Report on the Third-Round Thyroid Survey
(Second Full-Scale Thyroid Survey)

1. Summary

1.1 Purpose

In order to monitor the long-term health of children, we are now engaged in the second Full-scale Thyroid Survey (the Third-Round Survey). The first round was Preliminary Baseline Survey for initial assessment of thyroid glands, and the second round was the First Full-Scale Thyroid Survey to assess any changes.

1.2 Survey Population

In addition to the participants of Preliminary Baseline Survey (Fukushima residents born between 2 April 1992 and 1 April 2011), the Full-Scale Thyroid Survey (from and after the Second-Round Survey) also includes those who were born between 2 April 2011 and 1 April 2012.

1.3 Implementation Period

The Second Full-Scale Survey started on 1 May 2016 and covered examinees up to age 20 on a municipality-by-municipality schedule to FY 2017. Thereafter, we revised the schedule of examinations so that examinees can take examinations every five years – at ages 25, 30, 35, etc. – to make it easier for examinees to remember when they are due for examination. However, the interval between the examination at age 25 and the previous one should not be greater than 5 years.

1.4 Responsible Organizations

Fukushima Prefecture commissioned Fukushima Medical University (FMU) to conduct the survey in cooperation with organizations inside and outside Fukushima (the number of contracts is as of 30 June 2019).

1.4-1 The primary examination

Inside Fukushima Prefecture	81 medical facilities
Outside Fukushima Prefecture	119 medical facilities

1.4-2 The confirmatory examination

Inside Fukushima Prefecture	5 medical facilities including FMU
Outside Fukushima Prefecture	37 medical facilities

1.5 Method

1.5-1 The primary examination

We use ultrasonography for examination of the thyroid gland.

Assessments are made by specialists on the basis of the following criteria:

-Diagnostic criteria (A)

Those with A1 or A2 test results are recommended for watchful waiting until they undergo the primary examination, starting from April 2018.

A1: No nodules / cysts

A2: Nodules ≤5.0 mm or cysts ≤20.0 mm

-Diagnostic criteria (B)

Those with B test results are advised to take the confirmatory examination.

B: Nodules ≥5.1 mm or cysts ≥20.1 mm

Some A2 test results may be re-classified as B results when clinically indicated.

-Diagnostic criteria (C)

Those with C test results are advised to take the confirmatory examination.

C: Immediate need for confirmatory examination.

1.5-2 The confirmatory examination

We conduct ultrasonography, blood test, urine test, and fine needle aspiration cytology (FNAC) if needed for those with B or C test results. Priority is given to those in urgent clinical need.

We recommend medical follow-up for those requiring it due to confirmatory test results.

1.5-3 Flow chart

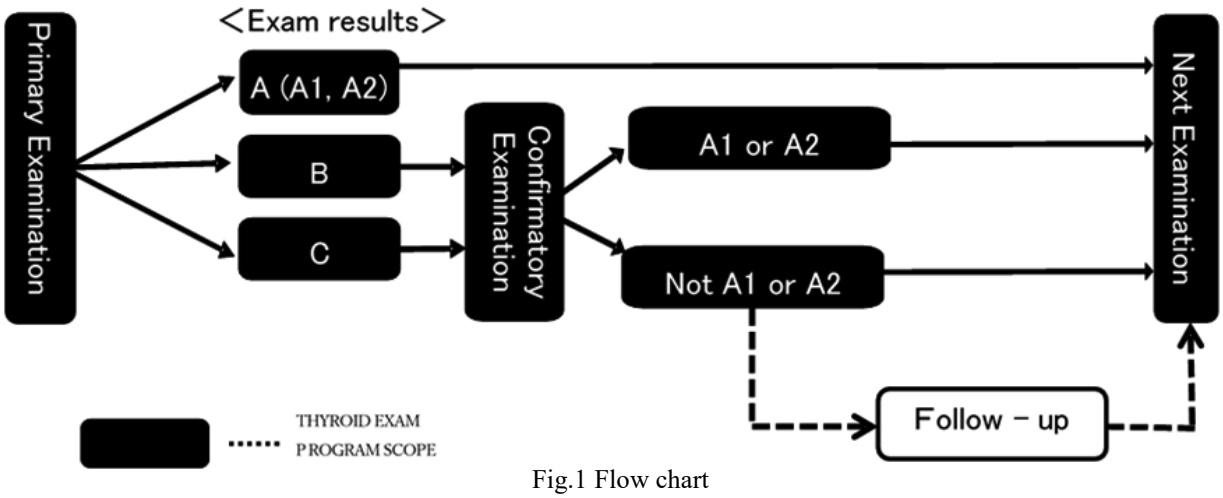


Fig.1 Flow chart

1.6 Municipalities Surveyed

The municipalities where examinations were carried out in FY 2016 and FY 2017 are as follows:

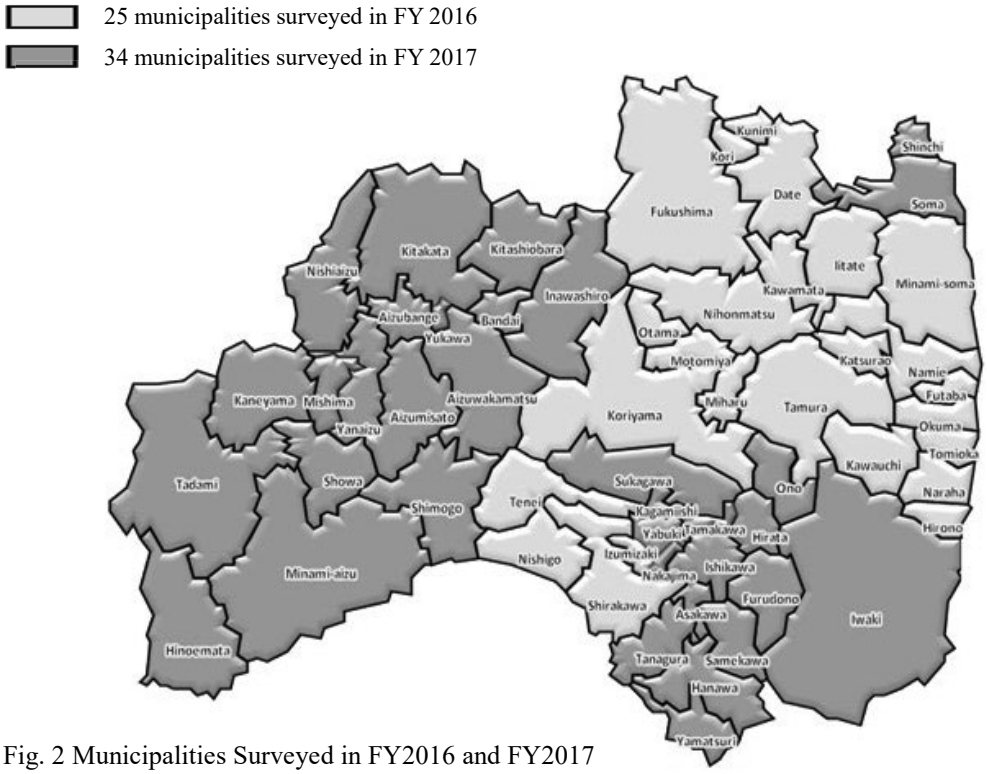


Fig. 2 Municipalities Surveyed in FY2016 and FY2017

2. Results as of 30 June 2019

2.1 Results of the Primary Examination

2.1-1 Progress report

The primary examination started on 1 May 2016 for at 336,669 people in 59 municipalities (25 municipalities in FY2016 and 34 municipalities in FY2017) and so far carried out for 217,879 people (64.7%). (Examination status for each municipality and that of prefectures other than Fukushima are as in Appendix 1 and Appendix 2)

Results have been confirmed for 217,869 participants (100.0%) and notifications have been sent accordingly. (The result for each municipality is as Appendix 3)

Thus far, 76,409 (35.1%) were classified as A1, 139,961 (64.2%) as A2, 1,499 (0.7%) as B, and none as C.

Table 1 Progress and results of the primary examination As of 30 June 2019

	Survey population	Participants		Exam results				
		Proportion (%)	Outside Fukushima	Proportion (%)	Class (%)			
					A		Requiring confirmatory exam	
	a	b (b/a)		c (c/b)	A1 d (d/c)	A2 e (e/c)	B f (f/c)	C g (g/c)
FY 2016	191,876	126,368 (65.9)	8,900	126,363 (100.0)	44,031 (34.8)	81,529 (64.5)	803 (0.6)	0 (0.0)
FY 2017	144,793	91,511 (63.2)	3,593	91,506 (100.0)	32,378 (35.4)	58,432 (63.9)	696 (0.8)	0 (0.0)
Total	336,669	217,879 (64.7)	12,493	217,869 (100.0)	76,409 (35.1)	139,961 (64.2)	1,499 (0.7)	0 (0.0)

Table 2. Number and proportion participatns with nodules/cysts As of 30 June 2019

	Number of participants with confirmed results	Number and proportion of participants with nodules/cysts			
		Nodules		Cysts	
	a	≥5.1 mm b (b/a)	≤5.0 mm c (c/a)	≥20.1 mm d (d/a)	≤20.0 mm e (e/a)
FY 2016	126,363	803 (0.6)	429 (0.3)	0 (0.0)	81,912 (64.8)
FY 2017	91,506	693 (0.8)	399 (0.4)	3 (0.0)	58,733 (64.2)
Total	217,869	1,496 (0.7)	828 (0.4)	3 (0.0)	140,645 (64.6)

- Proportions are rounded to the 1st decimal place. This also applies to other tables.
- The participants in FY2016 and FY 2017 surveys are those received the Full-Scale Survey examination conducted on a municipality-by-municipality basis (until they are older than 20 years old), whereas those who receive examination at 5-year intervals (those born in FY1992 and FY1993) are excluded.
- The results of those received examination at 5-year intervals will be shown separately. Those born in FY1992 (approx. 23,000) and FY1993 (approx. 22,000) will be covered in FY 2017 and FY2018 surveys, respectively.

2.1-2 Participation rates by age group

The participation rate of the age group of 18 or older (age as of 1 April 2016) in municipalities surveyed in FY 2016 was 17.1%.

The participation rate of the age group of 18 or older (age as of 1 April 2017) in municipalities surveyed in FY 2017 was 16.5%.

Table 3 Participation rates by age group

As of 30 June 2019

		Total	Age group (years)			
FY 2016	Age group (years)		4-7	8-12	13-17	18-23
	Survey population (a)	191,876	36,620	51,003	56,840	47,413
	Participants (b)	126,368	26,425	45,553	46,267	8,123
	Proportion (%) (b/a)	65.9	72.2	89.3	81.4	17.1
FY 2017	Age group (years)		5-7	8-12	13-17	18-24
	Survey population (a)	144,793	19,316	37,165	41,995	46,317
	Participants (b)	91,511	14,957	33,947	34,966	7,641
	Proportion (%) (b/a)	63.2	77.4	91.3	83.3	16.5
Total	Survey population (a)	336,669	55,936	88,168	98,835	93,730
	Participants (b)	217,879	41,382	79,500	81,233	15,764
	Proportion (%) (b/a)	64.7	74.0	90.2	82.2	16.8

・ Age groups are formed with the age as of 1 April of each fiscal year.

2.1-3 Comparison of Full-scale Thyroid Surveys

Comparison of Third- and Second-Round Examination results is as shown in Table 4.

Among 201,499 participants who were diagnosed as A1 or A2 in the Second-Round Examination, 200,804(99.7%) had A1 or A2 results, and 695 (0.3%) were diagnosed as B in the Third-Round Examination Program.

Among 1,147 participants who were diagnosed as B in the Second-Round Examination, 442 (38.5%) had A1 or A2 results, and 705 (61.5%) were diagnosed as B in the Third-Round Examination Program.

Table 4 Comparison of Full-scale Thyroid Survey

As of 30 June 2019

			Results of the Second-round Survey*1 (%) a	Results of the Third-Round Survey *2			
				A		B	C
				A1 b b/a (%)	A2 c c/a (%)	d d/a (%)	e e/a (%)
Results of the Second-round Survey	A	A1	79,741 (100.0)	57,627 (72.3)	21,978 (27.6)	136 (0.2)	0 (0.0)
		A2	121,758 (100.0)	12,170 (10.0)	109,029 (89.5)	559 (0.5)	0 (0.0)
	B		1,147 (100.0)	62 (5.4)	380 (33.1)	705 (61.5)	0 (0.0)
	C		0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	No participation		15,223 (100.0)	6,550 (43.0)	8,574 (56.3)	99 (0.7)	0 (0.0)
Total			217,869 (100.0)	76,409 (35.1)	139,961 (64.2)	1,499 (0.7)	0 (0.0)

*1 Upper figures show a previous (Second Round) diagnosis for the participants in this (Third Round) survey whose results have been confirmed. They are not the breakdown of the total number of the previous-round participants (270,557)

*2 Upper figures show the breakdown of the Third-Round Survey participants who were diagnosed for each diagnostic class in the Second-Round Survey. Lower figures are their proportion (%).

2.2 Results of the Confirmatory Examination

2.2-1 Progress report

Confirmatory Examinations have been conducted since October 2016 and so far 1,090 (72.7%) of 1,499 people who were recommended for a confirmatory examination as a result of the primary examination have received the examination and 1,038(95.2%) have completed the entire procedure of the examination (Implementation status of each municipality is shown in Appendix 5).

Of the foregoing 1,038 participants, 106 (A1: 8, A2: 98)(10.2%) were confirmed to meet A1 or A2 diagnostic criteria by the Primary Examination standards (including those with other thyroid conditions). Remaining 932 (89.8%) people were confirmed to be non-equivalent to A1 or A2.

Table 5 Progress and results of the confirmatory examination As of 30 June 2019

	Number of those requiring confirmatory exam a	Participants Proportion (%) b (b/a)	Confirmatory exam coverage (%) c (c/b)	Confirmed exam results A1 d (d/c)	A2 e (e/c)	Not A1 or A2 f (f/c)	FNAC g (g/f)
FY 2016	803	605 (75.3)	573 (94.7)	5 (0.9)	57 (9.9)	511 (89.2)	37 (7.2)
FY 2017	696	485 (69.7)	465 (95.9)	3 (0.6)	41 (8.8)	421 (90.5)	35 (8.3)
Total	1,499	1,090 (72.7)	1,038 (95.2)	8 (0.8)	98 (9.4)	932 (89.8)	72 (7.7)

2.2-2 Results of fine needle aspiration cytology (FNAC)

Among those who underwent FNAC, 29 had nodules classified as malignant or suspicious for malignancy. 12 of them were male, and 17 were female. Participants' age at the time of the confirmatory examination ranged from 12 to 23 years (mean age: 16.4 ± 2.8 years). The minimum and maximum tumor diameters were 5.6 mm and 33.0 mm. Mean tumor diameter was 13.2 ± 6.5 mm.

Results of these 29 participants in the Full-Scale Survey (the Second-Round Survey) were: 19 were classified as A (A1: 6, A2: 13), 7as B and 3did not participated in the survey.

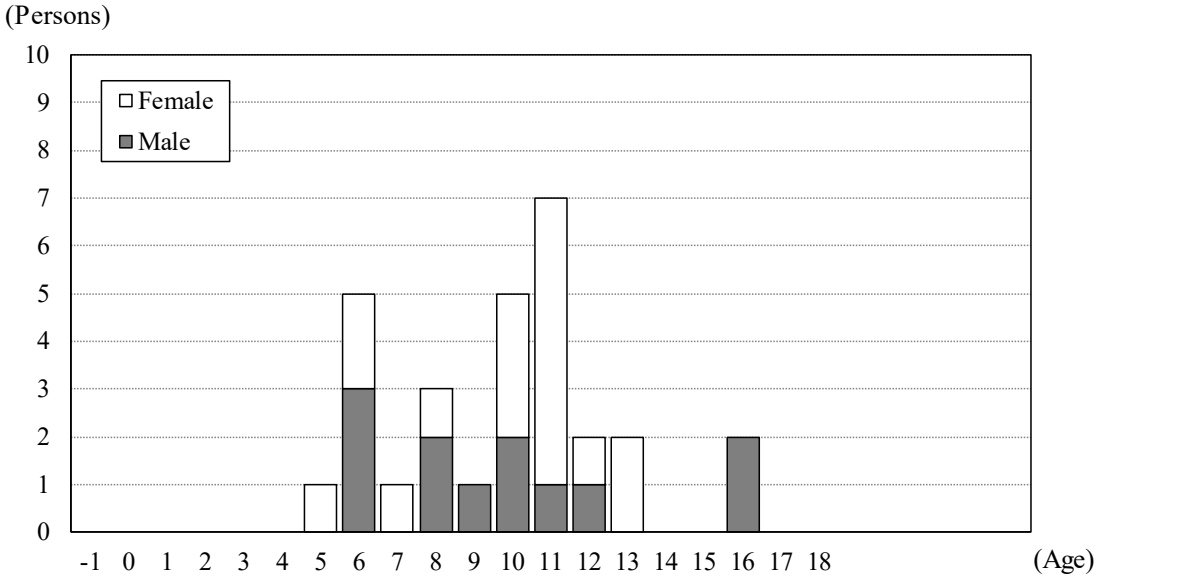
Table 6. Results of FNAC

A. Municipalities surveyed in FY 2016	
・Malignant or suspicious for malignancy：	12*)
・Male to female ratio：	6:6
・Mean age (SD, min-max):	16.3 (3.0, 12-23), 10.3 (2.8, 6-16) at the time of disaster
・Mean tumor size:	14.0 mm (6.0 mm, 8.7-30.4 mm)
B. Municipalities surveyed in FY 2017	
・Malignant or suspicious for malignancy：	17*)
・Male to female ratio：	6:11
・Mean age (SD, min-max):	16.5 (2.8, 12-22), 9.4 (2.9, 5-16) at the time of disaster
・Mean tumor size:	12.6 (7.0 mm, 5.6-33.0 mm)
C. Total	
・Malignant or suspicious for malignancy：	29*)
・Male to female ratio：	12:17
・Mean age (SD, min-max):	16.4 (2.8, 12-23), 9.8 (2.9, 5-16) at the time of disaster
・Mean tumor size:	13.2 mm (6.5 mm, 5.6-33.0 mm)

*) Surgical cases are as shown in Appendix 6.

