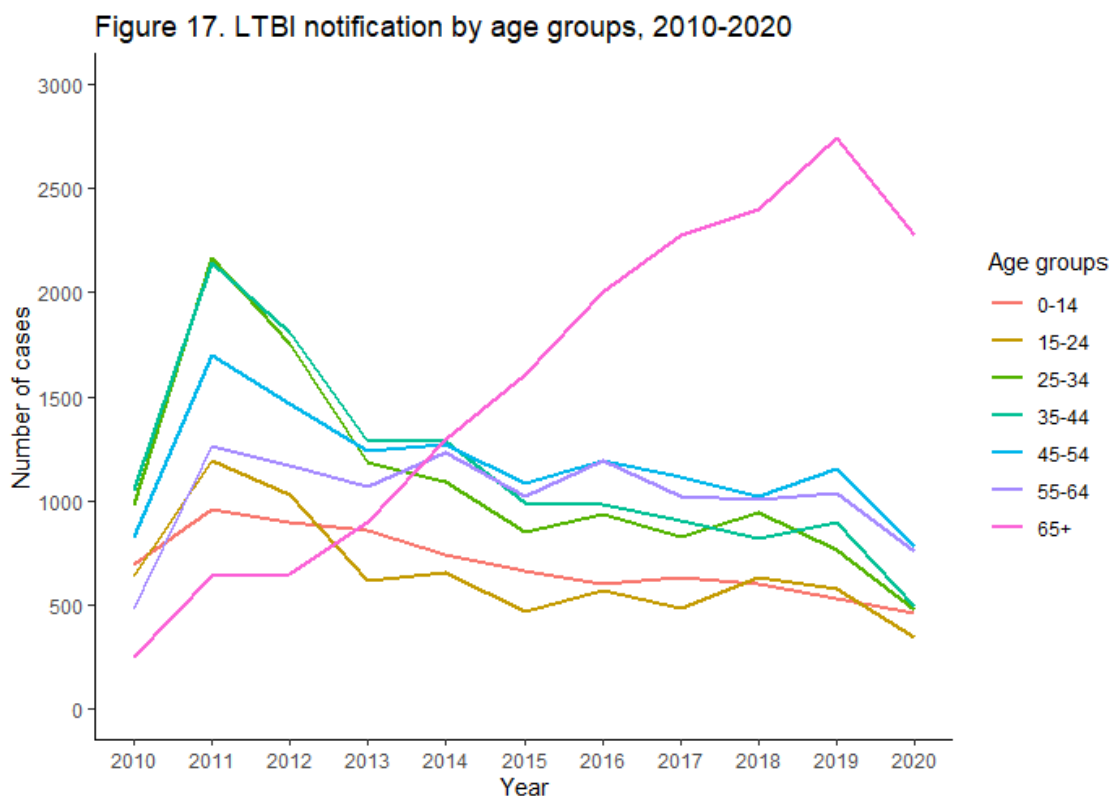


Table 18 summarizes the LTBI case notifications in 2020 by country of birth and age groups. Breaking down the cases by age groups, the largest number of cases were diagnosed among those aged 65 years and above (n= 2,280), followed by those aged 45 and 54 years old (n=775). However, while 45.4% (2,209 / 4,862) of LTBI cases among Japan-born were aged 65 years and above, 30.6% (183 / 599) and 31.1% (186 / 599) 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, 2020

Age groups	Total		Japan-born		Foreign-born		Country of birth unknown	
	n	%	n	%	n	%	n	%
0-14	459	8.2	427	8.8	29	4.8	3	2.6
15-24	338	6.1	151	3.1	183	30.6	4	3.5
25-34	474	8.5	281	5.8	186	31.1	7	6.1
35-44	492	8.8	402	8.3	82	13.7	8	7.0
45-54	775	13.9	688	14.2	67	11.2	20	17.5
55-64	757	13.6	704	14.5	33	5.5	20	17.5
65+	2,280	40.9	2,209	45.4	19	3.2	52	45.6
Total	5,575	100.0	4,862	100.0	599	100.0	114	100.0

Mode of detection:

50.9% (2,836 / 5,575) 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, 2020

