

## Basic Survey (Radiation Dose Estimates)

Reported on 5 June 2017

### 1. Response Rates and Radiation Dose Estimates

#### 1.1 Response Rates of Residents

The overall effective response rate to the Basic Survey (radiation dose estimates), for the entire population of Fukushima Prefecture, was 27.6% (566,680 of 2,055,267) as of 31 March 2017. Among the respondents, 73,142 answered through the simplified questionnaire. (See Table 1.)

Table 2 shows the response rates by age group.

Table 1 Response rates to the Basic Survey			
As of 31 March 2017			
		2,055,267	
Responses	Original questionnaire	493,538	24.0%
	Simplified questionnaire*	73,142	3.6%
	Total	566,680	27.6%
*Preliminary figures			
Fractions have been rounded.			

Table 2		Response rates by age group						As of 31 March 2017
Age group (years)	0-9	10-19	20-29	30-39	40-49	50-59	60-	Total
Response rate	46.6%	35.8%	18.1%	24.7%	22.4%	23.0%	27.9%	27.6%

## 1.2 Radiation Dose Estimates

Doses have been estimated for 552,034 of 566,680 respondents (97.4%) as of 31 March 2017, and results have been returned to 551,753 respondents. (See Table 3.)

Table 3 Response rates to the Basic Survey							
As of 31 March 2017							
Area	Survey population a	Responses b	Response rate c=b/a	Completed dose estimates d	Proportion e=d/b	Returned results f	Proportion g=f/b
Kempoku	504,034	152,184	30.2%	149,241	98.1%	149,186	98.0%
Kenchu	557,190	136,617	24.5%	133,224	97.5%	133,140	97.5%
Kennan	152,227	35,309	23.2%	34,301	97.1%	34,223	96.9%
Aizu	267,201	57,794	21.6%	55,593	96.2%	55,583	96.2%
Minami-aizu	30,788	6,387	20.7%	6,078	95.2%	6,077	95.1%
Soso	195,590	90,101	46.1%	87,389	97.0%	87,340	96.9%
Iwaki	348,237	88,288	25.4%	86,208	97.6%	86,204	97.6%
Total	2,055,267	566,680	27.6%	552,034	97.4%	551,753	97.4%

Including areas covered by the initial survey of people in Yamakiya, Namie and Iitate.

\* Table 3 provides a more detailed view of the responses summarized in Table 1.

\* In case uncertainties in the action record of a questionnaire prevented a radiation dose estimate, further inquiry was made to facilitate an estimate. This supplemental effort has been proceeding as much as possible, but failure to make contact with residents has prevented around 13,600 dose estimates from being completed.

We have been estimating doses for non-residents who were visiting or staying in Fukushima Prefecture at the time of the accident. (See Table 4.)

Table 4 Response rates to the Basic Survey						
(Visitors)						
As of 31 March 2017						
Number of requests a	Responses b	Response rate c=b/a	Completed dose estimates d	Proportion e=d/b	Returned results f	Proportion g=f/b
3,993	2,232	55.9%	2,016	90.3%	2,014	90.2%

\* Table 3, 4, and Appendix 1 include the data in the estimation period less than four months.

## 2. Results of Radiation Dose Estimates

Table 5 shows a breakdown of completed dose estimates (from Table 3), excluding cases of data covering less than four months.

Radiation doses for a total of 473,350 residents have been estimated to date. The results for 464,166 respondents (excluding radiation workers) suggest that the doses for about 87% of the respondents in Kempoku area and about 92% in Kenchu area were <2 mSv. The doses for approximately 88% of the respondents in Kennan area and more than 99% of those in Aizu and Minami-aizu areas were <1 mSv. Doses for about 77 % of respondents in the Soso area and more than 99% of respondents in Iwaki were also <1 mSv.