2.2-3 Age distribution of malignant or suspicious for malignancy cases diagnosed by FNAC

Age distributions of 29 people classified as malignant or suspicious for malignancy by age as of 11 March 2011 is shown in Fig. 3, and by age as of the confirmatory examination in Fig. 4.



The horizontal axis begins at -1 to include residents of Fukushima Prefecture born between 2 April 2011 and 1 April 2012

Fig.3 Age as of 11 March 2011

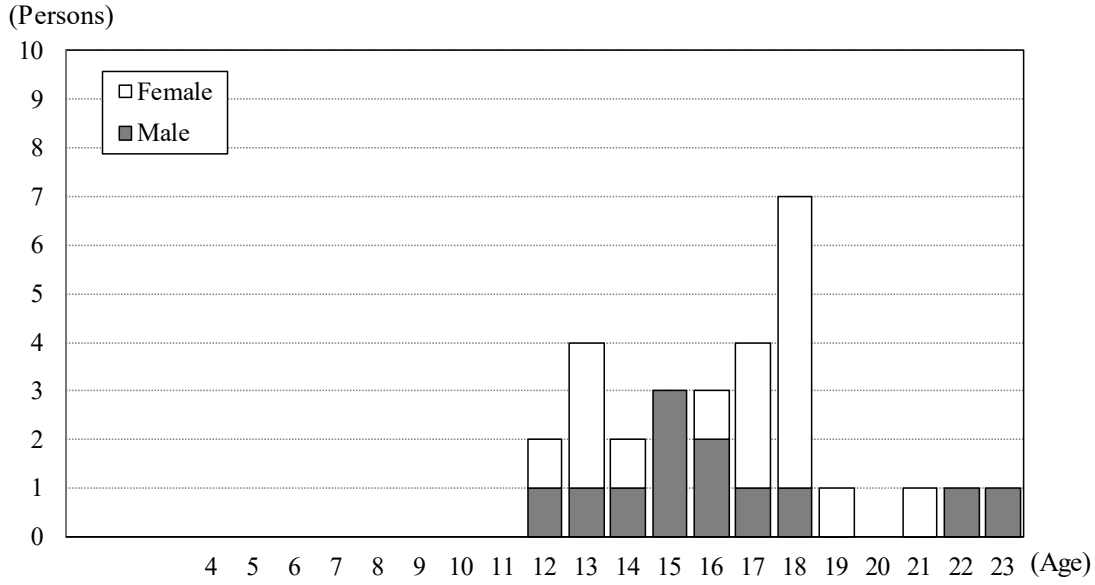


Fig. 4 Age as of the date of confirmatory examination

2.2-4 Basic Survey results of those who were diagnosed as malignant or suspicious for malignancy by FNAC

11(37.9%) of the 29 people participated in the Basic Survey (radiation dose estimates), and 11 received the results. The highest effective dose documented was 1.5 mSv.

Table 7. Breakdown of dose estimates for participants of the Basic Survey As of 30 June 2019

Effective dose (mSv)	Age at the time of the disaster									
	0-5		6-10		11-15		16-18		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<1	0	0	3	0	0	4	0	0	3	4
1-1.9	0	0	1	1	1	1	0	0	2	2
2-4.9	0	0	0	0	0	0	0	0	0	0
5-9.9	0	0	0	0	0	0	0	0	0	0
10-19.9	0	0	0	0	0	0	0	0	0	0
≥20	0	0	0	0	0	0	0	0	0	0
Total	0	0	4	1	1	5	0	0	5	6

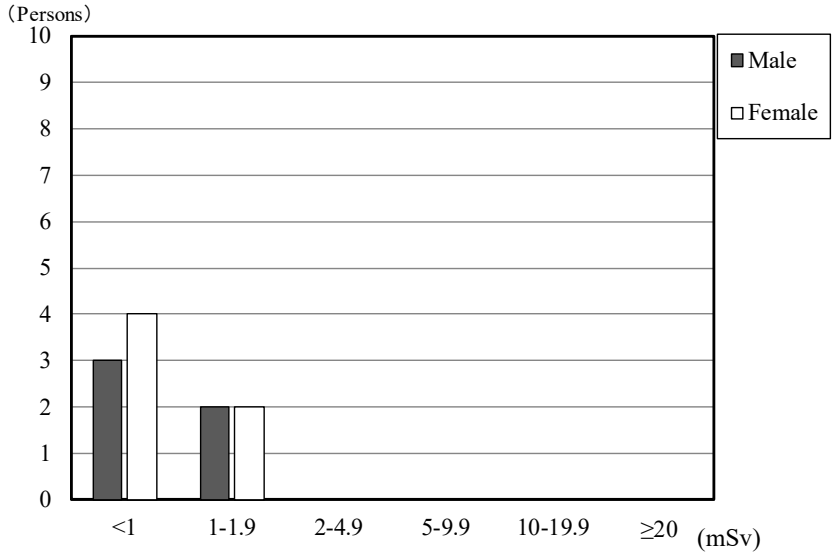


Fig. 5 Effective dose of the participants

2.2-5 Blood test and urinary iodine test results as of 30 June 2019

Table 8. Blood test results Mean±SD (Abnormal value)

	FT4 1) (ng/dL)	FT3 2) (pg/mL)	TSH 3) (μIU/mL)	Tg 4) (ng/mL)	TgAb 5) (IU/mL)	TPOAb 6) (IU/mL)
Reference Range	0.95-1.74 7)	2.13-4.07 7)	0.340-3.880 7)	≤33.7	<28.0	<16.0
29 malignant or suspicious	1.2 ± 0.1 (3.4%)	3.6 ± 0.7 (17.2%)	1.8 ± 1.2 (17.2%)	30.6 ± 39.3 (27.6%)	20.7%	13.8%
Other 978	1.2 ± 0.2 (6.2%)	3.5 ± 0.5 (6.3%)	1.3 ± 4.4 (9.0%)	29.2 ± 98.8 (14.4%)	8.2%	12.8%

1) FT4: free thyroxine; thyroid hormone binding 4 iodines; higher among patients with thyrotoxicosis (such as Graves' disease) and lower with hypothyroidism (such as Hashimoto's thyroiditis).
2) FT3: free triiodothyronine; thyroid hormone binding 3 iodines; higher among patients with thyrotoxicosis (such as Graves' disease) and lower with hypothyroidism (such as Hashimoto's thyroiditis).
3) TSH: thyroid-stimulating hormone; higher among patients with Hashimoto's disease and lower with Graves' disease.
4) Tg: thyroglobulin; higher when thyroid tissue is destroyed or when neoplastic tissue produces thyroglobulin.
5) TgAb: anti-thyroglobulin antibody; higher among patients with Hashimoto's disease and Graves' disease.
6) TPOAb: anti-thyroid peroxidase antibody; higher among patients with Hashimoto's disease or Graves' disease.
7) Reference interval varies according to age.

Table 9 Urinary iodine test results (μg/day)

	Minimum	25th percentile	Median	75th percentile	Maximum
29 malignant or suspicious	69	149	230	406	3510
Other 980	26	109	176	323	8910

2.2-6 Confirmatory Examination results by area as of 30 June 2019

The proportion of malignancy or suspicious of malignancy was 0.03% in Hamadori, 0.02% in 13 municipalities in the nationally designated evacuation zones and Aizu, and 0.01% in Nakadori.

Table 10 Confirmatory examination results by area

Area	Number of Participants a	Participants who required confirmatory exam b	Proportion who required confirmatory exam (%) b/a	Number who underwent confirmatory exam	Malignant or Suspicious cases c	Proportion of malignant or suspicious cases (%) c/a
13 municipalities [1)]	27,080	212	0.8	160	5	0.02
Nakadori [2)]	121,903	759	0.6	560	8	0.01
Hamadori [3)]	41,289	323	0.8	229	11	0.03
Aizu [4)]	27,607	205	0.7	141	5	0.02
Total	217,879	1,499	0.7	1,090	29	0.01

1) Tamura, Minami-soma, Date, Kawamata, Hirono, Naraha, Tomioka, Kawauchi, Okuma, Futaba, Namie, Katsurao, Iitate
2) Fukushima, Koriyama, Shirakawa, Sukagawa, Nihonmatsu, Motomiya, Kori, Kunimi, Otama, Kagamiishi, Tenei, Nishigo, Izumizaki, Nakajima, Yabuki, Tanagura, Yamatsuri, Hanawa, Samegawa, Ishikawa, Tamakawa, Hirata, Asakawa, Furudono, Miharu, Ono
3) Iwaki, Soma, Shinchi
4) Aizuwakamatsu, Kitakata, Shimogo, Hinoemata, Tadami, Minami-aizu, Kitashiobara, Nishiaizu, Bandai, Inawashiro, Aizubange, Yugawa, Yanaizu, Mishima, Kaneyama, Showa, Aizumisato

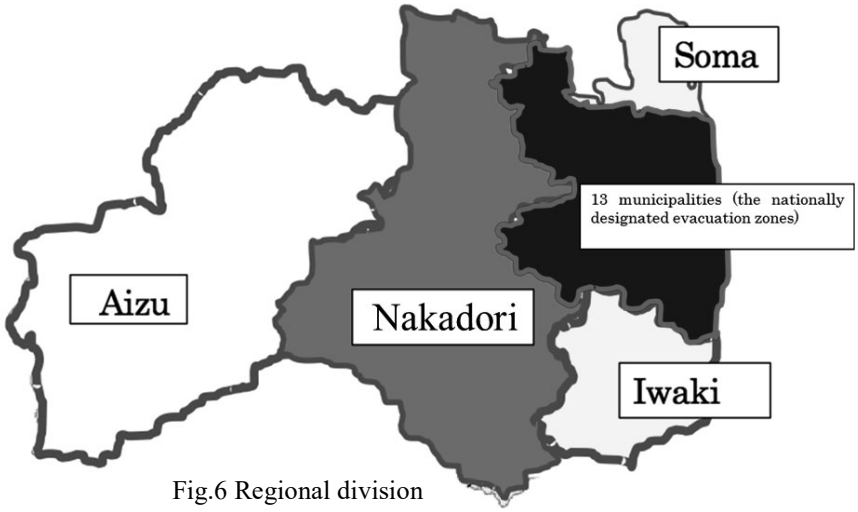


Fig.6 Regional division

2.3 Mental Health Care

2.3-1 Support for primary examination participants

Since July 2015, we offer person-to-person explanations to participants at public venues where primary examinations take place. After the examination, medical doctors explain the results showing the ultrasound image in private consultation booths set up at the venue. As of 30 June2019, 27,838 (84.9%) of 32,791 participants visited the consultation booths. In case the booths cannot be set up at school, alternatives such as briefing sessions at schools and telephonic supports are offered.

※ The number of those who used the consultation booths includes participants receiving the Second-Round Survey.

2.3-2 Support for confirmatory examination participants

We have set up a support team for participants of the confirmatory examination within Fukushima Medical University to address their anxiety and concerns, as well as online support for Q&A and counseling.

Since the start of the Full-Scale Thyroid Survey, 1,173participants (413males and 760 females) have received support as of 30 June 2019. The number of supports provided was 2,428 in total. Of these, 1,345 (55.4%) received support at their first examination and 1,017 (41.9%) at subsequent examination (includes 139 (5.7%) at FNAC) – and 66 (2.7%) at informed consent.

For those who have proceeded to the health insurance medical care, we continue to provide support in cooperation with the teams of medical staff at hospitals.

※ The number of those who used the consultation booths at the confirmatory examination includes participants receiving the examination second time.

Appendix 1

Thyroid ultrasound examination (TUE) coverage by municipality — As of 30 June 2019

	Survey population	Participants		Proportion (%)	Number and proportion*2 of participants by age group				Participants living outside Fukushima	Proportion (%)
			Outside Fukushima*1		4-9	10-14	15-19	≥20		
	a	b		b/a					c*3	c/b
Municipalities surveyed in FY 2016										
Kawamata	2,142	1,409	34	65.8	408	544	409	48	77	5.5
					29.0	38.6	29.0	3.4		
Namie	3,315	1,954	508	58.9	581	664	576	133	585	29.9
					29.7	34.0	29.5	6.8		
Iitate	987	604	23	61.2	174	261	151	18	42	7.0
					28.8	43.2	25.0	3.0		
Minami-soma	11,540	7,076	1,236	61.3	2,208	2,726	1,839	303	1,339	18.9
					31.2	38.5	26.0	4.3		
Date	10,210	7,085	242	69.4	2,028	2,674	2,095	288	262	3.7
					28.6	37.7	29.6	4.1		
Tamura	6,344	4,054	99	63.9	1,269	1,594	1,105	86	183	4.5
					31.3	39.3	27.3	2.1		
Hirono	975	546	66	56.0	163	185	154	44	62	11.4
					29.9	33.9	28.2	8.1		
Naraha	1,281	771	99	60.2	214	270	222	65	101	13.1
					27.8	35.0	28.8	8.4		
Tomioka	2,751	1,474	298	53.6	393	509	450	122	327	22.2
					26.7	34.5	30.5	8.3		
Kawauchi	297	171	15	57.6	47	72	49	3	15	8.8
					27.5	42.1	28.7	1.8		
Okuma	2,259	1,343	270	59.5	418	496	349	80	303	22.6
					31.1	36.9	26.0	6.0		
Futaba	1,133	464	117	41.0	139	184	117	24	125	26.9
					30.0	39.7	25.2	5.2		
Katsurao	211	129	4	61.1	36	50	32	11	10	7.8
					27.9	38.8	24.8	8.5		
Fukushima	49,340	34,099	2,096	69.1	10,281	12,202	10,176	1,440	2,379	7.0
					30.2	35.8	29.8	4.2		
Nihonmatsu	9,308	6,347	230	68.2	1,955	2,456	1,747	189	250	3.9
					30.8	38.7	27.5	3.0		
Motomiya	5,615	3,898	124	69.4	1,316	1,445	1,030	107	128	3.3
					33.8	37.1	26.4	2.7		
Otama	1,468	1,051	34	71.6	358	405	256	32	33	3.1
					34.1	38.5	24.4	3.0		
Koriyama	59,469	38,112	2,849	64.1	11,583	14,398	10,610	1,521	3,045	8.0
					30.4	37.8	27.8	4.0		
Kori	1,854	1,354	39	73.0	424	501	370	59	39	2.9
					31.3	37.0	27.3	4.4		
Kunimi	1,405	1,020	30	72.6	275	385	304	56	31	3.0
					27.0	37.7	29.8	5.5		
Tenei	966	634	24	65.6	191	258	164	21	23	3.6
					30.1	40.7	25.9	3.3		
Shirakawa	11,352	7,647	295	67.4	2,261	2,853	2,251	282	365	4.8
					29.6	37.3	29.4	3.7		
Nishigo	3,722	2,560	110	68.8	787	951	705	117	140	5.5
					30.7	37.1	27.5	4.6		
Izumizaki	1,163	799	12	68.7	239	310	222	28	19	2.4
					29.9	38.8	27.8	3.5		
Miharu	2,769	1,767	46	63.8	454	628	595	90	43	2.4
					25.7	35.5	33.7	5.1		
Subtotal	191,876	126,368	8,900	65.9	38,202	47,021	35,978	5,167	9,926	7.9
					30.2	37.2	28.5	4.1		

*1) The number of participants who received the examination at facilities outside Fukushima or by teams dispatched from FMU (as of 31 May 2019)

*2) The upper layer shows the number of participants, and the lower layer shows the proportion of participants from each municipality.