	Total		Japan-born		Foreign-born		Country of birth unknown	
	n	%	n	%	n	%	n	%
Total	5,575	100.0	4,862	100.0	599	100.0	114	100.0
Contact investigation	2,836	50.9	2,358	48.5	415	69.3	63	55.3
Hospital, with other disease(s)	1,469	26.3	1,381	28.4	50	8.3	38	33.3
Hospital, with symptoms	633	11.4	581	11.9	43	7.2	9	7.9
Routine health check	328	5.9	273	5.6	55	9.2	0	0.0
Others	173	3.1	163	3.4	9	1.5	1	0.9
Individual health check	75	1.3	60	1.2	15	2.5	0	0.0
Mass screening	38	0.7	27	0.6	11	1.8	0	0.0
Unknown	22	0.4	18	0.4	1	0.2	3	2.6
During follow-up	1	0.0	1	0.0	0	0.0	0	0.0

Treatment outcome:

Of the 7,684 LTBI cases that were notified in 2019, treatment outcome was available for 7,676 cohort at the end of one year. Table 20 summarize the treatment outcome of the 7,676 LTBI cases, by country of birth. The proportion of treatment success (cured and completed) was higher among the Japan-born than foreign-born patients (84.0% vs 79.5%), largely due to the higher proportion of transferred out among the latter (1.1% vs 6.3%).

Table 20. Treatment outcome LTBI cases notified in 2019

	Japan-born		Foreign-born		Country of birth unknown		TOTAL	
	n	%	n	%	n	%	n	%
Cured	450	6.8	54	5.9	9	5.6	513	6.7
Completed	5,098	77.2	669	73.6	131	80.9	5,898	76.8
Died	191	2.9	3	0.3	8	4.9	202	2.6
Failed	19	0.3	2	0.2	0	0.0	21	0.3
LTFU	525	7.9	52	5.7	11	6.8	588	7.7
Transferred out	75	1.1	57	6.3	1	0.6	133	1.7
Still on treatment	212	3.2	64	7.0	1	0.6	277	3.6
Unknown	35	0.5	8	0.9	1	0.6	44	0.6
Total	6,605	100.0	909	100.0	162	100.0	7,676	100.0

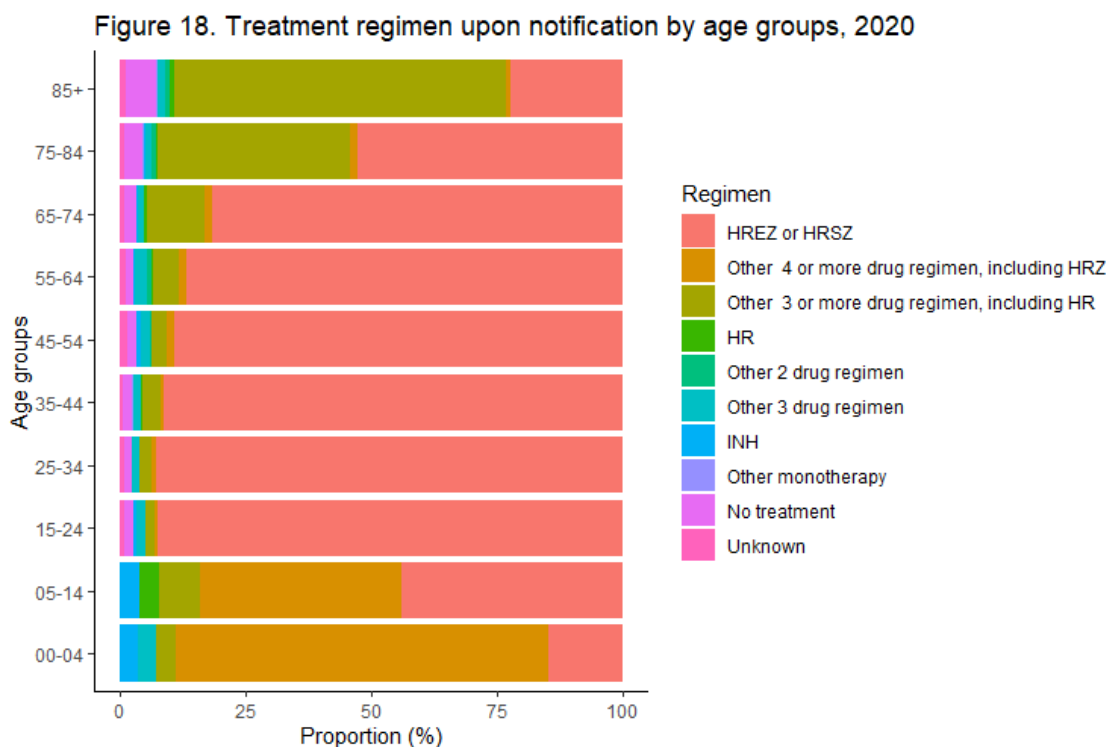
LTFU: lost to follow-up

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, 59.7% of all notified TB cases (7,602 / 12,739) began treatment with INH, RFP, PZA and either EB or SM, 1.4% (174 / 12,739) with other 4 or more drug regimen including HRZ, and 31.3% (3,987 / 12,739) 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 14,422 cases notified in 2019 and whose treatment outcome was known, data on duration of hospitalization in days was available for 5,569 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, 2019 (n=5,569)