Effective Dose (mSv)	Total	Excluding radiation workers				By area (excluding radiation workers)													
						Kempoku *		Kenchu		Kennan		Aizu		Minami-aizu		Soso **		Iwaki	
<1	294,309	288,591	62.2%	93.8%	99.8%	24,931	20.0%	58,158	51.5%	26,011	88.3%	45,702	99.3%	4,947	99.3%	55,783	77.3%	73,059	99.1%
1-2	149,305	146,962	31.7%	5.8%		83,758	67.0%	46,111	40.8%	3,429	11.6%	308	0.7%	36	0.7%	12,688	17.6%	632	0.9%
2-3	26,020	25,647	5.5%			15,694	12.6%	8,193	7.3%	17	0.1%	25	0.1%	0	-	1,688	2.3%	30	0.0%
3-4	1,575	1,495	0.3%		472	0.4%	423	0.4%	0	-	1	0.0%	0	-	595	0.8%	4	0.0%	
4-5	551	505	0.1%	0.2%	40	0.0%	5	0.0%	0	-	0	-	0	-	459	0.6%	1	0.0%	
5-6	441	389	0.1%		19	0.0%	3	0.0%	0	-	0	-	0	-	366	0.5%	1	0.0%	
6-7	268	230	0.0%		10	0.0%	1	0.0%	0	-	1	0.0%	0	-	218	0.3%	0	-	
7-8	155	116	0.0%	0.1%	1	0.0%	0	-	0	-	0	-	0	-	115	0.2%	0	-	
8-9	118	78	0.0%		1	0.0%	0	-	0	-	0	-	0	-	77	0.1%	0	-	
9-10	72	41	0.0%		0	-	0	-	0	-	0	-	0	-	41	0.1%	0	-	
10-11	69	36	0.0%	0.0%	0	-	0	-	0	-	0	-	0	-	36	0.0%	0	-	
11-12	52	30	0.0%		1	0.0%	0	-	0	-	0	-	0	-	29	0.0%	0	-	
12-13	37	13	0.0%		0	-	0	-	0	-	0	-	0	-	13	0.0%	0	-	
13-14	36	12	0.0%	0.0%	0	-	0	-	0	-	0	-	0	-	12	0.0%	0	-	
14-15	27	6	0.0%		0	-	0	-	0	-	0	-	0	-	6	0.0%	0	-	
≥15	315	15	0.0%		0	-	0	-	0	-	0	-	0	-	15	0.0%	0	-	
Total	473,350	464,166	100.0%	100.0%	100.0%	124,927	100%	112,894	100%	29,457	100%	46,037	100%	4,983	100%	72,141	100%	73,727	100%
Max	66mSv	25mSv				11mSv		6.3mSv		2.6mSv		6.0mSv		1.9mSv		25mSv		5.9mSv	
Mean value	0.9mSv	0.8mSv				1.4mSv		1.0mSv		0.6mSv		0.2mSv		0.1mSv		0.8mSv		0.3mSv	
Median	0.6mSv	0.6mSv				1.4mSv		0.9mSv		0.5mSv		0.2mSv		0.1mSv		0.5mSv		0.3mSv	

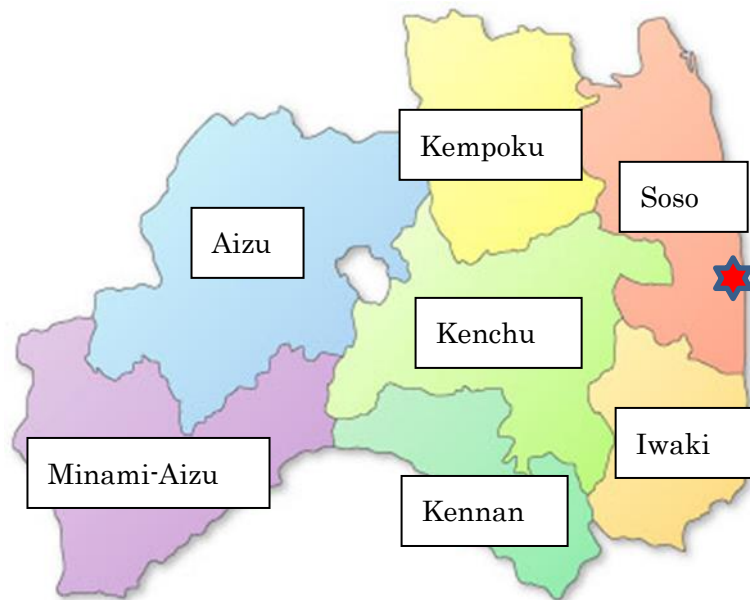
### 3. Evaluation of the results

The latest effective radiation dose estimates showed similar trends to those observed so far.

Since previous epidemiological studies<sup>1</sup> indicate no significant health effects at doses  $\leq 100$  mSv, we concluded that radiation doses estimated so far are unlikely to cause adverse effects on health, although this conclusion is based on external radiation doses estimated only for the first four months following the accident.

#### Reference

1) Sources and effects of ionizing radiation, United Nations Scientific Committee on the Effects of Atomic Radiation, UNSCEAR 2008 Report to the General Assembly, with scientific annexes.