*3) The number of participants who have resident registration outside of Fukushima.

・ Age groups were formed based on the age at the Full-Scale Thyroid Survey (the Third-Round Survey). This applies to other tables hereafter.

As of 30 June 2019

	Survey population	Participants		Proportion (%)	Number and proportion *2 of participants by age group				Participants living outside Fukushima *3	Proportion (%)
			Outside Fukushima*1		4-9	10-14	15-19	≥20		
	a	b		b/a					c	c/b
Municipalities surveyed in FY 2017										
Iwaki	56,810	36,618	2,005	64.5	8,793	13,724	11,600	2,501	2,001	5.5
					24.0	37.5	31.7	6.8		
Sukagawa	14,113	9,247	275	65.5	2,570	3,476	2,699	502	302	3.3
					27.8	37.6	29.2	5.4		
Soma	6,252	3,822	256	61.1	1,137	1,410	1,110	165	288	7.5
					29.7	36.9	29.0	4.3		
Kagamiishi	2,417	1,590	44	65.8	436	614	470	70	46	2.9
					27.4	38.6	29.6	4.4		
Shinchi	1,320	849	34	64.3	212	333	263	41	44	5.2
					25.0	39.2	31.0	4.8		
Nakajima	972	645	6	66.4	177	240	202	26	8	1.2
					27.4	37.2	31.3	4.0		
Yabuki	3,041	1,961	43	64.5	632	736	519	74	48	2.4
					32.2	37.5	26.5	3.8		
Ishikawa	2,530	1,609	36	63.6	485	591	470	63	47	2.9
					30.1	36.7	29.2	3.9		
Yamatsuri	930	578	16	62.2	187	219	148	24	12	2.1
					32.4	37.9	25.6	4.2		
Asakawa	1,210	819	27	67.7	214	316	251	38	36	4.4
					26.1	38.6	30.6	4.6		
Hirata	1,101	691	8	62.8	208	268	196	19	11	1.6
					30.1	38.8	28.4	2.7		
Tanagura	2,749	1,752	42	63.7	536	677	479	60	51	2.9
					30.6	38.6	27.3	3.4		
Hanawa	1,492	889	27	59.6	260	348	242	39	31	3.5
					29.2	39.1	27.2	4.4		
Samegawa	617	382	12	61.9	120	154	96	12	17	4.5
					31.4	40.3	25.1	3.1		
Ono	1,716	1,031	21	60.1	318	423	254	36	18	1.7
					30.8	41.0	24.6	3.5		
Tamakawa	1,210	798	10	66.0	222	333	220	23	10	1.3
					27.8	41.7	27.6	2.9		
Furudono	946	623	16	65.9	197	232	158	36	16	2.6
					31.6	37.2	25.4	5.8		
Hinoemata	94	47	5	50.0	14	13	17	3	4	8.5
					29.8	27.7	36.2	6.4		
Minami-aizu	2,512	1,472	25	58.6	437	559	428	48	23	1.6
					29.7	38.0	29.1	3.3		
Kaneyama	177	89	1	50.3	19	42	25	3	1	1.1
					21.3	47.2	28.1	3.4		
Showa	127	74	3	58.3	26	26	20	2	4	5.4
					35.1	35.1	27.0	2.7		
Mishima	174	107	1	61.5	24	44	37	2	1	0.9
					22.4	41.1	34.6	1.9		
Shimogo	873	528	9	60.5	160	200	148	20	8	1.5
					30.3	37.9	28.0	3.8		
Kitakata	8,079	4,925	101	61.0	1,336	1,903	1,518	168	108	2.2
					27.1	38.6	30.8	3.4		
Nishiaizu	885	476	9	53.8	135	175	145	21	14	2.9
					28.4	36.8	30.5	4.4		
Tadami	642	391	7	60.9	119	147	112	13	5	1.3
					30.4	37.6	28.6	3.3		
Inawashiro	2,383	1,504	40	63.1	456	560	420	68	47	3.1
					30.3	37.2	27.9	4.5		
Bandai	555	355	9	64.0	105	143	98	9	13	3.7
					29.6	40.3	27.6	2.5		
Kitashiobara	502	318	7	63.3	98	129	79	12	7	2.2
					30.8	40.6	24.8	3.8		
Aizumisato	3,311	2,063	41	62.3	568	832	563	100	45	2.2
					27.5	40.3	27.3	4.8		
Aizubange	2,790	1,735	48	62.2	489	679	490	77	39	2.2
					28.2	39.1	28.2	4.4		
Yanaizu	538	342	4	63.6	103	129	96	14	3	0.9
					30.1	37.7	28.1	4.1		
Aizuwakamatsu	21,119	12,767	400	60.5	3,585	4,811	3,915	456	450	3.5
					28.1	37.7	30.7	3.6		
Yugawa	606	414	5	68.3	121	159	115	19	6	1.4
					29.2	38.4	27.8	4.6		
Subtotal	144,793	91,511	3,593	63.2	24,499	34,645	27,603	4,764	3,764	4.1
					26.8	37.9	30.2	5.2		
Total	336,669	217,879	12,493	64.7	62,701	81,666	63,581	9,931	13,690	6.3
					28.8	37.5	29.2	4.6		

Appendix 2

Thyroid ultrasound examination (TUE) coverage outside Fukushima by prefecture As of 31 May 2019

Prefecture	Number of medeical facilities	Participants *
Hokkaido	7	**355**
Aomori	2	**143**
Iwate	3	**306**
Miyagi	2	**2,546**
Akita	1	**184**
Yamagata	3	**594**
Ibaraki	4	**770**
Tochigi	8	**750**
Gunma	2	**234**
Saitama	3	**589**
Chiba	5	**547**
Tokyo	16	**2,133**
Kanagawa	6	**1,033**
Niigata	2	**590**
Toyama	2	**23**
Ishikawa	1	**43**

Prefecture	Number of medeical facilities	Participants *
Fukui	1	**23**
Yamanashi	2	**105**
Nagano	2	**139**
Gifu	1	**43**
Shizuoka	2	**112**
Aichi	4	**223**
Mie	1	**25**
Shiga	1	**22**
Kyoto	3	**99**
Osaka	7	**232**
Hyogo	2	**138**
Nara	2	**30**
Wakayama	1	**6**
Tottori	1	**10**
Shimane	1	**15**
Okayama	3	**60**

Prefecture	Number of medeical facilities	Participants *
Hiroshima	2	**33**
Yamaguchi	1	**22**
Tokushima	1	**9**
Kagawa	1	**17**
Ehime	1	**12**
Kochi	1	**14**
Fukuoka	3	**85**
Saga	1	**5**
Nagasaki	2	**27**
Kumamoto	1	**31**
Oita	1	**14**
Miyazaki	1	**29**
Kagoshima	1	**19**
Okinawa	1	**54**

Total	119	**12,493**

- The number of participants includes those who received examination at facilities outside Fukushima or by teams dispatched by Fukushima Medical University.
- The number of dispatches of FMU teams for examinations outside Fukushima was 1, to Kanagawa.

Appendix 3

Results of primary examination by municipality — As of 30 June 2019

	Participants	Confirmed results b	Number by exam results				Nodules		Cysts	
			Proportion (%)							
		Proportion (%)	A		B	C	Proportion (%)		Proportion (%)	
	a	b/a (%)	A1	A2			≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm
Municipalities surveyed in FY 2016										
Kawamata	1,409	1,409	490	910	9	0	9	7	0	915
		100.0	34.8	64.6	0.6	0.0	0.6	0.5	0.0	64.9
Namie	1,954	1,954	652	1,286	16	0	16	9	0	1,289
		100.0	33.4	65.8	0.8	0.0	0.8	0.5	0.0	66.0
Iitate	604	604	203	397	4	0	4	2	0	397
		100.0	33.6	65.7	0.7	0.0	0.7	0.3	0.0	65.7
Minami-soma	7,076	7,076	2,568	4,455	53	0	53	32	0	4,477
		100.0	36.3	63.0	0.7	0.0	0.7	0.5	0.0	63.3
Date	7,085	7,085	2,460	4,575	50	0	50	23	0	4,599
		100.0	34.7	64.6	0.7	0.0	0.7	0.3	0.0	64.9
Tamura	4,054	4,054	1,490	2,518	46	0	46	22	0	2,543
		100.0	36.8	62.1	1.1	0.0	1.1	0.5	0.0	62.7
Hirono	546	546	195	347	4	0	4	3	0	346
		100.0	35.7	63.6	0.7	0.0	0.7	0.5	0.0	63.4
Naraha	771	771	293	475	3	0	3	2	0	476
		100.0	38.0	61.6	0.4	0.0	0.4	0.3	0.0	61.7
Tomioka	1,474	1,474	509	952	13	0	13	3	0	959
		100.0	34.5	64.6	0.9	0.0	0.9	0.2	0.0	65.1
Kawauchi	171	171	41	129	1	0	1	0	0	130
		100.0	24.0	75.4	0.6	0.0	0.6	0.0	0.0	76.0
Okuma	1,343	1,343	461	871	11	0	11	6	0	873
		100.0	34.3	64.9	0.8	0.0	0.8	0.4	0.0	65.0
Futaba	464	464	173	289	2	0	2	0	0	290
		100.0	37.3	62.3	0.4	0.0	0.4	0.0	0.0	62.5
Katsurao	129	129	50	79	0	0	0	1	0	79
		100.0	38.8	61.2	0.0	0.0	0.0	0.8	0.0	61.2
Fukushima	34,099	34,098	11,991	21,914	193	0	193	105	0	22,012
		100.0	35.2	64.3	0.6	0.0	0.6	0.3	0.0	64.6
Nihonmatsu	6,347	6,347	2,266	4,036	45	0	45	22	0	4,060
		100.0	35.7	63.6	0.7	0.0	0.7	0.3	0.0	64.0
Motomiya	3,898	3,898	1,357	2,524	17	0	17	8	0	2,535
		100.0	34.8	64.8	0.4	0.0	0.4	0.2	0.0	65.0
Otama	1,051	1,051	374	671	6	0	6	3	0	675
		100.0	35.6	63.8	0.6	0.0	0.6	0.3	0.0	64.2
Koriyama	38,112	38,109	13,082	24,789	238	0	238	130	0	24,898
		100.0	34.3	65.0	0.6	0.0	0.6	0.3	0.0	65.3
Kori	1,354	1,353	492	851	10	0	10	4	0	858
		99.9	36.4	62.9	0.7	0.0	0.7	0.3	0.0	63.4
Kunimi	1,020	1,020	340	672	8	0	8	2	0	677
		100.0	33.3	65.9	0.8	0.0	0.8	0.2	0.0	66.4
Tenei	634	634	213	414	7	0	7	1	0	419
		100.0	33.6	65.3	1.1	0.0	1.1	0.2	0.0	66.1
Shirakawa	7,647	7,647	2,666	4,940	41	0	41	23	0	4,964
		100.0	34.9	64.6	0.5	0.0	0.5	0.3	0.0	64.9
Nishigo	2,560	2,560	829	1,718	13	0	13	8	0	1,723
		100.0	32.4	67.1	0.5	0.0	0.5	0.3	0.0	67.3
Izumizaki	799	799	272	525	2	0	2	5	0	525
		100.0	34.0	65.7	0.3	0.0	0.3	0.6	0.0	65.7
Miharu	1,767	1,767	564	1,192	11	0	11	8	0	1,193
		100.0	31.9	67.5	0.6	0.0	0.6	0.5	0.0	67.5
Subtotal	126,368	126,363	44,031	81,529	803	0	803	429	0	81,912
		100.0	34.8	64.5	0.6	0.0	0.6	0.3	0.0	64.8

As of 30 June 2019

	Participants	Confirmed results b	Number by exam results				Nodules		Cysts	
			Proportion (%)				Proportion (%)		Proportion (%)	
			A		B	C				
	a	Proportion b/a (%)	A1	A2			≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm
Municipalities surveyed in FY 2017										
Iwaki	36,618	36,615	12,654	23,678	283	0	281	145	2	23,795
		100.0	34.6	64.7	0.8	0.0	0.8	0.4	0.0	65.0
Sukagawa	9,247	9,247	3,236	5,928	83	0	83	46	0	5,969
		100.0	35.0	64.1	0.9	0.0	0.9	0.5	0.0	64.6
Soma	3,822	3,822	1,536	2,253	33	0	33	21	0	2,270
		100.0	40.2	58.9	0.9	0.0	0.9	0.5	0.0	59.4
Kagamiishi	1,590	1,590	528	1,050	12	0	12	7	0	1,056
		100.0	33.2	66.0	0.8	0.0	0.8	0.4	0.0	66.4
Shinchi	849	849	307	535	7	0	7	4	0	537
		100.0	36.2	63.0	0.8	0.0	0.8	0.5	0.0	63.3
Nakajima	645	645	226	416	3	0	3	4	0	415
		100.0	35.0	64.5	0.5	0.0	0.5	0.6	0.0	64.3
Yabuki	1,961	1,961	682	1,271	8	0	8	4	0	1,274
		100.0	34.8	64.8	0.4	0.0	0.4	0.2	0.0	65.0
Ishikawa	1,609	1,609	639	962	8	0	8	4	0	965
		100.0	39.7	59.8	0.5	0.0	0.5	0.2	0.0	60.0
Yamatsuri	578	578	196	379	3	0	3	1	0	381
		100.0	33.9	65.6	0.5	0.0	0.5	0.2	0.0	65.9
Asakawa	819	819	292	518	9	0	9	3	0	524
		100.0	35.7	63.2	1.1	0.0	1.1	0.4	0.0	64.0
Hirata	691	691	271	415	5	0	5	2	0	416
		100.0	39.2	60.1	0.7	0.0	0.7	0.3	0.0	60.2
Tanagura	1,752	1,751	634	1,107	10	0	10	8	0	1,114
		99.9	36.2	63.2	0.6	0.0	0.6	0.5	0.0	63.6
Hanawa	889	889	322	558	9	0	9	5	0	561
		100.0	36.2	62.8	1.0	0.0	1.0	0.6	0.0	63.1
Samegawa	382	382	139	239	4	0	4	3	0	241
		100.0	36.4	62.6	1.0	0.0	1.0	0.8	0.0	63.1
Ono	1,031	1,031	309	714	8	0	8	3	0	718
		100.0	30.0	69.3	0.8	0.0	0.8	0.3	0.0	69.6
Tamakawa	798	798	283	512	3	0	3	6	0	513
		100.0	35.5	64.2	0.4	0.0	0.4	0.8	0.0	64.3
Furudono	623	623	238	382	3	0	3	2	0	383
		100.0	38.2	61.3	0.5	0.0	0.5	0.3	0.0	61.5
Hinoemata	47	47	21	26	0	0	0	0	0	26
		100.0	44.7	55.3	0.0	0.0	0.0	0.0	0.0	55.3
Minami-aizu	1,472	1,472	552	909	11	0	11	3	0	913
		100.0	37.5	61.8	0.7	0.0	0.7	0.2	0.0	62.0
Kaneyama	89	89	31	57	1	0	1	1	0	57
		100.0	34.8	64.0	1.1	0.0	1.1	1.1	0.0	64.0
Showa	74	74	34	38	2	0	2	0	0	39
		100.0	45.9	51.4	2.7	0.0	2.7	0.0	0.0	52.7
Mishima	107	107	28	78	1	0	1	1	0	79
		100.0	26.2	72.9	0.9	0.0	0.9	0.9	0.0	73.8
Shimogo	528	528	220	303	5	0	5	1	0	307
		100.0	41.7	57.4	0.9	0.0	0.9	0.2	0.0	58.1
Kitakata	4,925	4,925	1,761	3,128	36	0	36	27	0	3,139
		100.0	35.8	63.5	0.7	0.0	0.7	0.5	0.0	63.7
Nishiaizu	476	476	178	294	4	0	4	2	0	293
		100.0	37.4	61.8	0.8	0.0	0.8	0.4	0.0	61.6
Tadami	391	391	144	245	2	0	2	1	0	247
		100.0	36.8	62.7	0.5	0.0	0.5	0.3	0.0	63.2
Inawashiro	1,504	1,504	526	963	15	0	15	7	0	974
		100.0	35.0	64.0	1.0	0.0	1.0	0.5	0.0	64.8
Bandai	355	355	131	222	2	0	2	2	0	223
		100.0	36.9	62.5	0.6	0.0	0.6	0.6	0.0	62.8
Kitashiobara	318	318	107	209	2	0	2	1	0	209
		100.0	33.6	65.7	0.6	0.0	0.6	0.3	0.0	65.7
Aizumisato	2,063	2,063	769	1,279	15	0	15	12	0	1,285
		100.0	37.3	62.0	0.7	0.0	0.7	0.6	0.0	62.3
Aizubange	1,735	1,735	584	1,137	14	0	14	17	0	1,140
		100.0	33.7	65.5	0.8	0.0	0.8	1.0	0.0	65.7
Yanaizu	342	342	123	219	0	0	0	0	0	219
		100.0	36.0	64.0	0.0	0.0	0.0	0.0	0.0	64.0
Aizuwakamatsu	12,767	12,766	4,526	8,148	92	0	91	54	1	8,189
		100.0	35.5	63.8	0.7	0.0	0.7	0.4	0.0	64.1
Yugawa	414	414	151	260	3	0	3	2	0	262
		100.0	36.5	62.8	0.7	0.0	0.7	0.5	0.0	63.3
Subtotal	91,511	91,506	32,378	58,432	696	0	693	399	3	58,733
		100.0	35.4	63.9	0.8	0.0	0.8	0.4	0.0	64.2
Total	217,879	217,869	76,409	139,961	1,499	0	1,496	828	3	140,645
		100.0	35.1	64.2	0.7	0.0	0.7	0.4	0.0	64.6