	Median (days)	Mean (SD) (days)
Sputum smear PTB, new	63	77.7 (\pm 188.9)
Sputum smear PTB, retreatment	67	77.9 (\pm 57.1)
Other bacteriologically confirmed PTB	43	61.5 (\pm 62.0)
Clinically confirmed PTB	37	48.6 (\pm 44.4)
EPTB	50	69.8 (\pm 66.1)

PTB: pulmonary tuberculosis, EPTB: extrapulmonary tuberculosis

The duration of hospitalization also differed by the status of drug resistance, with MDR cases requiring significantly longer hospitalization than non-MDR cases (Table 22).

Table 22. Duration of hospitalization by drug resistance, 2019 (n=46)

	Median (days)	Mean (SD) (days)
MDR cases	102	118.9 (\pm 97.4)
Non-MDR cases	61	75.3 (\pm 181.5)

MDR: multidrug resistance

Overall treatment duration:

Among the 14,422 cases notified in 2019 and whose treatment outcome was known, 3,235 and 6,327 cases had either “cured” or “completed treatment”, respectively. Among the 9,562 cases with treatment success, data on treatment duration was available for 9,365 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=9,365)

	Median (days)	Mean (SD) (days)
Sputum smear PTB, new	275	270.4 (\pm 83.8)
Sputum smear PTB, retreatment	276	282.4 (\pm 86.3)
Other bacteriologically confirmed PTB	241	253.1 (\pm 83.9)
Clinically confirmed PTB	190	229.1 (\pm 74.5)
EPTB	273	268.8 (\pm 86.7)

PTB: pulmonary tuberculosis, EPTB: extrapulmonary tuberculosis

10. Treatment outcome

Non-MDR cohort:

In 2019, a total of 14,415 non-MDR cases were reported. Treatment outcome at the end of 12 months was available for 99.7% (14,368 / 14,415) and is summarized in Table 24. The overall treatment success (“cured” and “completed”) was 66.5% (9,550 / 14,368), with slightly higher success rate among females compared with males (68.6% vs 65.0%).

Table 24. Treatment outcomes at 12 months for drug sensitive cases notified in 2019, by sex

Tx outcome	Male		Female		Total	
	n	%	n	%	n	%
Cured	1,908	22.5	1,321	22.4	3,229	22.5
Completed	3,596	42.5	2,725	46.2	6,321	44.0
Died	2,021	23.9	1,297	22.0	3,318	23.1
Failed	8	0.1	3	0.1	11	0.1
LTFU	121	1.4	77	1.3	198	1.4
Transferred-out	252	3.0	118	2.0	370	2.6
Still on tx	540	6.4	353	6.0	893	6.2
Not evaluated	18	0.2	10	0.2	28	0.2
Total	8,464	100.0	5,904	100.0	14,368	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 81.8% (3,844 / 4,702), 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 54.5% (1,072 / 1,966) among those aged 90 years and above.

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Table 25. Treatment outcomes at 12 months for drug sensitive cases notified in 2019, by age groups

Tx outcome	0-64		65-69		70-74		75-79		80-84		85-89		90+	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Cured	1,202	25.6	243	28.4	306	26.1	413	25.4	418	21.5	380	18.1	267	13.6
Completed	2,642	56.2	420	49.1	562	48	735	45.1	756	38.9	699	33.2	507	25.8
Died	152	3.2	114	13.3	196	16.7	334	20.5	591	30.4	859	40.8	1,072	54.5
Failed	3	0.1	0	0	1	0.1	2	0.1	2	0.1	1	0	2	0.1
LTFU	73	1.6	9	1.1	15	1.3	24	1.5	31	1.6	31	1.5	15	0.8
Transferred-out	290	6.2	11	1.3	10	0.9	13	0.8	14	0.7	19	0.9	13	0.7
Still on tx	326	6.9	58	6.8	80	6.8	102	6.3	128	6.6	111	5.3	88	4.5
Not evaluated	14	0.3	0	0	1	0.1	5	0.3	2	0.1	4	0.2	2	0.1
Total	4,702	100.0	855	100.0	1,171	100.0	1,628	100.0	1,942	100.0	2,104	100.0	1,966	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 2019, by country of birth