## Response rates to the Basic Survey by district

Initial and full-scale surveys

As of 31 March 2017

Area	District	Survey population a	Responses b	Response rate c=b/a	Completed dose estimates d	Proportion e=d/b	Returned results f	Proportion g=f/b
Kempoku	Fukushima	295,641	93,867	31.8%	92,340	98.4%	92,307	98.3%
	Nihonmatsu	60,857	16,912	27.8%	16,547	97.8%	16,544	97.8%
	Date	67,576	18,283	27.1%	17,817	97.5%	17,805	97.4%
	Motomiya	31,760	9,106	28.7%	8,936	98.1%	8,934	98.1%
	Kori	13,207	3,883	29.4%	3,774	97.2%	3,774	97.2%
	Kunimi	10,316	3,028	29.4%	2,940	97.1%	2,940	97.1%
	Kawamata	15,885	5,179	32.6%	5,009	96.7%	5,004	96.6%
	Otama	8,792	1,926	21.9%	1,878	97.5%	1,878	97.5%
	Subtotal	504,034	152,184	30.2%	149,241	98.1%	149,186	98.0%
Kenchu	Koriyama	339,685	87,120	25.6%	85,069	97.6%	85,013	97.6%
	Sukagawa	80,156	17,154	21.4%	16,716	97.4%	16,715	97.4%
	Tamura	41,723	10,549	25.3%	10,191	96.6%	10,190	96.6%
	Kagamiishi	13,109	2,887	22.0%	2,824	97.8%	2,824	97.8%
	Tenei	6,469	1,255	19.4%	1,220	97.2%	1,198	95.5%
	Ishikawa	17,488	4,203	24.0%	4,101	97.6%	4,100	97.5%
	Tamakawa	7,335	1,500	20.4%	1,452	96.8%	1,452	96.8%
	Hirata	7,053	1,655	23.5%	1,599	96.6%	1,599	96.6%
	Asakawa	7,163	1,508	21.1%	1,473	97.7%	1,472	97.6%
	Furudono	6,319	1,309	20.7%	1,274	97.3%	1,274	97.3%
	Miharu	18,989	4,870	25.6%	4,764	97.8%	4,763	97.8%
	Ono	11,701	2,607	22.3%	2,541	97.5%	2,540	97.4%
	Subtotal	557,190	136,617	24.5%	133,224	97.5%	133,140	97.5%
Kennan	Shirakawa	65,428	16,103	24.6%	15,707	97.5%	15,640	97.1%
	Nishigo	20,088	5,047	25.1%	4,860	96.3%	4,857	96.2%
	Izumizaki	6,931	1,439	20.8%	1,343	93.3%	1,340	93.1%
	Nakajima	5,306	1,004	18.9%	976	97.2%	976	97.2%
	Yabuki	18,341	4,094	22.3%	3,986	97.4%	3,982	97.3%
	Tanagura	15,384	3,026	19.7%	2,961	97.9%	2,961	97.9%
	Yamatsuri	6,491	1,464	22.6%	1,415	96.7%	1,415	96.7%
	Hanawa	10,062	2,313	23.0%	2,262	97.8%	2,261	97.8%
	Samegawa	4,196	819	19.5%	791	96.6%	791	96.6%
	Subtotal	152,227	35,309	23.2%	34,301	97.1%	34,223	96.9%
Aizu	Aizuwakamatsu	127,816	29,598	23.2%	28,625	96.7%	28,624	96.7%
	Kitakata	53,199	11,057	20.8%	10,628	96.1%	10,623	96.1%
	Kitashiobara	3,276	607	18.5%	584	96.2%	584	96.2%
	Nishiaizu	7,725	1,453	18.8%	1,351	93.0%	1,351	93.0%
	Bandai	3,888	793	20.4%	775	97.7%	774	97.6%
	Inawashiro	16,271	3,647	22.4%	3,515	96.4%	3,514	96.4%
	Aizubange	17,881	3,261	18.2%	3,117	95.6%	3,117	95.6%
	Yugawa	3,513	713	20.3%	680	95.4%	680	95.4%
	Yanaizu	4,077	719	17.6%	687	95.5%	687	95.5%
	Mishima	2,031	373	18.4%	339	90.9%	339	90.9%
	Kaneyama	2,544	629	24.7%	573	91.1%	573	91.1%
	Showa	1,569	354	22.6%	327	92.4%	327	92.4%
	Aizumisato	23,411	4,590	19.6%	4,392	95.7%	4,390	95.6%
	Subtotal	267,201	57,794	21.6%	55,593	96.2%	55,583	96.2%
Minami-aizu	Shimogo	6,649	1,251	18.8%	1,191	95.2%	1,191	95.2%
	Hinoemata	614	142	23.1%	133	93.7%	133	93.7%
	Tadami	5,030	1,143	22.7%	1,081	94.6%	1,081	94.6%
	Minami-aizu	18,495	3,851	20.8%	3,673	95.4%	3,672	95.4%
	Subtotal	30,788	6,387	20.7%	6,078	95.2%	6,077	95.1%
Soso	Soma	37,363	13,294	35.6%	12,775	96.1%	12,769	96.1%
	Minami-soma	70,011	30,250	43.2%	29,472	97.4%	29,460	97.4%
	Hirono	5,164	2,228	43.1%	2,140	96.1%	2,138	96.0%
	Naraha	7,963	4,184	52.5%	4,022	96.1%	4,020	96.1%
	Tomiooka	15,749	8,622	54.7%	8,411	97.6%	8,405	97.5%
	Kawauchi	2,996	1,540	51.4%	1,487	96.6%	1,487	96.6%
	Okuma	11,473	6,082	53.0%	5,860	96.3%	5,860	96.3%
	Futaba	7,051	3,950	56.0%	3,845	97.3%	3,843	97.3%
	Namie	21,335	12,975	60.8%	12,670	97.6%	12,660	97.6%
	Katsurao	1,541	824	53.5%	768	93.2%	768	93.2%
	Shinchi	8,356	2,706	32.4%	2,606	96.3%	2,604	96.2%
	litate	6,588	3,446	52.3%	3,333	96.7%	3,326	96.5%
	Subtotal	195,590	90,101	46.1%	87,389	97.0%	87,340	96.9%
Iwaki	Iwaki	348,237	88,288	25.4%	86,208	97.6%	86,204	97.6%
Total		2,055,267	566,680	27.6%	552,034	97.4%	551,753	97.4%