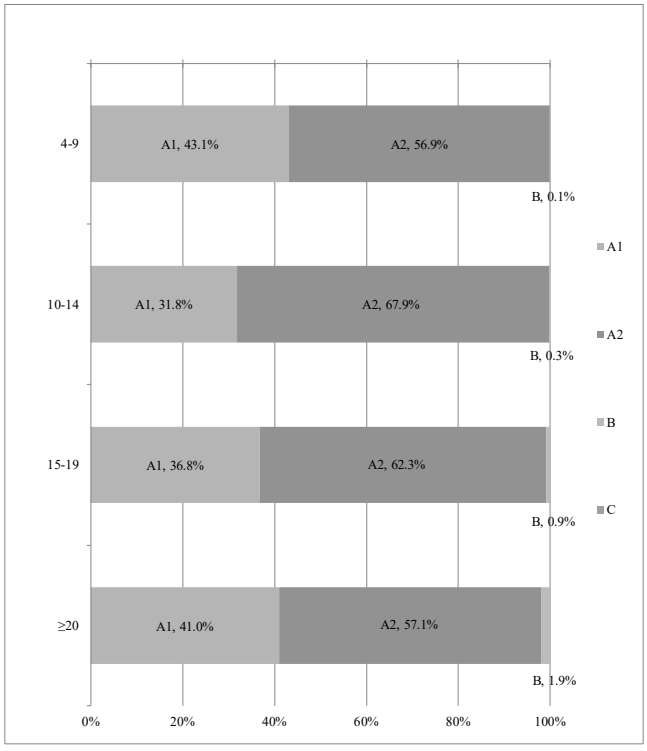
Appendix 4

1 Thyroid ultrasound examination results by age and gender

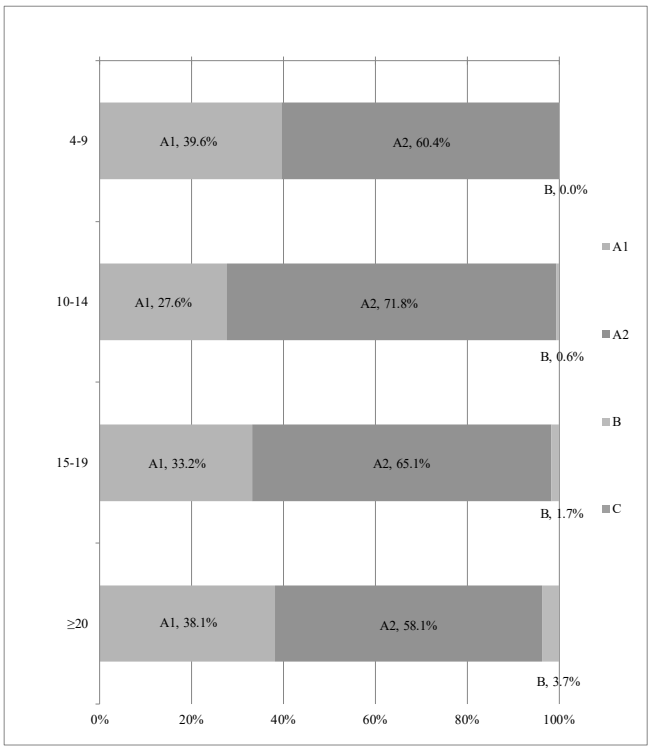
As of 30 June 2019

Class/ Gender / Age	A						B			C			Total		
	A1			A2											
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
4-9	13,887	12,061	25,948	18,338	18,383	36,721	17	12	29	0	0	0	32,242	30,456	62,698
10-14	13,268	11,055	24,323	28,284	28,707	56,991	110	242	352	0	0	0	41,662	40,004	81,666
15-19	11,697	10,532	22,229	19,838	20,687	40,525	286	541	827	0	0	0	31,821	31,760	63,581
≥20	1,770	2,139	3,909	2,464	3,260	5,724	83	208	291	0	0	0	4,317	5,607	9,924
Total	40,622	35,787	76,409	68,924	71,037	139,961	496	1,003	1,499	0	0	0	110,042	107,827	217,869

Results by age group (Male)



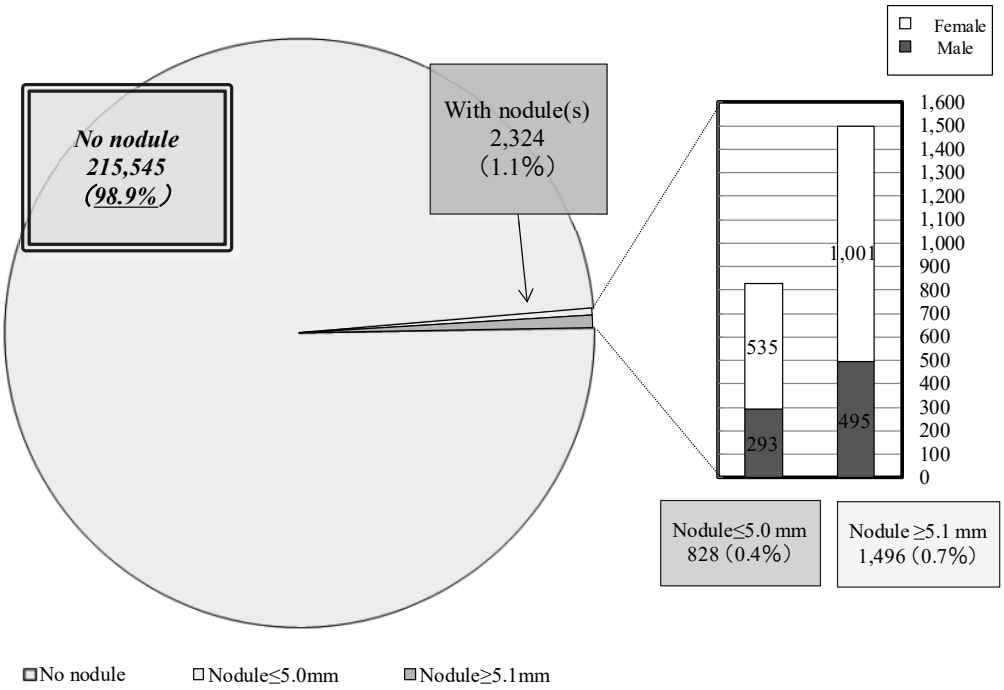
Results by age group (Female)

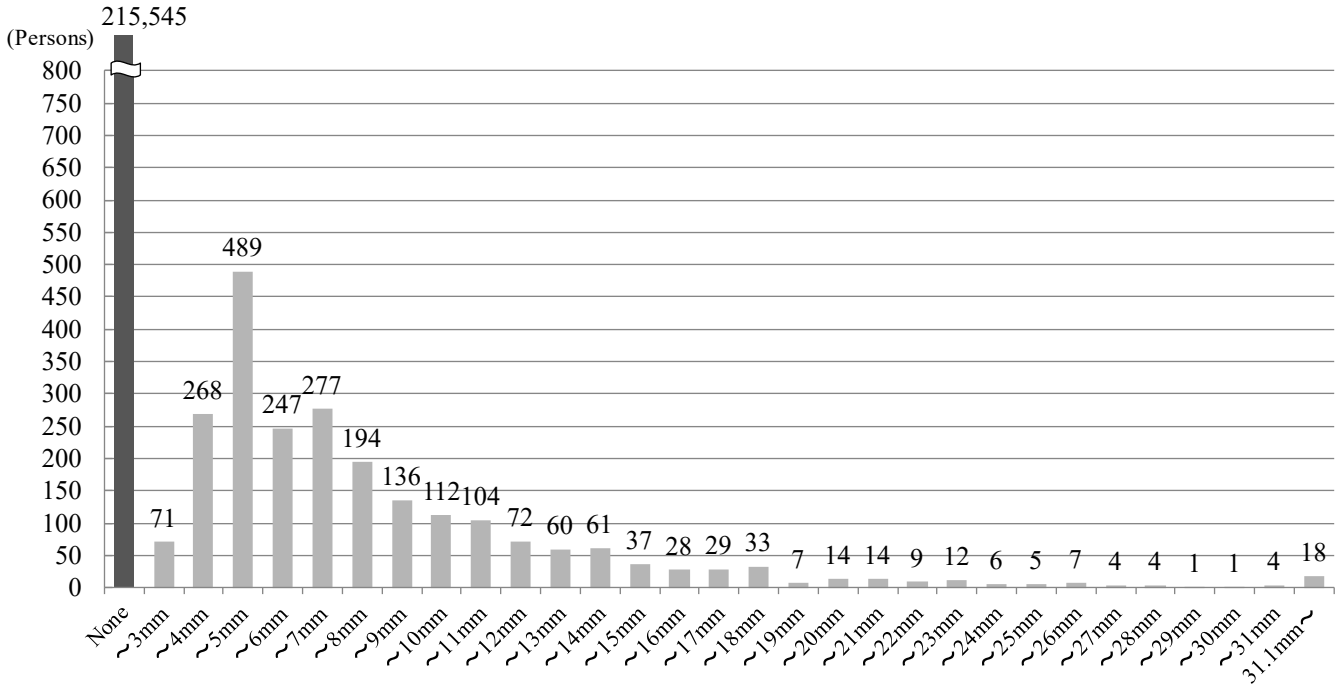


2 Nodule characteristics

As of 30 June 2019

Nodule size	Total	Male	Female	Class	Proportion
None	215,545	109,254	106,291	A1	98.9%
≤ 3.0 mm	71	34	37	A2	0.4%
3.1-5.0 mm	757	259	498		
5.1-10.0 mm	966	329	637	B	0.7%
10.1-15.0 mm	334	111	223		
15.1-20.0 mm	111	27	84		
20.1-25.0 mm	46	17	29		
≥ 25.1 mm	39	11	28		
Total	217,869	110,042	107,827		

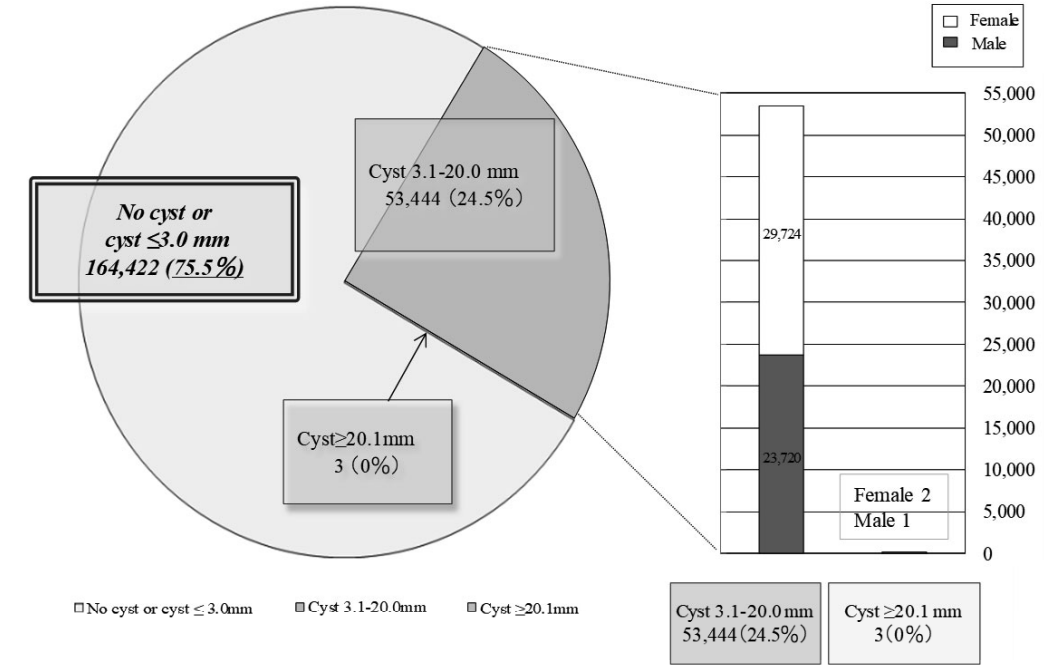


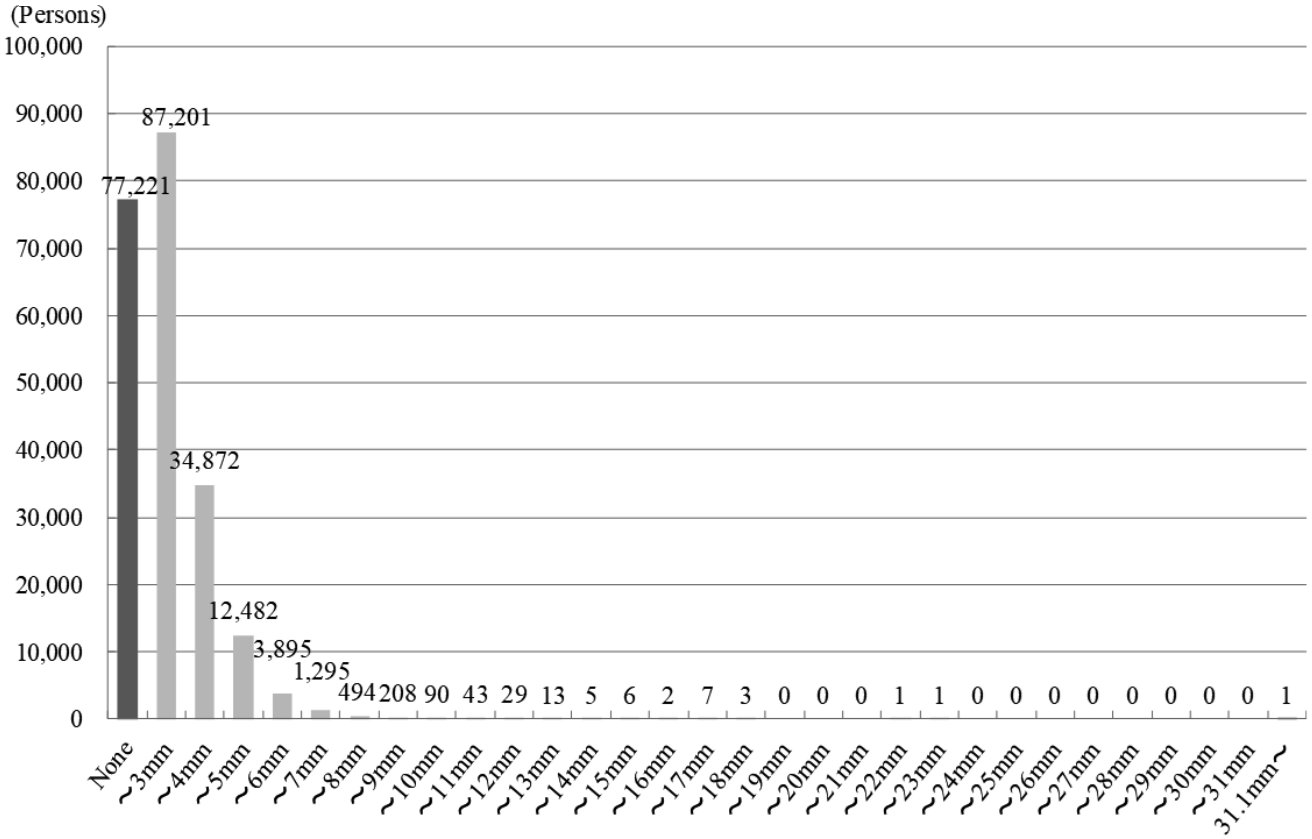


3 Cyst characteristics

As of 30 June 2019

Cyst size	Total	Male	Female	Class	Proportion
None	77,221	40,910	36,311	A1	75.5%
≤ 3.0 mm	87,201	45,411	41,790	A2	24.5%
3.1-5.0 mm	47,354	21,599	25,755		
5.1-10.0 mm	5,982	2,091	3,891		
10.1-15.0 mm	96	25	71		
15.1-20.0 mm	12	5	7		
20.1-25.0 mm	2	0	2	B	0.001%
≥ 25.1 mm	1	1	0		
Total	217,869	110,042	107,827		