Tx outcome	Japan-born		Foreign-born		Country of birth unknown		TOTAL	
	n	%	n	%	n	%	n	%
Cured	885	27.7	306	21.2	11	17.2	1,202	25.6
Completed	1,818	56.9	781	54.1	43	67.2	2,642	56.2
Died	138	4.3	11	0.8	3	4.7	152	3.2
Failed	2	0.1	1	0.1	0	0.0	3	0.1
LTFU	47	1.5	24	1.7	2	3.1	73	1.6
Transferred-out	81	2.5	206	14.3	3	4.7	290	6.2
Still on tx	217	6.8	107	7.4	2	3.1	326	6.9
Not evaluated	6	0.2	8	0.6	0	0.0	14	0.3
Total	3,194	100.0	1,444	100.0	64	100.0	4,702	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=66). The overall treatment success rate was 66.6% (44 / 66).

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

Tx outcomes	n	%
Treatment success	44	66.6
Died	5	7.6
Failed	0	0.0
LTFU	2	3.0
Transferred-out	7	10.6
Still on tx	5	7.6
Not evaluated	3	4.5
Total	66	100.0

Tx: treatment, LTFU: lost to follow-up

HIV positive cohort:

Treatment outcome of HIV positive cases notified in 2019 is summarized in Table 28 (n=29). The overall treatment success rate was 62.0% (818 / 29).

Table 28. Treatment outcomes at 12 months for HIV positive drug sensitive cases notified in 2019

Tx outcomes	n	%
Cured	3	10.3
Completed	15	51.7
Died	3	10.3
Failed	0	0.0
LTFU	0	0.0
Transferred-out	4	13.8
Still on tx	4	13.8
Not evaluated	0	0.0
Total	29	100.0

Tx: treatment, LTFU: lost to follow-up

Appendix I: Notes on TB surveillance system in Japan

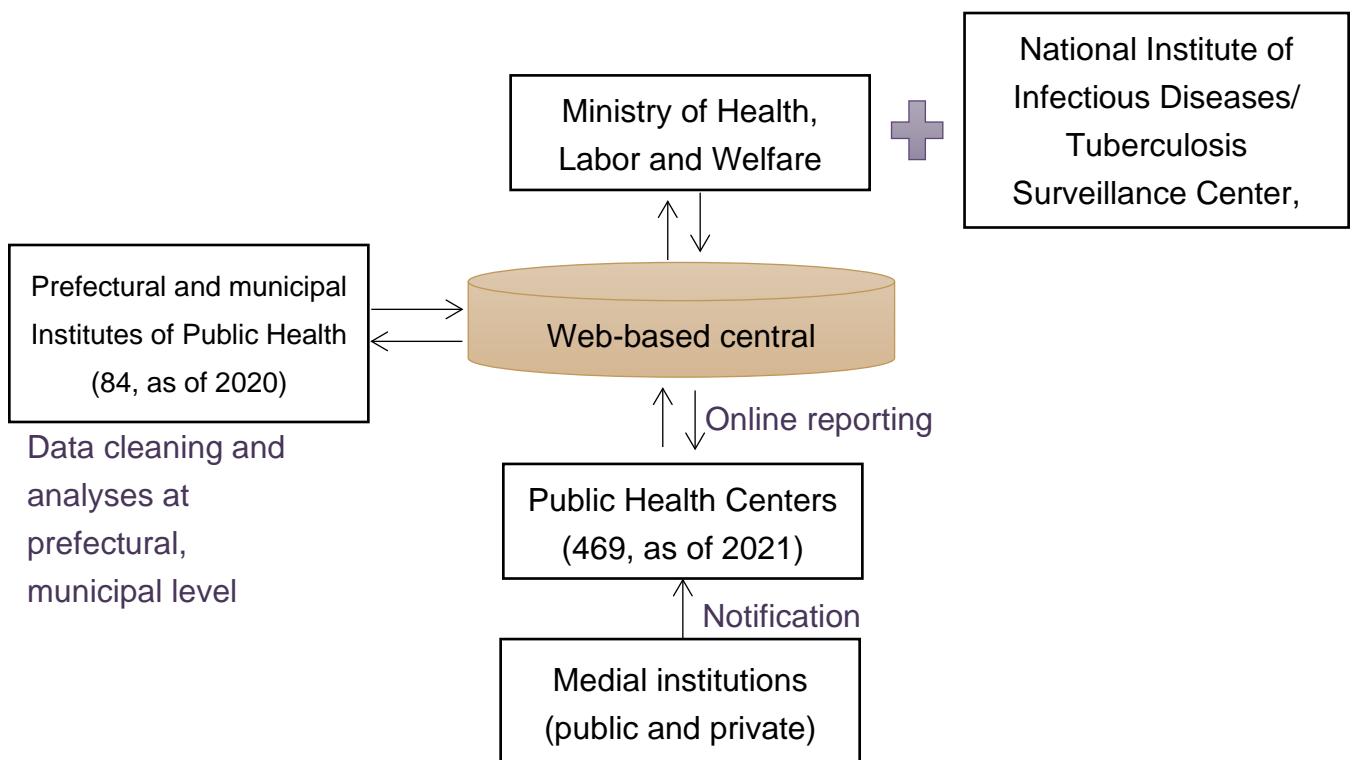
Both TB and LTBI (those diagnosed as being infected but not with active TB, and who were judged as requiring preventive therapy) are notifiable diseases under the Infectious Diseases Control Law. All physicians who diagnose TB or LTBI are requested to report to the local public health centers as soon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