Estimated external radiation doses in the first four months (from 11 March through 11 July)

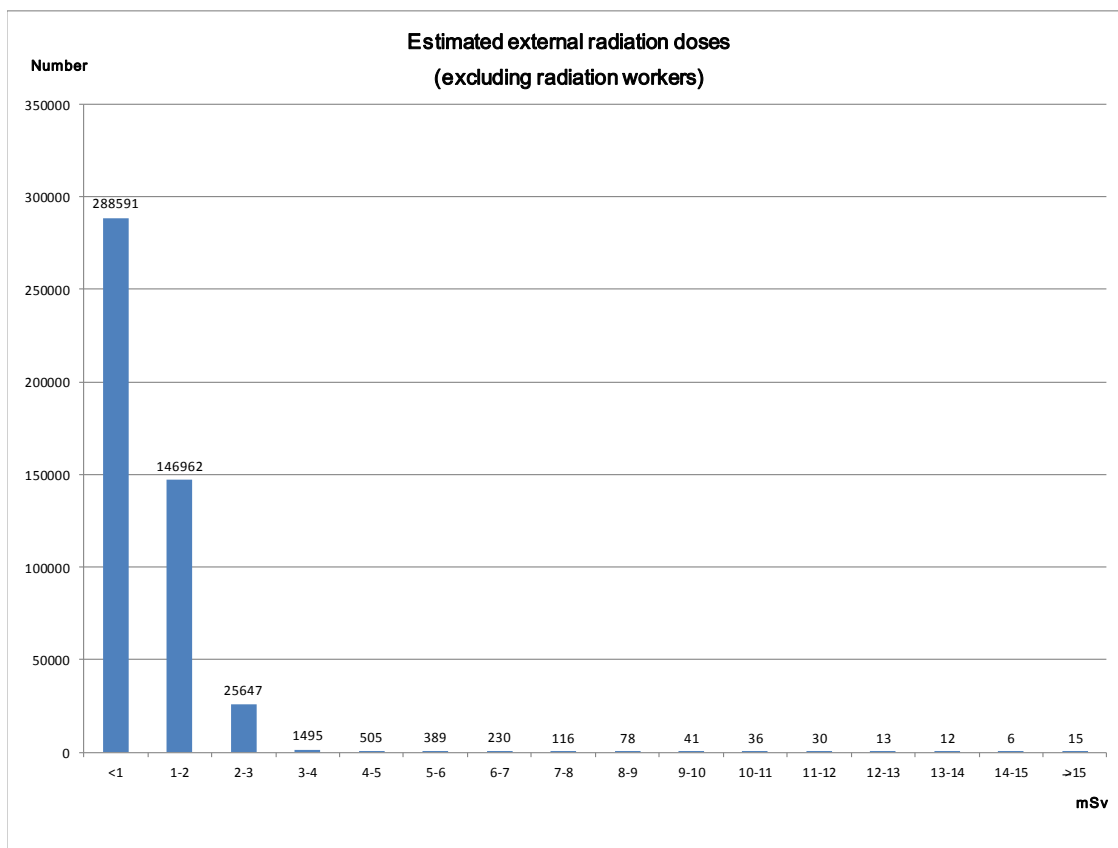
Initial and full-scale surveys

As of 31 March 2017

**Estimated external radiation doses by region**

Effective Dose (mSv)	Total	Excluding radiation workers	By region							Proportion (%) excluding radiation workers		
			Kempoku	Kenchu	Kennan	Aizu	Minami-aizu	Soso	Iwaki			
<1	294,309	288,591	24,931	58,158	26,011	45,702	4,947	55,783	73,059	62.2	93.8	99.8
1-2	149,305	146,962	83,758	46,111	3,429	308	36	12,688	632	31.7		
2-3	26,020	25,647	15,694	8,193	17	25	0	1,688	30	5.5	5.8	
3-4	1,575	1,495	472	423	0	1	0	595	4	0.3		
4-5	551	505	40	5	0	0	0	459	1	0.1	0.2	0.2
5-6	441	389	19	3	0	0	0	366	1	0.1		
6-7	268	230	10	1	0	1	0	218	0	0.0	0.1	
7-8	155	116	1	0	0	0	0	115	0	0.0		
8-9	118	78	1	0	0	0	0	77	0	0.0	0.0	
9-10	72	41	0	0	0	0	0	41	0	0.0		
10-11	69	36	0	0	0	0	0	36	0	0.0	0.0	0.0
11-12	52	30	1	0	0	0	0	29	0	0.0		
12-13	37	13	0	0	0	0	0	13	0	0.0	0.0	
13-14	36	12	0	0	0	0	0	12	0	0.0		
14-15	27	6	0	0	0	0	0	6	0	0.0	0.0	
≥15	315	15	0	0	0	0	0	15	0	0.0	0.0	0.0
Total	473,350	464,166	124,927	112,894	29,457	46,037	4,983	72,141	73,727	100.0	100.0	100.0
Max	66	25	11	6.3	2.6	6.0	1.9	25	5.9			
Mean value	0.9	0.8	1.4	1.0	0.6	0.2	0.1	0.8	0.3			
Median	0.6	0.6	1.4	0.9	0.5	0.2	0.1	0.5	0.3			