Appendix 5

Results of confirmatory examination by area

As of 30 June 2019

Area	Participants	Participants who required confirmatory exam	Number of those who underwent confirmatory exam					Number of confirmed results				
			Total	Ages 4-9	Ages 10-14	Ages 15-19	≥ 20	Total	A1	A2	Not A1 or A2	
												FNAC
	a	b Proportion (%) b/a	c Proportion (%) c/b	d Proportion (%) d/c	e Proportion (%) e/c	f Proportion (%) f/c	g Proportion (%) g/c	h Proportion (%) h/c	i Proportion (%) i/h	j Proportion (%) j/h	k Proportion (%) k/h	l Proportion (%) l/k
13 municipalities [1]	27,080	212	160	1	36	95	28	152	0	19	133	13
		0.8	75.5	0.6	22.5	59.4	17.5	95.0	0.0	12.5	87.5	9.8
Nakadori [2]	121,903	759	560	14	111	317	118	532	5	44	483	31
		0.6	73.8	2.5	19.8	56.6	21.1	95.0	0.9	8.3	90.8	6.4
Hamadori [3]	41,289	323	229	2	53	115	59	220	2	23	195	19
		0.8	70.9	0.9	23.1	50.2	25.8	96.1	0.9	10.5	88.6	9.7
Aizu [4]	27,607	205	141	4	25	74	38	134	1	12	121	9
		0.7	68.8	2.8	17.7	52.5	27.0	95.0	0.7	9.0	90.3	7.4
Total	217,879	1,499	1,090	21	225	601	243	1,038	8	98	932	72
		0.7	72.7	1.9	20.6	55.1	22.3	95.2	0.8	9.4	89.8	7.7

1) Tamura, Minami-soma, Date, Kawamata, Hirono, Naraha, Tomioka, Kawauchi, Okuma, Futaba, Namie, Katsurao, Iitate
2) Fukushima, Koriyama, Shirakawa, Sukagawa, Nihonmatsu, Motomiya, Kori, Kunimi, Otama, Kagamiishi, Tenei, Nishigo, Izumizaki, Nakajima, Yabuki, Tanagura, Yamatsuri, Hanawa, Samegawa, Ishikawa, Tamakawa, Hirata, Asakawa, Furudono, Miharu, Ono
3) Iwaki, Soma, Shinchi
4) Aizuwakamatsu, Kitakata, Shimogo, Hinoemata, Tadami, Minami-aizu, Kitashiobara, Nishiaizu, Bandai, Inawashiro, Aizubange, Yugawa, Yanaizu, Mishima, Kaneyama, Showa, Aizumisato

Appendix 6

Surgical cases for malignancy or suspicion of malignancy

1. Municipalities surveyed in FY 2016
   - Malignant or suspicious for malignancy: 12 (11 surgical cases: 11 papillary thyroid carcinomas)
2. Municipalities surveyed in FY 2017
   - Malignant or suspicious for malignancy: 17 (8surgical case: 8papillary thyroid carcinomas)
3. Total
   - Malignant or suspicious for malignancy: 29 (19 surgical cases: 19 papillary thyroid carcinomas)

Report on the Fourth-Round Thyroid Survey
(Third Full-Scale Thyroid Survey)

1. Summary

1.1 Purpose

In order to monitor the long-term health of children, we are now engaged in the third Full-Scale Thyroid Survey (the Fourth-Round Survey), following the Preliminary Baseline Survey for background assessment of thyroid glands, and two Full-Scale Thyroid Surveys (the Second- and Third-Round Surveys) to continuously confirm the status of thyroid glands.

1.2 Survey Population

All the Fukushima residents approximately 18 years old or younger at the time of earthquake (born between 2 April 1992 and 1 April 2012).

1.3 Implementation Period

From April 2018 (schedule of FY 2018 and FY 2019):

1.3-1 For those 18 years old or younger

The examination will be carried out for each municipality in FY 2018 and FY 2019.

1.3-2 19 years old or older

The examination will be carried out for each age (school grade).
FY 2018: those who were born in FY 1996 and FY 1998
FY 2019: those who were born in FY 1997 and FY 1999

1.3-3 For those 25 years old

For those who are older than 20, examination will be carried out with 5-year interval.
FY 2018: those who were born in FY 1993
FY 2019: those who were born in FY 1994
The results of these examinations will be reported separately.

1.4 Responsible Organizations

Fukushima Prefecture commissioned Fukushima Medical University (FMU) to conduct the survey in cooperation with organizations inside and outside Fukushima (the number of contracts is as of 30 June 2019).

1.4-1 The primary examination

Inside Fukushima Prefecture	81 medical facilities
Outside Fukushima Prefecture	119 medical facilities

1.4-2 The confirmatory examination

Inside Fukushima Prefecture	5 medical facilities including FMU
Outside Fukushima Prefecture	37 medical facilities

1.5 Method

1.5-1 The primary examination

We use ultrasonography for examination of the thyroid gland.

Assessments are made by specialists on the basis of the following criteria:

-Diagnostic Criteria (A)

A1: No nodules / cysts

A2: Nodules ≤5.0 mm or cysts ≤20.0 mm

-Diagnostic Criteria (B)

B: Nodules ≥5.1 mm or cysts ≥20.1 mm

Some A2 test results may be re-classified as B results when clinically indicated.

-Diagnostic Criteria (C)

C: Immediate need for confirmatory examination.

1.5-2 The confirmatory examination

We conduct ultrasonography, blood test, urine test, and fine needle aspiration cytology (FNAC) if needed for those with B or C test results. Priority is given to those in urgent clinical need.

We recommend medical follow-up for those requiring it due to confirmatory exam results.

1.5-3 Flow chart

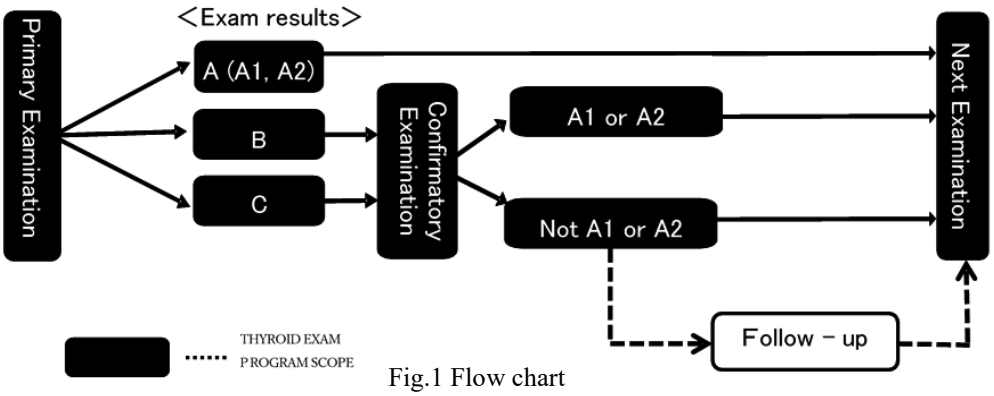


Fig.1 Flow chart

1.6 Municipalities Surveyed

The municipalities where examinations (for those 18 years old or younger) were carried out in FY 2018 and FY 2019 are as follows:

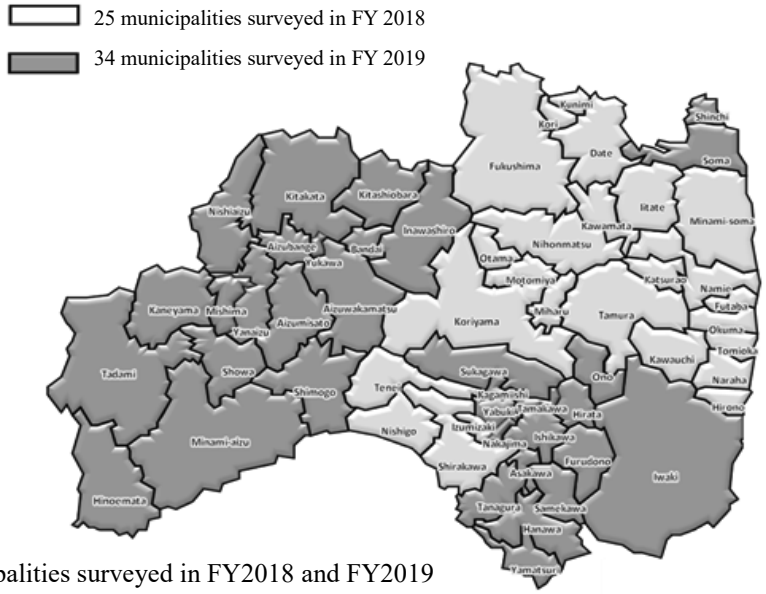


Fig.2 Municipalities surveyed in FY2018 and FY2019

2. Results as of 30 June2019

2.1 Results of the Primary Examination

2.1-1 Progress report

The examination was carried out for 117,899 (40.1%) participants by 30 June2019 (Implementation status for each municipality and prefectures other than Fukushima are shown in Appendix 1 and Appendix 2).

Results of 105,927 participants (89.8%) have been confirmed and notifications were sent to them accordingly. (The result for each municipality is shown in Appendix 3).

Of these, 36,237 were classified as A1 (34.2%), 69,035 as A2 (65.2%), 655 (0.6%) as B, and none as C.

Table 1 Progress and results of the primary examination As of 30 June 2019

	Survey population	Participants			Exam results					
		Proportion (%)		Outside Fukushima	Proportion (%)	Class (%)				
						A			Requiring confirmatory exam	
	a	b	(b/a)		c (c/b)	A1 d (d/c)	A2 e (e/c)		B f (f/c)	C g (g/c)
FY 2018	168,020	99,948	(59.5)	6,069	98,942 (99.0)	33,786 (34.1)	64,594 (65.3)		562 (0.6)	0 (0.0)
FY 2019	126,138	17,951	(14.2)	719	6,985 (38.9)	2,451 (35.1)	4,441 (63.6)		93 (1.3)	0 (0.0)
Total	294,158	117,899	(40.1)	6,788	105,927 (89.8)	36,237 (34.2)	69,035 (65.2)		655 (0.6)	0 (0.0)

Table 2. Number and proportion of participants with nodules/cysts As of 30 June 2019

	Number of participants with confirmed results	Number and proportion of participants with nodules/cysts			
		Nodules		Cysts	
	a	≥5.1 mm b (b/a)	≤5.0 mm c (c/a)	≥20.1 mm d (d/a)	≤20.0 mm e (e/a)
FY 2018	98,942	560 (0.6)	310 (0.3)	2 (0.0)	64,874 (65.6)
FY 2019	6,985	93 (1.3)	43 (0.6)	0 (0.0)	4,484 (64.2)
Total	105,927	653 (0.6)	353 (0.3)	2 (0.0)	69,358 (65.5)

- Proportions are rounded at a lower decimal place. This applies to other tables as well.
- Those who receive the examination at 5-year intervals (birth year FY1992 to 1995) are excluded. The results of examinations with 5-year intervals will be shown separately.
- The examination for those born in FY 1992 (approx. 22,000) and FY 1993 (approx. 22,000) took place in FY 2017 and FY 2018, respectively. Those born in FY 1994 (approx. 22,000) and FY 1995 (approx. 21,000) will be covered in FY 2019 and FY 2020 surveys, respectively.

2.1-2 Participation rates by age group

The participation rate for each age group as of 1 April of each year is shown in Table 3.

Table 3 Participation rates by age group — As of 30 June 2019

		Total	Age group (years)		
FY 2018	Age group (years)		6-11	12-17	18-24
	Survey population (a)	168,020	56,926	64,829	46,265
	Participants (b)	99,948	46,924	49,621	3,403
	Proportion (%) (b/a)	59.5	82.4	76.5	7.4
FY 2019	Age group (years)		7-11	12-17	18-24
	Survey population (a)	126,138	34,136	47,275	44,727
	Participants (b)	17,951	8,305	6,680	2,966
	Proportion (%) (b/a)	14.2	24.3	14.1	6.6
Total	Survey population (a)	294,158	91,062	112,104	90,992
	Participants (b)	117,899	55,229	56,301	6,369
	Proportion (%) (b/a)	40.1	60.6	50.2	7.0

・ Age groups are formed with the age as of 1 April of each fiscal year.

2.1-3 Comparison of Full-scale Thyroid Surveys

Comparison of Fourth- and Third-Round Survey results is shown in Table 4. Among 93,416 participants who were diagnosed as A1 or A2 in the Third-Round Survey, 93,099 (99.7%) had A1 or A2 results, and 317 (0.3%) were diagnosed as B in the Fourth-Round Survey. Among 356 participants who were diagnosed as B in the Third-Round Survey, 77 (21.6%) had A1 or A2 results, and 279 (78.4%) were diagnosed as B in the Fourth-Round Survey.

Table 4 Comparison of Full-scale Thyroid Survey — As of 30 June 2019

			Results of the Third-round Survey*1 (%) a	Results of the Fourth-Round Survey *2 A A1 b b/a (%)	A A2 c c/a (%)	B d d/a (%)	C e e/a (%)
Results of the Third-round Survey	A	A1	31,997 (100.0)	24,383 (76.2)	7,577 (23.7)	37 (0.1)	0 (0.0)
		A2	61,419 (100.0)	6,807 (11.1)	54,332 (88.5)	280 (0.5)	0 (0.0)
	B		356 (100.0)	3 (0.8)	74 (20.8)	279 (78.4)	0 (0.0)
	C		0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	No participation		12,155 (100.0)	5,044 (41.5)	7,052 (58.0)	59 (0.5)	0 (0.0)
Total			105,927 (100.0)	36,237 (34.2)	69,035 (65.2)	655 (0.6)	0 (0.0)

*1 Upper figures show a previous (Third-Round) diagnosis for the participants in this (Fourth-Round) survey whose results have been confirmed. They are not the breakdown of the total number of the previous-round participants (217,869).

*2 Upper figures show the breakdown of the Fourth-Round Survey participants who were diagnosed for each diagnostic class in the Third-Round Survey. Lower figures are their proportion (%).

2.2 Results of Confirmatory Examination

2.2-1 Progress Report

By 30 June 2019, 392of 655 people (59.8%) have received the examination. Of those, 346(88.3%) have completed.

Of the foregoing 346 participants, 31 (A1: 2, A2: 29) (9.0%) was confirmed to meet A1 or A2 diagnostic criteria by the Primary Examination standards (including those with other thyroid conditions). Remaining 315 (91.0%) people were confirmed to be outside of A1/A2 criteria.

Table 5 Progress and results of the confirmatory examination As of 30 June 2019

	Number of those requiring confirmatory exam	Participants Proportion (%)	Confirmatory exam coverage (%)	Confirmed exam results			
				A1	A2	Not A1 or A2	
							FNAC
	a	b (b/a)	c (c/b)	d (d/c)	e (e/c)	f (f/c)	g (g/f)
FY 2018	562	352 (62.6)	316 (89.8)	2 (0.6)	28 (8.9)	286 (90.5)	23 (8.0)
FY 2019	93	40 (43.0)	30 (75.0)	0 (0.0)	1 (3.3)	29 (96.7)	0 (0.0)
Total	655	392 (59.8)	346 (88.3)	2 (0.6)	29 (8.4)	315 (91.0)	23 (7.3)

2.2-2 Results of fine needle aspiration cytology (FNAC)

Among those who underwent FNAC, 13 had nodules classified as malignant or suspicious for malignancy. Six of them were male, and 7 were female.

Ten of these 13 participants had A (A1: 2, A2: 8) and 3 had B in the Full-Scale Examination (Third-Round Examination).