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

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

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

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

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

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

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

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

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

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

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

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

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

The denominators are summarized in Table iii.b.

Table iii.a
Data capture rate,
2020

Prefecture	Country of birth	Occupation	Homeless-ness	Treatment history	Previous treatment regimen	Total delay
1	95.5	96.6	16.3	99.5	85.7	77.6
2	98.3	98.3	29.2	99.2	85.7	76.0
3	100.0	100.0	70.3	98.6	83.3	56.1
4	100.0	98.5	44.4	100.0	66.7	57.5
5	95.2	96.8	39.7	92.1	100.0	25.0
6	100.0	98.6	60.0	97.1	100.0	16.3
7	100.0	100.0	73.8	99.2	66.7	41.4
8	100.0	96.9	34.8	98.3	81.8	32.2
9	100.0	100.0	20.7	98.3	83.3	82.1
10	100.0	98.7	65.1	100.0	85.7	98.9
11	93.5	91.4	51.4	98.5	68.0	33.3
12	98.5	96.4	56.1	99.2	60.0	64.1
13	99.8	98.0	67.7	97.9	73.8	66.8
14	94.4	97.8	25.6	98.1	81.8	39.0
15	91.8	100.0	45.6	99.3	80.0	80.5
16	100.0	100.0	36.6	97.2	57.1	26.2
17	100.0	100.0	54.5	98.0	66.7	89.3
18	98.4	100.0	55.6	95.2	50.0	77.8
19	100.0	100.0	89.6	97.9	0.0	42.3
20	100.0	87.0	34.1	99.3	80.0	54.1
21	100.0	99.6	64.2	99.2	80.0	62.5
22	99.1	98.3	33.6	99.4	55.6	42.7
23	100.0	98.9	84.8	99.1	76.5	84.4
24	97.1	98.9	21.7	99.4	53.3	62.7
25	100.0	96.7	17.2	98.4	25.0	26.4
26	99.0	98.6	63.4	99.0	71.4	58.6
27	99.2	98.8	40.4	99.4	80.7	95.2
28	98.4	98.8	61.0	99.5	72.0	82.1
29	97.7	95.5	57.1	97.7	25.0	84.7
30	100.0	100.0	66.4	98.2	83.3	98.4
31	73.5	100.0	26.5	100.0	NA	42.9
32	98.5	93.9	43.9	90.9	NA	58.8
33	100.0	99.3	19.0	99.3	100.0	73.9
34	94.1	92.1	33.1	98.4	75.0	45.4
35	100.0	99.3	49.6	99.3	50.0	67.6
36	100.0	96.9	35.1	97.9	100.0	69.1
37	100.0	98.9	49.5	98.9	NA	51.2
38	100.0	99.2	40.2	100.0	66.7	82.0
39	85.7	93.9	24.5	100.0	83.3	64.5
40	98.6	96.3	31.1	98.8	69.0	68.6
41	100.0	98.9	20.7	94.3	50.0	53.5
42	86.5	99.4	36.8	98.2	60.0	50.5
43	93.5	97.1	31.8	99.4	83.3	32.5
44	99.1	98.1	58.9	95.3	75.0	97.0
45	100.0	100.0	37.5	100.0	87.5	76.9
46	100.0	98.8	51.8	97.6	60.0	53.7
47	97.8	98.9	76.9	99.5	66.7	42.6
Total	98.1	97.6	49.1	98.7	71.8	65.9

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(cont.)