Percentages have been rounded and may not total to 100%.



**Estimated external radiation doses by age group (excluding radiation workers)**

Effective Dose ( mSv )	Age at the time of the disaster (years)									Total
	0 - 9	10 - 19	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 -	
<1	48,035	44,499	21,284	34,188	28,590	32,843	36,306	25,719	17,127	288,591
1-2	22,979	21,684	10,123	18,285	16,641	18,540	19,490	12,285	6,935	146,962
2-3	6,439	4,262	1,135	2,337	2,245	2,971	3,423	1,995	840	25,647
3-4	250	157	81	158	153	230	233	164	69	1,495
4-5	19	47	35	39	75	95	81	76	38	505
5-6	14	13	29	34	46	86	73	66	28	389
6-7	3	6	10	22	24	45	52	47	21	230
7-8	4	4	8	9	13	35	22	14	7	116
8-9	2	6	2	7	8	16	16	12	9	78
9-10	0	1	2	3	3	12	11	5	4	41
10-11	1	1	1	2	6	11	5	6	3	36
11-12	0	0	1	3	0	5	8	11	2	30
12-13	0	0	0	0	1	6	4	1	1	13
13-14	0	0	1	1	1	4	3	2	0	12
14-15	0	0	0	0	0	3	3	0	0	6
≥15	0	0	0	0	3	3	6	1	2	15
Total	77,746	70,680	32,712	55,088	47,809	54,905	59,736	40,404	25,086	464,166

**Estimated external radiation doses by sex (excluding radiation workers)**

Effective Dose ( mSv )	By sex				Total	Proportion (%)
	Male	Proportion (%)	Female	Proportion (%)		
<1	128,800	60.6	159,791	63.5	288,591	62.2
1-2	68,106	32.0	78,856	31.3	146,962	31.7
2-3	13,926	6.6	11,721	4.7	25,647	5.5
3-4	951	0.4	544	0.2	1,495	0.3
4-5	282	0.1	223	0.1	505	0.1
5-6	199	0.1	190	0.1	389	0.1
6-7	130	0.1	100	0.0	230	0.0
7-8	64	0.0	52	0.0	116	0.0
8-9	49	0.0	29	0.0	78	0.0
9-10	24	0.0	17	0.0	41	0.0
10-11	22	0.0	14	0.0	36	0.0
11-12	16	0.0	14	0.0	30	0.0
12-13	6	0.0	7	0.0	13	0.0
13-14	8	0.0	4	0.0	12	0.0
14-15	3	0.0	3	0.0	6	0.0
≥15	12	0.0	3	0.0	15	0.0
Total	212,598	100.0	251,568	100.0	464,166	100.0

Percentages have been rounded and may not total to 100%.

As of 31 March 2017

Estimated external radiation doses by region in the first four months (from 11 March through 11 July) excluding radiation workers