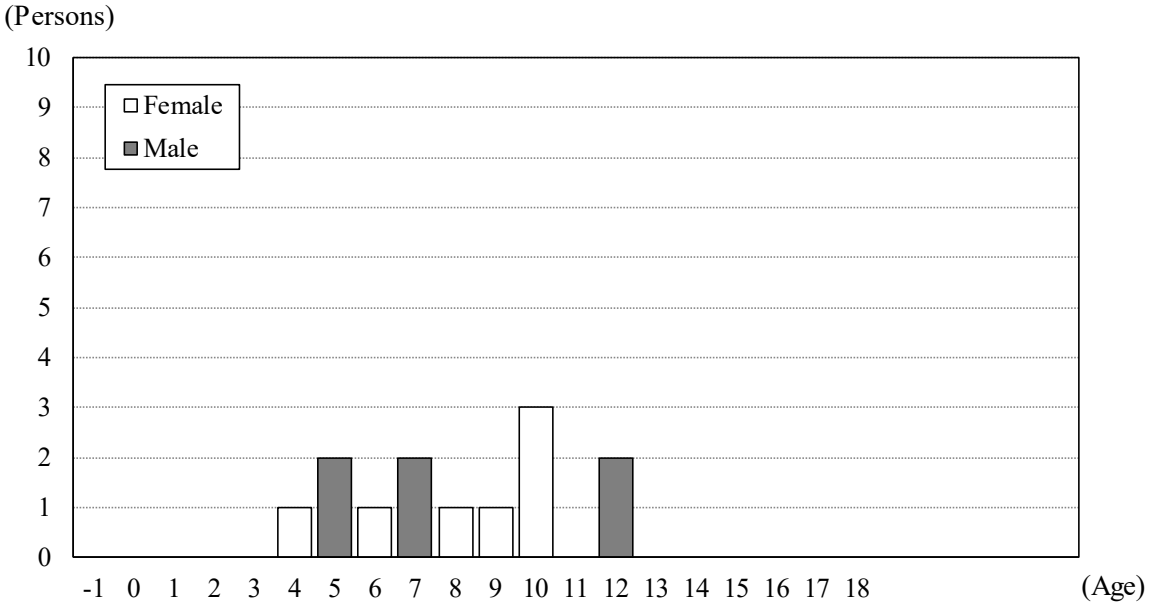
Table 6. Results of FNAC

A. Municipalities surveyed in FY 2018	
・Malignant or suspicious for malignancy：	13*)
・Male to female ratio：	6:7
B. Municipalities surveyed in FY 2019	
・Malignant or suspicious for malignancy：	0*)
・Male to female ratio：	0:0
C. Total	
・Malignant or suspicious for malignancy：	13*)
・Male to female ratio：	6:7
・Mean age (SD, min-max):	15.8 (2.8, 11-20), 8.1 (2.7, 4-12) at the time of disaster
・Mean tumor size:	10.7 mm (3.3 mm, 6.9-17.2 mm)

*) Surgical cases are as shown in Appendix 6.

2.2-3 Age distribution of malignant or suspicious for malignancy cases diagnosed by FNAC

Age distributions of 13 people classified as malignant or suspicious with their age as of 11 March 2011 is as Fig. 3, with their age as of confirmatory examination is as Fig. 4.



Note: Those who were 17 and 18 at the time of the disaster were not included in the Fourth-Round Survey participants.
The horizontal axis begins at -1 to include residents of Fukushima Prefecture born between 2 April 2011 and 1 April 2012

Fig.3 Age as of 11 March 2011

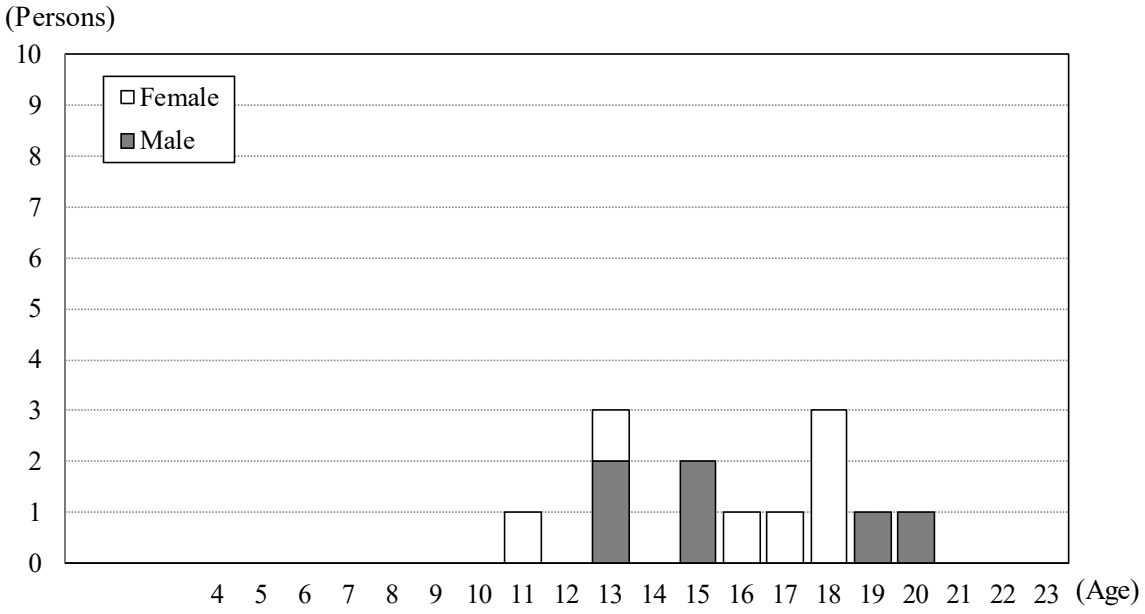


Fig. 4 Age as of the date of confirmatory examination

2.2-4 Basic Survey results of those who were diagnosed as malignant or suspicious for malignancy by FNAC

Nine (69.2%) of the 13 people who were diagnosed as malignant or suspicious cases by FNAC had participated in the Basic Survey (radiation dose estimates), and 9 received the results. The highest effective dose documented was 2.4 mSv.

Table 7. A breakdown of dose estimates for participants of the Basic Survey As of 30 June 2019

Effective dose (mSv)	Age at the time of the disaster									
	0-5		6-10		11-15		16-18		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<1	0	0	1	0	0	0	0	0	1	0
1-1.9	0	0	1	1	1	0	0	0	2	1
2-4.9	2	0	0	2	1	0	0	0	3	2
5-9.9	0	0	0	0	0	0	0	0	0	0
10-19.9	0	0	0	0	0	0	0	0	0	0
≥20	0	0	0	0	0	0	0	0	0	0
Total	2	0	2	3	2	0	0	0	6	3

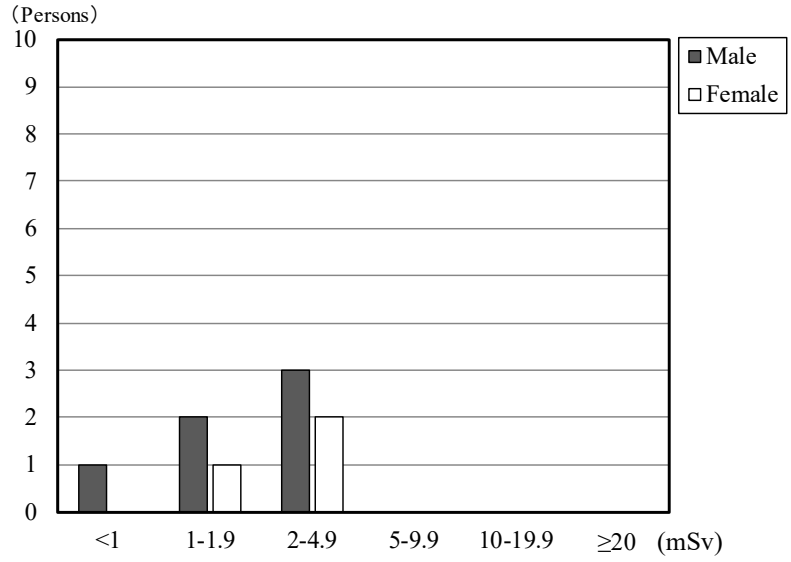


Fig. 5 Effective dose of the participants

2.2-5 Blood and urinary iodine test results as of 30 June 2019

Table 8. Blood test results　　Mean±SD (Abnormal value)

	FT4 [1] (ng/dL)	FT3 [2] (pg/mL)	TSH [3] (μIU/mL)	Tg [4] (ng/mL)	TgAb [5] (IU/mL)	TPOAb [6] (IU/mL)
Reference Range	0.95～1.74 [7]	2.13～4.07 [7]	0.340～3.880 [7]	≤33.7	<28.0	<16.0
13 malignant or suspicious	1.3 ± 0.1 (0.0%)	3.6 ± 0.5 (0.0%)	1.2 ± 0.5 (0.0%)	12.2± 11.6 (7.7%)	46.2%	30.8%
Other 318	1.3 ± 0.3 (5.0%)	3.6 ± 1.1 (6.9%)	1.2 ± 0.9 (8.8%)	20.5± 30.5 (11.3%)	5.3%	6.0%

1) FT4: free thyroxine; thyroid hormone binding 4 iodines; higher among patients with thyrotoxicosis (such as Graves' disease) and lower with hypothyroidism (such as Hashimoto's thyroiditis).
2) FT3: free triiodothyronine; thyroid hormone binding 3 iodines; higher among patients with thyrotoxicosis (such as Graves' disease) and lower with hypothyroidism (such as Hashimoto's thyroiditis).
3) TSH: thyroid-stimulating hormone; higher among patients with Hashimoto's disease and lower with Graves' disease.
4) Tg: thyroglobulin; higher when thyroid tissue is destroyed or when neoplastic tissue produces thyroglobulin.
5) TgAb: anti-thyroglobulin antibody; higher among patients with Hashimoto's disease and Graves' disease.
6) TPOAb: anti-thyroid peroxidase antibody; higher among patients with Hashimoto's disease or Graves' disease.
7) Reference interval varies according to age.

Table 9 Urinary iodine test results　　(μg/day)

	Minimum	25th percentile	Median	75th percentile	Maximum
13 malignant or suspicious	54	135	209	360	1780
Other 313	32	121	205	337	17200

2.2-6 Confirmatory exam results by area as of 30 June 2019

Among those who were diagnosed as malignant or suspicious, residents of 13 municipalities which were designated as an evacuation zone by the government and Nakadori account for 0.01% , and residents of Hamadori and Aizu areas account for 0.00%.

Table 10 Confirmatory examination results by area

Area	Number of Participants a	Participants who required confirmatory exam b	Proportion who required confirmatory exam (%) b/a	Number who underwent confirmatory exam	Malignant or uspicious cases c	Proportion of malignant or suspicious cases (%) c/a
13 municipalities [1]	18,929	110	0.6	80	2	0.01
Nakadori [2]	89,995	490	0.5	292	11	0.01
Hamadori [3]	2,672	31	1.2	14	0	0.00
Aizu [4]	6,303	24	0.4	6	0	0.00
Total	117,899	655	0.6	392	13	0.01

1) Tamura, Minami-soma, Date, Kawamata, Hirono, Naraha, Tomioka, Kawauchi, Okuma, Futaba, Namie, Katsurao, Iitate
2) Fukushima, Koriyama, Shirakawa, Sukagawa, Nihonmatsu, Motomiya, Kori, Kunimi, Otama, Kagamiishi, Tenei, Nishigo, Izumizaki, Nakajima, Yabuki, Tanagura, Yamatsuri, Hanawa, Samegawa, Ishikawa, Tamakawa, Hirata, Asakawa, Furudono, Miharu, Ono
3) Iwaki, Soma, Shinchi
4) Aizuwakamatsu, Kitakata, Shimogo, Hinoemata, Tadami, Minami-aizu, Kitashiobara, Nishiaizu, Bandai, Inawashiro, Aizubange, Yugawa, Yanaizu, Mishima, Kaneyama, Showa, Aizumisato

3. Mental Health Care

We provide the following support.

3.1 Support for the Primary Examination Participants

After the examination, medical doctors explain the results showing the ultrasound image in private consultation booths at the venue. As of 30 June 2019, 1,490 (100%) of 1,490 participants visited the consultation booths.

3.2 Briefing Sessions

To help participants or their parents improve their understanding of the thyroid examination, briefing sessions were carried out. Since April 2018, 718 people in 26 venues participated in the briefing sessions as of 30 June 2019. The cumulative total of participants is 14, 741.

3.3 Support for the Confirmatory Examination Participants

We have set up a support team for participants of the confirmatory examination within Fukushima Medical University to address their anxiety and concerns, as well as online support for Q&A and counseling.

Since the start of Fourth-Round Survey, 275 participants (89 males and 186females) have received support as of 30 June 2019. The number of supports provided was 552 in total. Of these, 275 (49.8%) received support at their first examination and 277 (50.2%) at subsequent examination.

For those who proceeded to regular insured medical care, we continue to provide support in cooperation with teams of medical staff at hospitals.

Appendix 1

Thyroid ultrasound examination (TUE) coverage by municipality — As of 30 June 2019

	Survey population	Participants		Proportion (%)	Number and proportion[*2] of participants by age group			Participants living outside Fukushima	Proportion (%)
			Outside Fukushima[*1]		6-11	12-17	18-24		
	a	b		b/a				c[*3]	c/b
Municipalities surveyed in FY 2018									
Kawamata	1,832	1,116	25	60.9	469 42.0	575 51.5	72 6.5	40	3.6
Namie	2,858	1,072	271	37.5	434 40.5	514 47.9	124 11.6	318	29.7
Iitate	852	510	16	59.9	207 40.6	271 53.1	32 6.3	23	4.5
Minami-soma	10,201	5,152	745	50.5	2,256 43.8	2,551 49.5	345 6.7	816	15.8
Date	8,781	5,763	155	65.6	2,325 40.3	3,022 52.4	416 7.2	167	2.9
Tamura	5,435	3,269	56	60.1	1,492 45.6	1,563 47.8	214 6.5	70	2.1
Hirono	801	270	29	33.7	135 50.0	118 43.7	17 6.3	25	9.3
Naraha	1,094	219	42	20.0	103 47.0	95 43.4	21 9.6	51	23.3
Tomioka	2,339	605	163	25.9	226 37.4	291 48.1	88 14.5	183	30.2
Kawauchi	267	126	9	47.2	47 37.3	76 60.3	3 2.4	9	7.1
Okuma	2,020	530	180	26.2	236 44.5	226 42.6	68 12.8	195	36.8
Futaba	978	206	56	21.1	95 46.1	95 46.1	16 7.8	58	28.2
Katsurao	174	91	2	52.3	34 37.4	49 53.8	8 8.8	3	3.3
Fukushima	43,238	27,960	1,581	64.7	11,601 41.5	14,166 50.7	2,193 7.8	1,615	5.8
Nihonmatsu	8,104	5,336	174	65.8	2,253 42.2	2,752 51.6	331 6.2	167	3.1
Motomiya	4,910	3,108	85	63.3	1,386 44.6	1,536 49.4	186 6.0	79	2.5
Otama	1,287	896	19	69.6	413 46.1	436 48.7	47 5.2	17	1.9
Koriyama	52,557	31,244	2,107	59.4	12,916 41.3	15,940 51.0	2,388 7.6	2,110	6.8
Kori	1,609	1,092	25	67.9	464 42.5	544 49.8	84 7.7	25	2.3
Kunimi	1,204	784	14	65.1	291 37.1	428 54.6	65 8.3	16	2.0
Tenei	839	443	6	52.8	201 45.4	221 49.9	21 4.7	6	1.4
Shirakawa	9,969	6,044	208	60.6	2,552 42.2	3,057 50.6	435 7.2	216	3.6
Nishigo	3,263	2,060	72	63.1	898 43.6	1,009 49.0	153 7.4	82	4.0
Izumizaki	1,025	600	4	58.5	270 45.0	287 47.8	43 7.2	4	0.7
Miharu	2,383	1,452	25	60.9	556 38.3	755 52.0	141 9.7	20	1.4
Subtotal	168,020	99,948	6,069	59.5	41,860 41.9	50,577 50.6	7,511 7.5	6,315	6.3

*1) The number of participants who received the examination at facilities outside Fukushima (as of 31 May 2019)
*2) The upper layer shows number of participants, the lower layer shows the proportion of participants from each municipality.
*3) The number of participants who have resident registration outside of Fukushima.
・ Age groups were formed based on the age at the Full-Scale Survey (the Fourth-Round Survey). This applies to other tables hereafter.