Prefecture	DM	HIV status	HIV testing status	Culture known TB	Culture known PTB	DST known TB	DST known PTB
1	84.5	1.8	59.7	78.9	84.0	61.4	61.0
2	70.0	0.0	57.5	75.8	75.8	51.5	49.2
3	91.9	1.4	54.1	78.4	85.5	25.6	26.8
4	91.9	1.5	31.9	81.5	87.5	71.6	73.6
5	63.5	0.0	15.9	85.7	86.7	23.5	28.6
6	78.6	2.9	27.1	72.9	80.0	30.0	27.3
7	86.1	1.6	71.3	61.5	66.3	48.1	44.9
8	85.4	2.1	37.3	60.3	63.2	40.0	40.8
9	98.3	17.9	32.4	93.9	99.1	94.3	94.3
10	86.8	5.9	45.4	96.1	99.1	89.0	91.1
11	76.4	3.0	20.9	65.5	69.1	60.2	60.5
12	88.9	0.8	30.8	87.9	91.0	76.1	76.5
13	91.7	42.5	15.3	92.5	95.6	94.0	95.8
14	73.0	1.4	21.8	72.8	75.2	66.1	66.9
15	85.0	4.8	76.9	79.6	86.3	61.2	68.1
16	84.5	2.8	42.3	94.4	95.8	79.2	76.9
17	88.9	1.0	29.3	92.9	98.6	90.8	92.3
18	96.8	0.0	6.3	93.7	91.1	79.5	77.1
19	95.8	8.3	72.9	87.5	89.2	62.5	57.1
20	62.3	2.2	16.7	65.9	72.9	41.5	43.4
21	80.4	0.8	49.1	64.5	71.3	61.3	62.9
22	67.0	0.0	37.1	87.6	88.6	75.6	76.7
23	92.3	3.4	34.8	95.3	98.4	92.4	92.8
24	81.7	3.4	22.9	75.4	78.2	46.0	52.3
25	97.5	2.5	49.2	59.0	55.8	43.1	38.1
26	90.1	0.7	23.3	83.6	88.1	77.7	77.3
27	91.6	1.4	46.9	95.2	97.4	94.0	95.7
28	85.0	1.6	30.4	91.4	96.0	85.0	84.9
29	92.5	0.0	21.8	95.5	99.0	71.4	73.8
30	99.1	0.0	81.8	100.0	100.0	100.0	100.0
31	73.5	0.0	35.3	44.1	47.4	30.0	37.5
32	80.3	1.5	3.0	63.6	58.1	77.1	73.9
33	95.4	0.0	37.3	86.3	89.6	63.7	63.9
34	76.4	0.4	33.9	72.4	79.4	57.0	57.7
35	97.2	0.0	44.7	75.2	78.8	58.6	59.7
36	90.7	0.0	39.2	87.6	90.9	64.7	57.4
37	86.3	0.0	13.7	85.3	84.8	69.8	73.2
38	98.4	2.5	61.5	68.9	77.1	60.0	66.7
39	100.0	0.0	36.7	79.6	86.1	58.1	61.5
40	86.5	0.4	13.1	68.9	72.8	74.0	73.8
41	79.3	0.0	8.0	73.6	78.0	78.3	82.5
42	93.9	0.0	39.9	65.6	69.7	52.6	55.6
43	84.7	1.8	70.0	64.1	74.1	72.2	73.3
44	100.0	0.9	87.9	100.0	100.0	86.4	84.9
45	67.7	0.0	40.6	96.9	100.0	90.7	91.5
46	93.4	0.0	33.7	71.7	75.0	61.1	58.4
47	88.7	1.1	26.9	75.3	81.4	67.3	67.1
Total	86.3	6.9	33.7	82.8	86.5	77.5	78.4

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Table iii.b
Denominators used
to calculate the
capture rate, 2020

Prefecture	Active TB	Total PTB	Active TB, retreatment cases	Symptomatic PTB	Culture positive PTB	Culture positive TB
1	380	282	7	237	177	207
2	120	95	7	75	59	66
3	74	62	6	41	41	43
4	135	104	15	87	72	81
5	63	45	1	28	28	34
6	70	50	3	43	33	40
7	122	89	12	58	49	54
8	287	201	11	149	103	125
9	179	116	6	78	88	105
10	152	115	7	93	101	118
11	675	521	25	366	296	327
12	611	465	40	315	340	381
13	1,589	1,231	61	799	956	1,106
14	808	633	22	433	390	437
15	147	102	5	82	72	85
16	71	48	7	42	39	48
17	99	73	6	56	65	76
18	63	45	2	27	35	44
19	48	37	2	26	28	32
20	138	96	5	74	53	65
21	265	202	10	128	97	111
22	348	245	18	164	180	217
23	924	678	34	487	539	622
24	175	110	15	75	65	87
25	122	86	4	53	42	51
26	292	219	14	157	163	184
27	1,400	1,077	57	785	845	974
28	641	454	25	368	377	447
29	133	97	8	72	80	91
30	110	86	6	63	73	85
31	34	19	1	14	8	10
32	66	43	4	34	23	35
33	153	125	2	92	83	91
34	254	180	12	130	111	135
35	141	104	4	71	72	87
36	97	66	5	55	54	68
37	95	66	0	43	41	53
38	122	83	9	61	54	65
39	49	36	6	31	26	31
40	512	356	29	264	206	254
41	87	59	2	43	40	46
42	163	109	5	91	63	76
43	170	108	6	83	75	90
44	107	87	4	67	73	81
45	96	84	8	65	71	75
46	166	128	5	108	77	90
47	186	129	3	94	82	101
Total	12,739	9,446	546	6,807	6,645	7,731