Area/region		Effective Doses ( mSv )																	Total
		<1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	≥15		
Kempoku	Fukushima	16,171	52,561	9,376	151	13	10	4	0	0	0	0	0	0	0	0	0	78,286	
	Nihonmatsu	1,318	8,663	3,530	90	1	0	0	0	0	0	0	0	0	0	0	0	13,602	
	Date	4,385	9,075	1,135	147	8	2	3	1	1	0	0	0	0	0	0	0	14,757	
	Motomiya	745	5,459	1,257	24	1	0	0	0	0	0	0	0	0	0	0	0	7,486	
	Kori	315	2,751	66	2	0	1	0	0	0	0	0	0	0	0	0	0	3,135	
	Kunimi	967	1,436	12	0	0	0	0	0	0	0	0	0	0	0	0	0	2,415	
	Kawamata	639	2,750	185	56	17	6	3	0	0	0	0	1	0	0	0	0	3,657	
	Otama	391	1,063	133	2	0	0	0	0	0	0	0	0	0	0	0	0	1,589	
Kempoku Subtotal		24,931	83,758	15,694	472	40	19	10	1	1	0	0	1	0	0	0	0	124,927	
Kenchu	Koriyama	23,957	40,569	7,744	413	5	3	1	0	0	0	0	0	0	0	0	0	72,692	
	Sukagawa	10,748	3,188	334	4	0	0	0	0	0	0	0	0	0	0	0	0	14,271	
	Tamura	7,673	681	24	3	0	0	0	0	0	0	0	0	0	0	0	0	8,381	
	Kagamiishi	2,337	74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,411	
	Tenei	400	588	59	1	0	0	0	0	0	0	0	0	0	0	0	0	1,048	
	Ishikawa	3,166	38	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3,205	
	Tamakawa	1,175	18	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1,196	
	Hirata	1,292	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,326	
	Asakawa	1,212	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,227	
	Furudono	1,059	14	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1,075	
	Miharu	3,118	809	24	2	0	0	0	0	0	0	0	0	0	0	0	0	3,953	
	Ono	2,021	83	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2,106	
Kenchu Subtotal		58,158	46,111	8,193	423	5	3	1	0	0	0	0	0	0	0	0	0	112,894	
Kennan	Shirakawa	12,347	1,272	9	0	0	0	0	0	0	0	0	0	0	0	0	0	13,628	
	Nishigo	2,225	1,971	2	0	0	0	0	0	0	0	0	0	0	0	0	0	4,198	
	Izumizaki	1,104	21	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1,126	
	Nakajima	823	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	836	
	Yabuki	3,347	83	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3,431	
	Tanagura	2,524	28	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2,555	
	Yamatsuri	1,139	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,148	
	Hanawa	1,852	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,875	
	Samegawa	650	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	660	
Kennan Subtotal		26,011	3,429	17	0	0	0	0	0	0	0	0	0	0	0	0	0	29,457	
Aizu	Aizuwakamatsu	23,632	160	13	0	0	0	1	0	0	0	0	0	0	0	0	0	23,806	
	Kitakata	8,888	56	3	1	0	0	0	0	0	0	0	0	0	0	0	0	8,948	
	Kitashiobara	475	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	479	
	Nishiaizu	1,012	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,014	
	Bandai	654	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	664	
	Inawashiro	2,840	30	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2,873	
	Aizubange	2,613	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,628	
	Yugawa	579	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	583	
	Yanaizu	544	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	548	
	Mishima	246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	246	
	Kaneyama	405	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	408	
	Showa	245	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	246	
	Aizumisato	3,569	22	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3,594	
Aizu Subtotal		45,702	308	25	1	0	0	1	0	0	0	0	0	0	0	0	0	46,037	
Minami-aizu	Shimogo	961	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	966	
	Hinoemata	103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	103	
	Tadami	874	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	879	
	Minami-aizu	3,009	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,035	
Minami-aizu Subtotal		4,947	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,983	
Soso	Soma	10,009	458	87	20	5	0	0	0	0	2	0	0	0	0	0	0	10,581	
	Minami-soma	19,115	6,221	513	99	35	3	7	4	1	0	0	1	0	0	0	0	25,999	
	Hirono	1,836	58	2	0	0	0	1	0	1	0	0	0	0	0	0	0	1,898	
	Naraha	3,393	131	13	2	0	1	1	0	0	0	0	0	0	0	0	0	3,541	
	Tomioka	5,826	1,102	98	18	3	2	0	3	2	0	0	1	0	0	0	0	7,055	
	Kawauchi	962	350	16	1	0	1	1	1	0	0	0	0	0	0	0	0	1,332	
	Okuma	3,370	1,284	112	17	6	4	4	3	0	2	2	1	0	4	0	1	4,810	
	Futaba	2,671	468	77	18	6	4	3	6	2	1	0	2	0	0	0	2	3,260	
	Namie	5,739	2,117	383	68	40	17	12	13	9	6	11	7	5	4	3	8	8,442	
	Katsurao	502	162	24	4	0	1	0	0	0	0	0	0	0	0	0	0	693	
	Shinchi	2,174	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,194	
	Iitate	186	317	363	348	364	333	189	85	62	30	23	17	8	4	3	4	2,336	
Soso Subtotal		55,783	12,688	1,688	595	459	366	218	115	77	41	36	29	13	12	6	15	72,141	
Iwaki	Iwaki	73,059	632	30	4	1	1	0	0	0	0	0	0	0	0	0	0	73,727	
Total		288,591	146,962	25,647	1,495	505	389	230	116	78	41	36	30	13	12	6	15	464,166	
Proportion (%)		62.2	31.7	5.5	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	
		93.8		5.8		0.2		0.1		0.0		0.0		0.0		0.0		100.0	
		99.8						0.2						0.0					100.0
Visitors		1,457	271	18	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1,749
Total+Visitors		290,048	147,233	25,665	1,497	505	389	230	116	78	41	36	30	13	12	6	16	465,915	

Percentages have been rounded and may not total to 100%.



# Progress Report of the Comprehensive Health Check

Reported on 5 June 2017

## 1. Purpose

The Fukushima Daiichi Nuclear Power Plant accident caused by the Great East Japan Earthquake in March 2011 led to a large-scale evacuation of residents in surrounding areas, especially the government-designated Evacuation Zones and Evacuation Warning Zones. Many of the Fukushima evacuees have since been concerned about their own health due primarily to the sudden and notable changes in their lifestyle, diet and exercise habits, in addition to the loss of opportunity to undergo necessary health check-ups.