As of 30 June 2019

	Survey population	Participants		Proportion (%)	Number and proportion[*2] of participants by age group			Participants living outside Fukushima	Proportion (%)
			Outside Fukushima[*1]		6-11	12-17	18-24		
	a	b		b/a				c[*3]	c/b
Municipalities surveyed in FY 2019									
Iwaki	49,591	1,969	386	4.0	431 21.9	421 21.4	1,117 56.7	515	26.2
Sukagawa	12,375	1,520	68	12.3	292 19.2	759 49.9	469 30.9	63	4.1
Soma	5,506	637	45	11.6	352 55.3	179 28.1	106 16.6	79	12.4
Kagamiishi	2,133	224	7	10.5	45 20.1	109 48.7	70 31.3	7	3.1
Shinchi	1,162	66	6	5.7	13 19.7	33 50.0	20 30.3	9	13.6
Nakajima	849	430	1	50.6	185 43.0	213 49.5	32 7.4	1	0.2
Yabuki	2,672	1,011	5	37.8	683 67.6	252 24.9	76 7.5	9	0.9
Ishikawa	2,182	1,158	6	53.1	519 44.8	566 48.9	73 6.3	5	0.4
Yamatsuri	816	202	6	24.8	20 9.9	169 83.7	13 6.4	6	3.0
Asakawa	1,064	561	4	52.7	230 41.0	296 52.8	35 6.2	9	1.6
Hirata	969	506	4	52.2	239 47.2	233 46.0	34 6.7	3	0.6
Tanagura	2,399	824	8	34.3	517 62.7	253 30.7	54 6.6	8	1.0
Hanawa	1,299	586	4	45.1	278 47.4	281 48.0	27 4.6	9	1.5
Samegawa	519	253	1	48.7	133 52.6	113 44.7	7 2.8	2	0.8
Ono	1,488	750	2	50.4	342 45.6	363 48.4	45 6.0	3	0.4
Tamakawa	1,052	530	2	50.4	242 45.7	265 50.0	23 4.3	1	0.2
Furudono	817	421	6	51.5	200 47.5	188 44.7	33 7.8	7	1.7
Hinoemata	87	28	0	32.2	16 57.1	12 42.9	0 0.0	0	0.0
Minami-aizu	2,128	811	7	38.1	453 55.9	336 41.4	22 2.7	4	0.5
Kaneyama	147	47	0	32.0	21 44.7	25 53.2	1 2.1	0	0.0
Showa	115	45	0	39.1	26 57.8	16 35.6	3 6.7	0	0.0
Mishima	148	53	0	35.8	28 52.8	25 47.2	0 0.0	0	0.0
Shimogo	747	298	2	39.9	170 57.0	119 39.9	9 3.0	3	1.0
Kitakata	6,946	200	17	2.9	92 46.0	55 27.5	53 26.5	24	12.0
Nishiaizu	761	239	0	31.4	145 60.7	89 37.2	5 2.1	2	0.8
Tadami	555	232	3	41.8	132 56.9	91 39.2	9 3.9	1	0.4
Inawashiro	2,070	841	4	40.6	463 55.1	347 41.3	31 3.7	5	0.6
Bandai	477	169	1	35.4	94 55.6	72 42.6	3 1.8	1	0.6
Kitashiobara	445	174	1	39.1	92 52.9	79 45.4	3 1.7	1	0.6
Aizumisato	2,822	1,061	7	37.6	559 52.7	474 44.7	28 2.6	9	0.8
Aizubange	2,401	856	14	35.7	480 56.1	336 39.3	40 4.7	13	1.5
Yanaizu	464	195	1	42.0	106 54.4	84 43.1	5 2.6	1	0.5
Aizuwakamatsu	18,413	831	98	4.5	367 44.2	184 22.1	280 33.7	124	14.9
Yugawa	519	223	3	43.0	116 52.0	96 43.0	11 4.9	4	1.8
Subtotal	126,138	17,951	719	14.2	8,081 45.0	7,133 39.7	2,737 15.2	928	5.2
Total	294,158	117,899	6,788	40.1	49,941 42.4	57,710 48.9	10,248 8.7	7,243	6.1

Appendix 2

Thyroid ultrasound examination (TUE) coverage outside Fukushima by prefecture As of 31 May 2019

Prefecture	Number of medeical facilities	Participants *
Hokkaido	7	**175**
Aomori	2	**94**
Iwate	3	**192**
Miyagi	2	**1,590**
Akita	1	**109**
Yamagata	3	**366**
Ibaraki	4	**354**
Tochigi	8	**432**
Gunma	2	**118**
Saitama	3	**354**
Chiba	5	**273**
Tokyo	16	**1,030**
Kanagawa	6	**468**
Niigata	2	**323**
Toyama	2	**13**
Ishikawa	1	**29**

Prefecture	Number of medeical facilities	Participants *
Fukui	1	**9**
Yamanashi	2	**57**
Nagano	2	**80**
Gifu	1	**20**
Shizuoka	2	**57**
Aichi	4	**115**
Mie	1	**12**
Shiga	1	**9**
Kyoto	3	**60**
Osaka	7	**123**
Hyogo	2	**92**
Nara	2	**14**
Wakayama	1	**6**
Tottori	1	**7**
Shimane	1	**9**
Okayama	3	**24**

Prefecture	Number of medeical facilities	Participants *
Hiroshima	2	**12**
Yamaguchi	1	**12**
Tokushima	1	**0**
Kagawa	1	**16**
Ehime	1	**4**
Kochi	1	**10**
Fukuoka	3	**49**
Saga	1	**0**
Nagasaki	2	**20**
Kumamoto	1	**16**
Oita	1	**4**
Miyazaki	1	**9**
Kagoshima	1	**2**
Okinawa	1	**20**
Total	119	**6,788**

*The number of participants represents those who received examination at facilities outside Fukushima

Appendix 3

Results of primary examination by municipality — As of 30 June 2019

	Participants	Confirmed results b	Number by exam results				Nodules		Cysts	
		Proportion (%)	Proportion (%)				Proportion (%)		Proportion (%)	
		Proportion (%)	A		B	C	≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm
	a	b/a (%)	A1	A2						
Municipalities surveyed in FY 2018										
Kawamata	1,116	1,112	405	703	4	0	4	2	0	707
		99.6	36.4	63.2	0.4	0.0	0.4	0.2	0.0	63.6
Namie	1,072	1,050	357	686	7	0	7	5	0	687
		97.9	34.0	65.3	0.7	0.0	0.7	0.5	0.0	65.4
Iitate	510	506	188	315	3	0	3	2	0	318
		99.2	37.2	62.3	0.6	0.0	0.6	0.4	0.0	62.8
Minami-soma	5,152	5,073	1,797	3,244	32	0	32	23	0	3,254
		98.5	35.4	63.9	0.6	0.0	0.6	0.5	0.0	64.1
Date	5,763	5,733	1,971	3,728	34	0	34	17	0	3,748
		99.5	34.4	65.0	0.6	0.0	0.6	0.3	0.0	65.4
Tamura	3,269	3,243	1,200	2,024	19	0	19	10	0	2,031
		99.2	37.0	62.4	0.6	0.0	0.6	0.3	0.0	62.6
Hirono	270	265	86	175	4	0	4	1	0	177
		98.1	32.5	66.0	1.5	0.0	1.5	0.4	0.0	66.8
Naraha	219	209	82	127	0	0	0	0	0	127
		95.4	39.2	60.8	0.0	0.0	0.0	0.0	0.0	60.8
Tomioka	605	581	215	363	3	0	3	0	0	364
		96.0	37.0	62.5	0.5	0.0	0.5	0.0	0.0	62.7
Kawauchi	126	121	37	83	1	0	1	0	0	84
		96.0	30.6	68.6	0.8	0.0	0.8	0.0	0.0	69.4
Okuma	530	518	175	341	2	0	2	2	0	343
		97.7	33.8	65.8	0.4	0.0	0.4	0.4	0.0	66.2
Futaba	206	199	66	133	0	0	0	0	0	133
		96.6	33.2	66.8	0.0	0.0	0.0	0.0	0.0	66.8
Katsurao	91	90	29	60	1	0	1	0	0	60
		98.9	32.2	66.7	1.1	0.0	1.1	0.0	0.0	66.7
Fukushima	27,960	27,804	9,565	18,093	146	0	145	83	1	18,163
		99.4	34.4	65.1	0.5	0.0	0.5	0.3	0.0	65.3
Nihonmatsu	5,336	5,312	1,859	3,407	46	0	45	19	1	3,434
		99.6	35.0	64.1	0.9	0.0	0.8	0.4	0.0	64.6
Motomiya	3,108	3,091	1,088	1,991	12	0	12	8	0	1,992
		99.5	35.2	64.4	0.4	0.0	0.4	0.3	0.0	64.4
Otama	896	889	295	588	6	0	6	1	0	592
		99.2	33.2	66.1	0.7	0.0	0.7	0.1	0.0	66.6
Koriyama	31,244	30,911	10,166	20,573	172	0	172	97	0	20,662
		98.9	32.9	66.6	0.6	0.0	0.6	0.3	0.0	66.8
Kori	1,092	1,084	385	692	7	0	7	2	0	695
		99.3	35.5	63.8	0.6	0.0	0.6	0.2	0.0	64.1
Kunimi	784	781	253	519	9	0	9	1	0	526
		99.6	32.4	66.5	1.2	0.0	1.2	0.1	0.0	67.3
Tenei	443	424	164	258	2	0	2	2	0	260
		95.7	38.7	60.8	0.5	0.0	0.5	0.5	0.0	61.3
Shirakawa	6,044	5,896	2,014	3,851	31	0	31	20	0	3,865
		97.6	34.2	65.3	0.5	0.0	0.5	0.3	0.0	65.6
Nishigo	2,060	2,028	684	1,334	10	0	10	9	0	1,339
		98.4	33.7	65.8	0.5	0.0	0.5	0.4	0.0	66.0
Izumizaki	600	581	221	359	1	0	1	1	0	360
		96.8	38.0	61.8	0.2	0.0	0.2	0.2	0.0	62.0
Miharu	1,452	1,441	484	947	10	0	10	5	0	953
		99.2	33.6	65.7	0.7	0.0	0.7	0.3	0.0	66.1
Subtotal	99,948	98,942	33,786	64,594	562	0	560	310	2	64,874
		99.0	34.1	65.3	0.6	0.0	0.6	0.3	0.0	65.6

As of 30 June 2019

	Participants	Confirmed results b	Number by exam results				Nodules		Cysts	
			Proportion (%)				Proportion (%)		Proportion (%)	
			A		B	C				
	a	Proportion b/a (%)	A1	A2			≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm
Municipalities surveyed in FY 2019										
Iwaki	1,969	1,587	584	980	23	0	23	12	0	991
		80.6	36.8	61.8	1.4	0.0	1.4	0.8	0.0	62.4
Sukagawa	1,520	1,267	417	834	16	0	16	12	0	842
		83.4	32.9	65.8	1.3	0.0	1.3	0.9	0.0	66.5
Soma	637	328	112	208	8	0	8	2	0	212
		51.5	34.1	63.4	2.4	0.0	2.4	0.6	0.0	64.6
Kagamiishi	224	187	64	119	4	0	4	0	0	121
		83.5	34.2	63.6	2.1	0.0	2.1	0.0	0.0	64.7
Shinchi	66	59	23	36	0	0	0	1	0	36
		89.4	39.0	61.0	0.0	0.0	0.0	1.7	0.0	61.0
Nakajima	430	101	40	60	1	0	1	0	0	61
		23.5	39.6	59.4	1.0	0.0	1.0	0.0	0.0	60.4
Yabuki	1,011	322	135	184	3	0	3	2	0	185
		31.8	41.9	57.1	0.9	0.0	0.9	0.6	0.0	57.5
Ishikawa	1,158	176	78	95	3	0	3	0	0	95
		15.2	44.3	54.0	1.7	0.0	1.7	0.0	0.0	54.0
Yamatsuri	202	43	13	30	0	0	0	0	0	30
		21.3	30.2	69.8	0.0	0.0	0.0	0.0	0.0	69.8
Asakawa	561	104	34	67	3	0	3	0	0	67
		18.5	32.7	64.4	2.9	0.0	2.9	0.0	0.0	64.4
Hirata	506	116	35	81	0	0	0	1	0	81
		22.9	30.2	69.8	0.0	0.0	0.0	0.9	0.0	69.8
Tanagura	824	243	96	144	3	0	3	2	0	146
		29.5	39.5	59.3	1.2	0.0	1.2	0.8	0.0	60.1
Hanawa	586	96	36	60	0	0	0	1	0	59
		16.4	37.5	62.5	0.0	0.0	0.0	1.0	0.0	61.5
Samegawa	253	41	17	24	0	0	0	0	0	24
		16.2	41.5	58.5	0.0	0.0	0.0	0.0	0.0	58.5
Ono	750	209	63	144	2	0	2	0	0	146
		27.9	30.1	68.9	1.0	0.0	1.0	0.0	0.0	69.9
Tamakawa	530	72	28	41	3	0	3	0	0	42
		13.6	38.9	56.9	4.2	0.0	4.2	0.0	0.0	58.3
Furudono	421	43	15	28	0	0	0	0	0	28
		10.2	34.9	65.1	0.0	0.0	0.0	0.0	0.0	65.1
Hinoemata	28	2	1	1	0	0	0	0	0	1
		7.1	50.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0
Minami-aizu	811	64	24	39	1	0	1	0	0	40
		7.9	37.5	60.9	1.6	0.0	1.6	0.0	0.0	62.5
Kaneyama	47	9	4	5	0	0	0	0	0	5
		19.1	44.4	55.6	0.0	0.0	0.0	0.0	0.0	55.6
Showa	45	40	10	30	0	0	0	0	0	30
		88.9	25.0	75.0	0.0	0.0	0.0	0.0	0.0	75.0
Mishima	53	1	1	0	0	0	0	0	0	0
		1.9	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shimogo	298	22	9	12	1	0	1	0	0	13
		7.4	40.9	54.5	4.5	0.0	4.5	0.0	0.0	59.1
Kitakata	200	145	50	94	1	0	1	2	0	93
		72.5	34.5	64.8	0.7	0.0	0.7	1.4	0.0	64.1
Nishiaizu	239	152	60	92	0	0	0	0	0	92
		63.6	39.5	60.5	0.0	0.0	0.0	0.0	0.0	60.5
Tadami	232	27	12	15	0	0	0	0	0	15
		11.6	44.4	55.6	0.0	0.0	0.0	0.0	0.0	55.6
Inawashiro	841	169	61	106	2	0	2	0	0	107
		20.1	36.1	62.7	1.2	0.0	1.2	0.0	0.0	63.3
Bandai	169	4	1	3	0	0	0	0	0	3
		2.4	25.0	75.0	0.0	0.0	0.0	0.0	0.0	75.0
Kitashiobara	174	12	6	6	0	0	0	0	0	6
		6.9	50.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0
Aizumisato	1,061	170	53	113	4	0	4	0	0	115
		16.0	31.2	66.5	2.4	0.0	2.4	0.0	0.0	67.6
Aizubange	856	571	163	403	5	0	5	1	0	408
		66.7	28.5	70.6	0.9	0.0	0.9	0.2	0.0	71.5
Yanaizu	195	15	2	13	0	0	0	0	0	13
		7.7	13.3	86.7	0.0	0.0	0.0	0.0	0.0	86.7
Aizuwakamatsu	831	575	199	367	9	0	9	6	0	369
		69.2	34.6	63.8	1.6	0.0	1.6	1.0	0.0	64.2
Yugawa	223	13	5	7	1	0	1	1	0	8
		5.8	38.5	53.8	7.7	0.0	7.7	7.7	0.0	61.5
Subtotal	17,951	6,985	2,451	4,441	93	0	93	43	0	4,484
		38.9	35.1	63.6	1.3	0.0	1.3	0.6	0.0	64.2
Total	117,899	105,927	36,237	69,035	655	0	653	353	2	69,358
		89.8	34.2	65.2	0.6	0.0	0.6	0.3	0.0	65.5

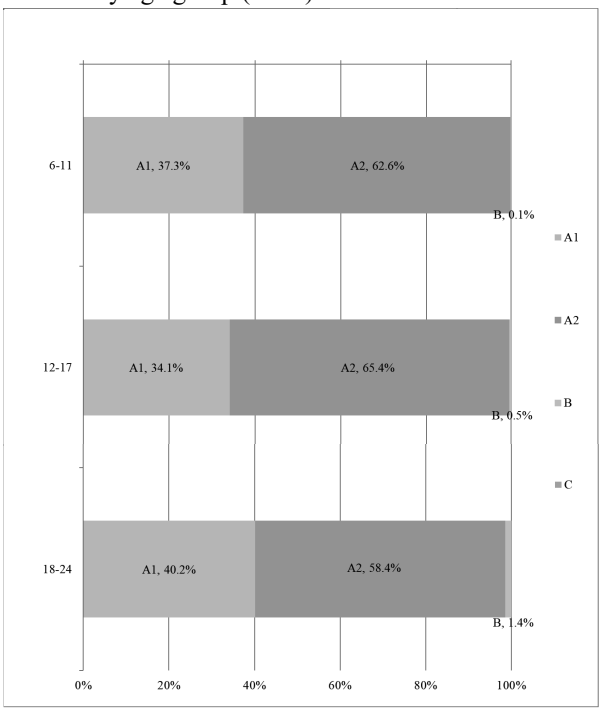
Appendix 4

1. Thyroid ultrasound examination results by age and gender

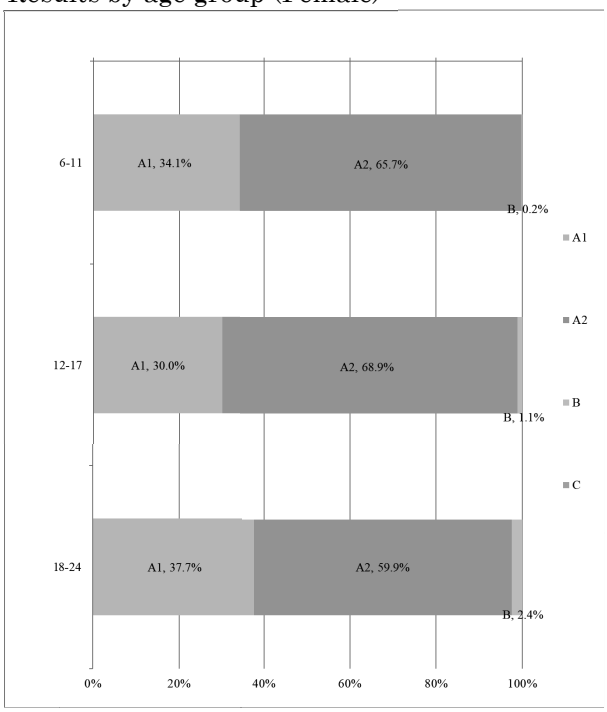
As of 30 June2019

Class/ Gender / Ages	A						B			C			Total		
	A1			A2											
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total		Female	Total
6-11	8,283	7,198	15,481	13,884	13,854	27,738	24	37	61	0	0	0	22,191	21,089	43,280
12-17	9,254	7,813	17,067	17,751	17,924	35,675	131	279	410	0	0	0	27,136	26,016	53,152
18-24	1,810	1,879	3,689	2,634	2,988	5,622	64	120	184	0	0	0	4,508	4,987	9,495
Total	19,347	16,890	36,237	34,269	34,766	69,035	219	436	655	0	0	0	53,835	52,092	105,927