Appendix IV: Supplementary tables

Table s1. Number and rate of all active TB notifications, 2010-2020

	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

Table s2. Number of TB notifications by age group and sex, 2020

Age groups	Total	Male	Female
	n	n	n
0-4	27	14	13
5-9	9	6	3
10-14	16	7	9
15-19	75	36	39
20-24	505	251	254
25-29	522	294	228
30-34	360	187	173
35-39	326	153	173
40-44	329	178	151
45-49	412	261	151
50-54	464	292	172
55-59	460	313	147
60-64	511	364	147
65-69	751	536	215
70-74	1,074	746	328
75-79	1,473	920	553
80-84	1,781	1099	682
85-89	1,905	1032	873
90+	1,739	818	921
Total	12,739	7,507	5,232

Table s3. Newly notified cases by age groups, 1987-2020

	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

Table s4. Pulmonary TB cases by culture test results, 2012-2020

	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

Table s5. Proportion of those with cavity among pulmonary TB cases by age groups and sex, 2020

	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	33.3	1	20.0
10-14	0	0.0	5	83.3	5	41.7
15-19	12	37.5	7	21.2	19	29.2
20-24	59	29.9	38	21.0	97	25.7
25-29	61	27.4	44	26.3	105	26.9
30-34	49	33.8	27	21.1	76	27.8
35-39	36	30.5	28	22.2	64	26.2
40-44	44	32.4	23	21.3	67	27.5
45-49	70	34.5	27	27.0	97	32.0
50-54	95	41.5	32	29.9	127	37.8
55-59	86	34.8	23	24.2	109	31.9
60-64	121	42.5	24	24.0	145	37.7
65-69	165	37.6	42	31.3	207	36.1
70-74	210	36.7	54	24.8	264	33.4
75-79	204	29.9	90	25.9	294	28.5
80-84	221	28.5	92	22.1	313	26.2
85-89	200	28.1	136	25.4	336	26.9
90+	134	23.0	159	26.1	293	24.6
Total	1767	31.5	852	24.9	2619	29.0

Table s6. Proportion of those with smear positive among pulmonary TB cases by age groups and sex, 2020

	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	0.0
5-9	0	0.0	0	0.0	0	0.0
10-14	0	0.0	3	50.0	3	25.0
15-19	9	28.1	11	31.4	20	29.9
20-24	67	32.7	60	31.9	127	32.3
25-29	65	28.4	63	37.3	128	32.2
30-34	54	36.7	47	35.1	101	35.9
35-39	48	40.3	45	34.9	93	37.5
40-44	56	40.9	41	36.6	97	39.0
45-49	93	44.7	36	35.0	129	41.5
50-54	109	46.2	41	37.6	150	43.5
55-59	118	45.7	39	40.2	157	44.2
60-64	152	52.1	48	46.6	200	50.6
65-69	234	51.5	55	39.6	289	48.7
70-74	282	47.7	103	45.8	385	47.2
75-79	357	50.6	183	51.4	540	50.8
80-84	471	57.3	241	53.4	712	55.9
85-89	419	55.6	323	56.0	742	55.7
90+	349	56.1	393	58.7	742	57.5
Total	2,883	49.4	1,732	47.9	4,615	48.9

Table s7. Number and proportion of retreatment cases, 2010-2020

	New	Retreatment	Unknown	Total
2007	23,312	1,685	314	25,311
2008	22,500	1,836	424	24,760
2009	22,009	1,751	410	24,170
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

Table s8. Proportion of drug susceptibility test results known of culture confirmed pulmonary TB, 2012- 2020