In order to promote the health of Fukushima residents, it is important for them to know their current health status. This is essential for not only prevention of lifestyle diseases, but also early detection and early treatment of various illnesses. To this end, the Comprehensive Health Check is available for all residents of the Evacuation Zones.

## 2. Survey Population

Residents of Evacuation Zones at the time they were designated in 2011 (hereafter, Designated Areas), as well as those assessed to require the service based on the result of the Basic Survey.

### 【Designated Areas】

All of Tamura City, Minami-Soma City, Kawamata Town, Hirono Town, Naraha Town, Tomioka Town, Kawauchi Village, Okuma Town, Futaba Town, Namie Town, Katsurao Village, Iitate Village and parts of Date City (belonging to designated evacuation areas)

## 3. Implementation Status

### 3.1 Items of the Comprehensive Health Check

Examination items have been selected for each age group in order to allow residents of the Designated Areas to know their own health status, which is essential for not only prevention of lifestyle diseases but also early detection and early treatment of various illnesses.

For those aged 16 years and older, examination items of the Specific Comprehensive Health Check will be implemented based on Article 20 of the Act on Assurance of Medical Care for Elderly People (Act No. 80, 1982), including other additional items such as complete blood count.

### 【Examination items by age group】

Age group (years)	Examination Items
0-6 (Infant before entering school)	Height, weight, Additional items if requested: CBC (Number of red blood cells, hematocrit, hemoglobin, platelet count, number of white blood cells, differential white blood count.)
7-15 (From 1st to 9th grade)	Height, weight, blood pressure, CBC (Number of red blood cells, hematocrit, hemoglobin, platelet count, number of white blood cells, differential white blood count.) Additional items on requested: Blood biochemistry (AST, ALT, $\gamma$ GT, TG, HDL-C, LDL-C, HbA1c, plasma glucose, serum creatinine, uric acid)
16 and older	Height, weight, abdominal circumference or BMI, blood pressure <u>CBC (Number of red blood cells, hematocrit, hemoglobin, platelet count, number of white blood cells, differential white blood count.)</u> Urinary test (urine protein, urinary sugar, <u>urine occult blood</u> ) Blood biochemistry (AST, ALT, $\gamma$ GT, TG, HDL-C, LDL-C, HbA1c, plasma glucose, <u>serum creatinine, estimated glomerular filtration rate [eGFR], uric acid</u> ) The underlined values are not routinely measured during regular health exams.

### 3.2. The implementation status in FY 2016

#### ◆Methods of FY 2016

Age group	Area	Methods
$\geq 16$ years old	Within the prefecture	Additional check-ups in specific health examinations held by target municipalities (Health Check conducted by municipalities within the prefecture)
		Individual health examinations at designated medical institutions within the prefecture (Individual health examinations within the prefecture) * Number of cooperating medical institutions is 482
		Group health examinations conducted by FMU (Group health examinations within the prefecture) * 28 locations within the prefecture (conducted 51 times)
	Outside the prefecture	Additional check-ups in specific health examinations held by target municipalities (Other <sup>1</sup> )
		Individual health examinations at designated medical institutions outside the prefecture (Individual health examinations outside the prefecture) * Number of cooperating medical institutions is 719 (including 283 medical institutions that could accommodate $\leq 15$ years old)
$\leq 15$ years old	Within the prefecture	Children's health examinations at designated medical institutions within the prefecture (Children's health examinations within the prefecture) * Number of cooperating medical institutions is 96
	Outside the prefecture	Children's health examinations at designated medical institutions outside the prefecture (Children's health examinations outside the prefecture) * Number of cooperating medical institutions is 411 (including 283 medical institutions that could accommodate $\geq 16$ years old)

- 1) conducted outside the prefecture (cases where the municipality delegated the examination to examination agencies)

### 3.3 Changes in the Participants of the FY 2011-2016 Survey

#### Progress Report for FY 2011-2016 (Ages 16 and older)

(Unit: person, percentage)

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
	Revised value as of 11 Sep 2012	Revised value as of 5 Jul 2013	Revised value as of 1 Sep 2014	Revised value as of 1 Sep 2015	Revised value of 1 Sep 2016	Preliminary value as of 31 Mar 2017
Survey population	182,370	184,910	186,970	188,328	190,019	191,101
Health Check conducted by municipalities within the prefecture	8,798	23,907	25,604	25,913	26,195	26,644
Individual examinations conducted within the prefecture	—	6,692	5,806	4,927	4,443	3,941
Group examinations conducted within the prefecture	41,949	10,603	6,767	5,808	5,183	4,341
Individual examinations conducted outside the prefecture	3,815	3,055	3,205	3,418	3,332	2,118
Other <sup>1,2</sup>	2,045	3,206	2,017	1,846	2,113	2,108
Number of overlapping examinees within and outside the prefecture	208	454	359	38	55	*
Total (Excluding the number of overlapping examinees)	56,399	47,009	43,040	41,874	41,211	39,152
Proportion of participants (%)	30.9%	25.4%	23.0%	22.2%	21.7%	20.5%

1) conducted within the prefecture (cases where the municipality delegated the examination to medical institutions or county/city medical associations)

2) conducted outside the prefecture (cases where the municipality delegated the examination to examination agencies)

\* Because we are finding and removing duplicate records, the result is unconfirmed.