Results by age group (Male)



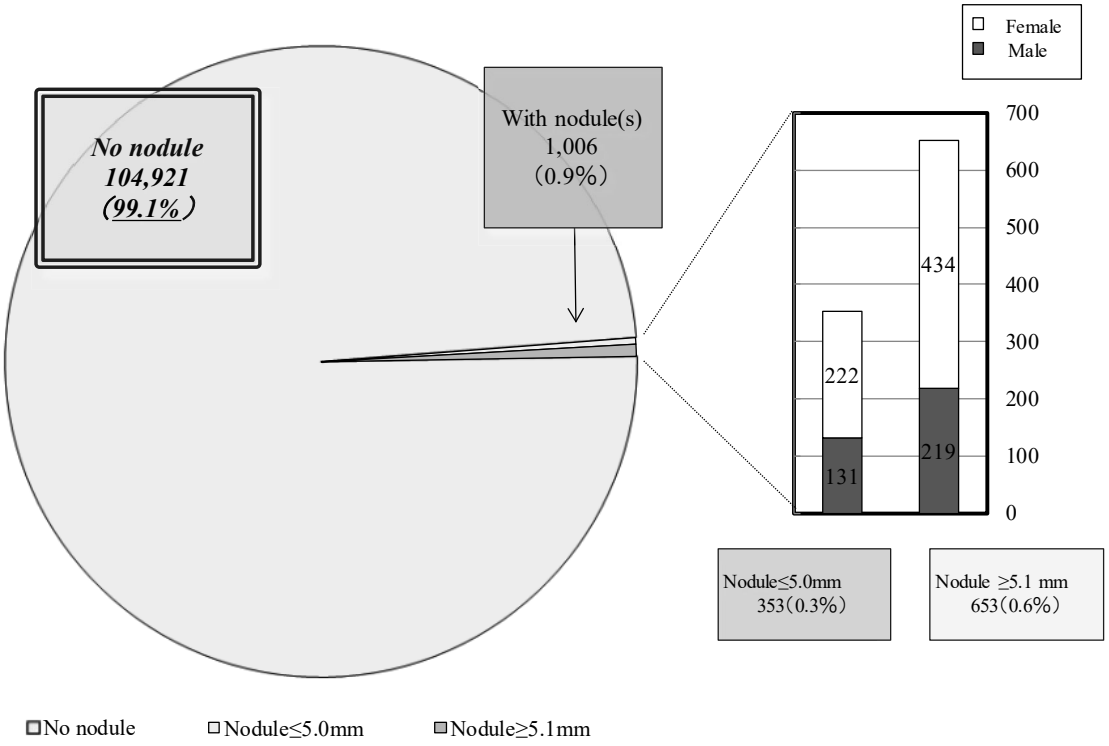
Results by age group (Female)

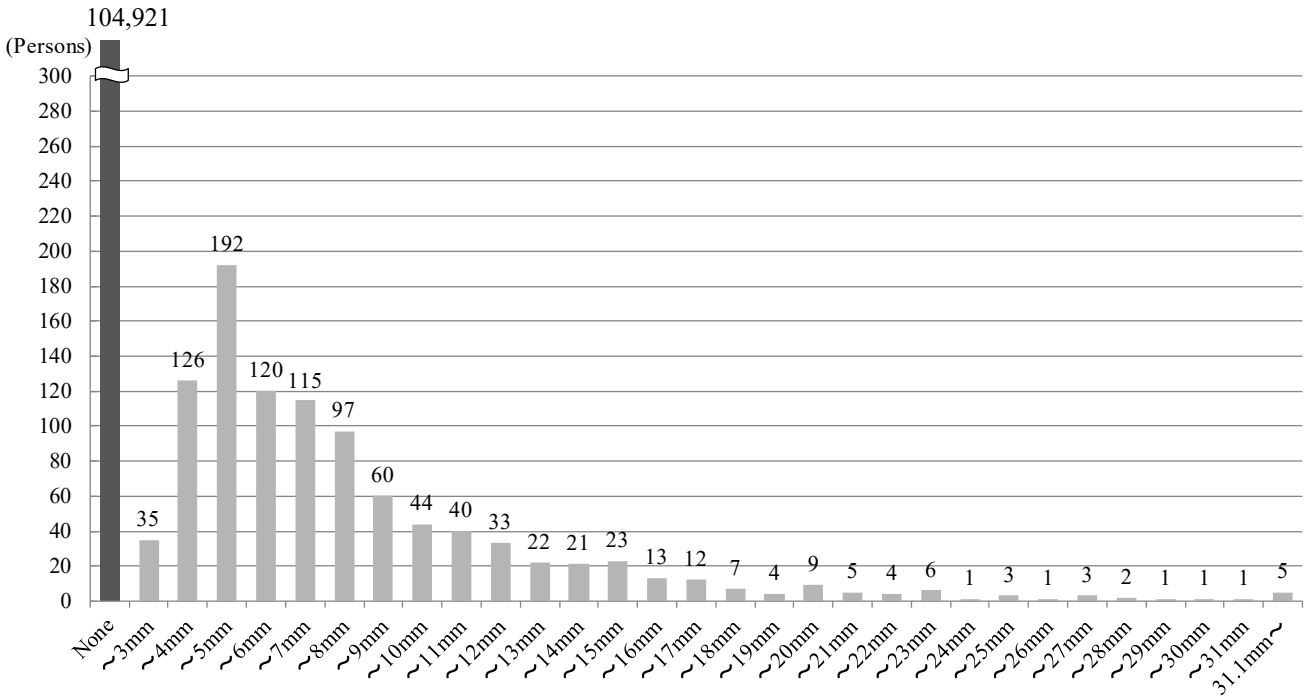


2 Nodule characteristics

As of 30 June 2019

Nodule size	Total	Male	Female	Class	Proportion
None	104,921	53,485	51,436	A1	99.1%
≤ 3.0 mm	35	18	17	A2	0.3%
3.1-5.0 mm	318	113	205		
5.1-10.0 mm	436	150	286	B	0.6%
10.1-15.0 mm	139	51	88		
15.1-20.0 mm	45	12	33		
20.1-25.0 mm	19	5	14		
≥ 25.1 mm	14	1	13		
Total	105,927	53,835	52,092		

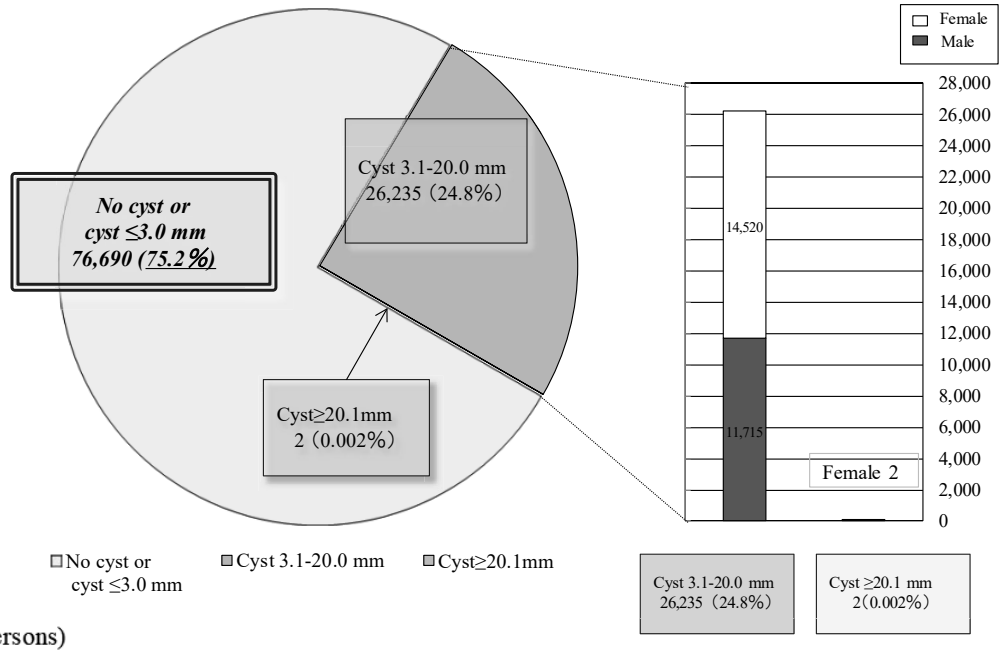


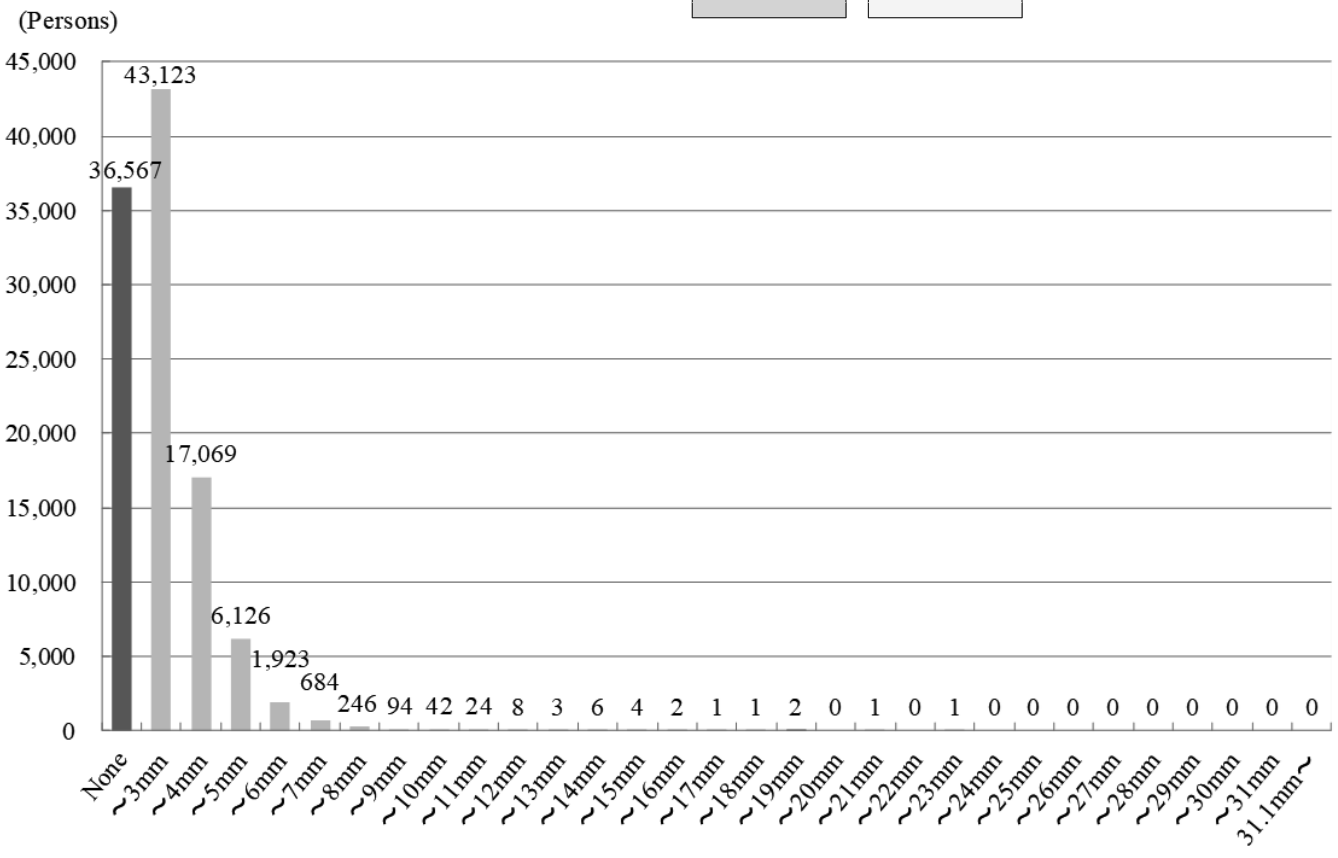


3 Cyst characteristics

As of 30 June 2019

Cyst size	Total	Male	Female	Class	Proportion
None	36,567	19,473	17,094	A1	75.2%
≤ 3.0 mm	43,123	22,647	20,476	A2	24.8%
3.1-5.0 mm	23,195	10,601	12,594		
5.1-10.0 mm	2,989	1,099	1,890		
10.1-15.0 mm	45	15	30		
15.1-20.0 mm	6	0	6		
20.1-25.0 mm	2	0	2	B	0.002%
≥ 25.1 mm	0	0	0		
Total	105,927	53,835	52,092		





Appendix 5

Results of confirmatory examination coverage by area — As of 30 June 2019

Area	Participants	Participants who required confirmatory exam	Number of those who underwent confirmatory exam				Number of confirmed results				
			Total	Ages 6-11	Ages 12-17	≥ 18	Total	A1	A2	Not A1 or A2	
											FNAC
	a	b	c	d	e	f	h	i	j	k	l
		Proportion (%) b/a	Proportion (%) c/b	Proportion (%) d/c	Proportion (%) e/c	Proportion (%) f/c	Proportion (%) h/c	Proportion (%) i/h	Proportion (%) j/h	Proportion (%) k/h	Proportion (%) l/k
13 municipalities [1)]	18,929	110	80	7	56	17	77	1	1	75	5
		0.6	72.7	8.8	70.0	21.3	96.3	1.3	1.3	97.4	6.7
Nakadori [2)]	89,995	490	292	28	177	87	253	1	27	225	18
		0.5	59.6	9.6	60.6	29.8	86.6	0.4	10.7	88.9	8.0
Hamadori [3)]	2,672	31	14	0	2	12	12	0	0	12	0
		1.2	45.2	0.0	14.3	85.7	85.7	0.0	0.0	100.0	0.0
Aizu [4)]	6,303	24	6	0	1	5	4	0	1	3	0
		0.4	25.0	0.0	16.7	83.3	66.7	0.0	25.0	75.0	0.0
Total	117,899	655	392	35	236	121	346	2	29	315	23
		0.6	59.8	8.9	60.2	30.9	88.3	0.6	8.4	91.0	7.3

1) Tamura, Minami-soma, Date, Kawamata, Hirono, Naraha, Tomioka, Kawauchi, Okuma, Futaba, Namie, Katsurao, Iitate
2) Fukushima, Koriyama, Shirakawa, Sukagawa, Nihonmatsu, Motomiya, Kori, Kunimi, Otama, Kagamiishi, Tenei, Nishigo, Izumizaki, Nakajima, Yabuki, Tanagura, Yamatsuri, Hanawa, Samegawa, Ishikawa, Tamakawa, Hirata, Asakawa, Furudono, Miharu, Ono
3) Iwaki, Soma, Shinchi
4) Aizuwakamatsu, Kitakata, Shimogo, Hinoemata, Tadami, Minami-aizu, Kitashiobara, Nishiaizu, Bandai, Inawashiro, Aizubange, Yugawa, Yanaizu, Mishima, Kaneyama, Showa, Aizumisato

Appendix 6

Surgical cases for malignancy or suspicion of malignancy

1. Municipalities surveyed in FY 2018
   Malignant or suspicious for malignancy: 13 (1 surgical cases: 1 papillary thyroid carcinomas)
2. Municipalities surveyed in FY 2019
   Malignant or suspicious for malignancy: 0 (0 surgical case: 0 papillary thyroid carcinomas)
3. Total
   Maalignant or suspicious for malignancy: 13 (1 surgical cases: 1 papillary thyroid carcinomas)