	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

PTB: pulmonary tuberculosis, DST: drug susceptibility test

Table s9a. Drug resistance among pulmonary TB, new cases, 2012-2020

	INH resistance				RFP resistance				MDR			
	Resistant	Not resistant	Total	% resistant	Resistant	Not resistant	Total	% resistant	Resistant	Not resistant	Total	% resistant
2012	310	7,367	7,677	4.0	46	7,631	7,677	0.6	38	7,639	7,639	0.5
2013	326	6,840	7,166	4.5	42	7,124	7,166	0.6	31	7,135	7,135	0.4
2014	288	6,816	7,104	4.1	58	7,046	7,104	0.8	40	7,064	7,064	0.6
2015	317	6,818	7,135	4.4	58	7,077	7,135	0.8	33	7,102	7,102	0.5
2016	316	6,962	7,278	4.3	56	7,222	7,278	0.8	37	7,241	7,241	0.5
2017	338	7,096	7,434	4.5	62	7,372	7,434	0.8	41	7,393	7,393	0.6
2018	331	6,840	7,171	4.6	68	7,103	7,171	0.9	41	7,130	7,130	0.6
2019	319	5,969	6,288	5.1	52	6,236	6,288	0.8	35	6,253	6,253	0.6
2020	260	4,678	4,938	5.3	44	4,894	4,938	0.9	31	4,907	4,907	0.6

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

Table s9b. Drug resistance among pulmonary TB, retreatment cases, 2012-2020

	INH resistance				RFP resistance				MDR			
	Resistant	Not resistant	Total	% resistant	Resistant	Not resistant	Total	% resistant	Resistant	Not resistant	Total	% resistant
2012	67	487	554	12.1	26	528	554	4.7	22	532	554	4.0
2013	35	400	435	8.0	22	413	435	5.1	16	419	435	3.7
2014	57	392	449	12.7	17	432	449	3.8	15	434	449	3.3
2015	49	363	412	11.9	18	394	412	4.4	14	398	412	3.4
2016	51	307	358	14.2	16	342	358	4.5	12	346	358	3.4
2017	36	326	362	9.9	15	347	362	4.1	9	353	362	2.5
2018	41	282	323	12.7	16	307	323	5.0	11	312	323	3.4
2019	36	250	286	12.6	13	273	286	4.5	9	277	286	3.1
2020	31	170	201	15.4	14	187	201	7.0	13	188	201	6.5

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

Table s10. Proportions of those with drug resistance, by country of birth and age groups, 2020

Age groups	Japan-born					Foreign-born				
	DST confirmed PTB	INH resistant	% INH resistant	MDR	% MDR	DST confirmed PTB	INH resistant	% INH resistant	MDR	% MDR
20-39	265	24	9.1	3	1.1	394	51	12.9	21	5.3
40-59	600	42	7.0	5	0.8	78	9	11.5	1	1.3
60-79	1570	85	5.4	6	0.4	31	6	19.4	0	0.0
80+	2171	74	3.4	9	0.4	9	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, 2010-2020

COB: country of birth	No.cases	NoI 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

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, 2010-2020

Notification year	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	1411	11.3	9	17.3	428	74.6	546	62.3	214	33.0	110	12.8	104	1.1

Table s13. Foreign-born TB notifications in selected country of birth, 2010-2020

	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

Table s14. Foreign-born TB notifications by year of entry to Japan, 2012-2020

	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

Table s15. Proportions of those with delay, 2010-2020

	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

*Note: total excluding those cases without data on delay

Table s16. LTBI notifications and the proportion of foreign-born, 2010-2020

	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

COB: country of birth

Table s17. LTBI notification by age groups, 2010-2020

	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

Table s18. Treatment regimen upon notification by age groups, 2020

	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Total
HREZ or HRSZ	4	11	536	817	598	779	842	1,487	1,718	810	7,602
Other 4 or more drug regimen, including HRZ	20	10	4	8	3	15	14	26	41	33	174
Other 3 or more drug regimen, including HR	1	2	10	21	24	26	50	211	1,243	2,399	3,987
HR	0	1	0	0	1	1	4	9	18	40	74
Other 2 drug regimen	0	0	0	1	1	2	6	4	26	25	65
Other 3 drug regimen	1	0	11	12	9	16	24	22	42	54	191
INH	1	1	2	2	0	7	4	6	7	6	36
Other monotherapy	0	0	0	0	2	0	0	0	4	6	12
No treatment	0	0	11	12	13	15	15	41	119	223	449
Unknown	0	0	6	9	4	15	12	19	36	48	149
Total	27	25	580	882	655	876	971	1,825	3,254	3,644	12,739

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