#### Progress Report for FY 2011-2016 (Ages 15 and younger)

(Unit: person, percentage)

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
	Revised value as of 11 Sep 2012	Revised value as of 5 Jul 2013	Revised value as of 1 Sep 2014	Revised value as of 1 Sep 2015	Revised value as of 1 Sep 2016	Preliminary value as of 31 Mar 2017
Survey population	27,819	27,077	26,474	25,883	25,296	24,600
Children's health examination within the prefecture	15,002	9,534	8,432	7,432	6,206	5,191
Children's health examination outside the prefecture	2,949	2,283	1,822	1,792	1,403	1,226
Number of overlapping examinees within and outside the prefecture	17	37	6	8	6	*
Total (excluding the number of overlapping examinees)	17,934	11,780	10,248	9,216	7,603	6,417
Proportion of participants (%)	64.5%	43.5%	38.7%	35.6%	30.1%	26.1%

\* Because we are finding and removing duplicate records, the result is unconfirmed.

#### **4. Evaluation**

In the  $\geq 16$ -year age group, 20.5% of the eligible residents underwent the health check-up in FY 2016, down from 21.7% in FY 2015 by 1.2 points. Likewise, in the  $\leq 15$ -year age group, the participation rate was 26.1% in FY 2016, down from 30.1% in FY 2015 by 4.0 points.

One possible reason is that the annual Comprehensive Health Check has become widely accepted since its initiation in FY 2011, creating a sense of security and a resultant lack of urgency among the eligible residents. Some might have declined invitation to attend the health check because the examination items were similar to those at work, or they made doctors' visits regularly. Especially, it is thought that young children have more difficulties than those  $\geq 16$  years old with group health exams on Saturdays or Sundays and prefer doctors' visits on weekdays.

#### **5. Implementation Plan for FY 2017 (Tentative plan)**

##### **【People residing within the prefecture】**

Continuing on from FY 2016, the additional examination items will be made available for eligible residents in specific health exams provided by municipal governments. At the same time, we will conduct group health exams, individual health exams and children's health exams at medical institutions.

##### **【People living outside the prefecture】**

Continuing on from FY 2016, we will conduct individual health exams and children's health exams at medical institutions outside Fukushima.

		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
≥16 years old	Within the prefecture		Additional check-ups in specific health examinations held by municipalities *								Group health examinations		
	Outside the prefecture				Health examinations at designated medical organizations outside the prefecture								
≤15 years old	Within the prefecture				Children's health examinations in designated medical institutions within the prefecture								
	Outside the prefecture					Children's health examinations at designated medical institutions outside the prefecture							

\* Iitate (from 10 May), Tamura (from 22 May), Katsurao (from 4 Jun), Kawamata (from 12 Jun), Minami-soma (from 21 Jun), Hirono (from 4 Jul), Futaba (from 25 Aug), Kawauchi (from 4 Sep), Naraha (from 11 Sep), Namie (from 14 Sep), Tomioka (from 19 Sep), Okuma (from 16 Oct)

# Progress Report of Mental Health and Lifestyle Survey

Reported on 5 June 2017

## Progress Report of the FY 2015 Survey as of 31 March 2017

### 1. Responses

Number of responses and response rates

Category	Survey population	Responses (Online response)	Response rate (Online response)
Children	24,175	4,313 (300)	17.8% (7.0%)
Adults	183,863	33,167 (1,391)	18.0% (4.2%)
Total	208,038	37,480 (1,691)	18.0% (4.5%)

### 2. Support

#### 2.1 Telephone counseling

Clinical psychiatrists, public health nurses and other professionals provide telephone counseling sessions to respondents who were assessed to require support for mental health or lifestyle problems.

##### (A) Support based on the scores

Category	Participants requiring support <sup>1</sup>	Proportion <sup>2</sup>	Contact attempts to date <sup>3</sup>	Proportion	Counseling sessions completed	Proportion
Children	128	3.8%	58	45.3%	31	24.2%
Adults	1,744	5.4%	577	33.1%	416	23.9%
Total	1,872	5.2%	635	33.9%	447	23.9%

##### 1) Number of participants who were assessed to require support

- Children with SDQ (Strength and Difficulties Questionnaire) score  $\geq 20$
- Adults with K6 (general mental health conditions) score  $\geq 15$ , or, with K6 score  $\geq 13$  and PCL-4 score  $\geq 12$ .

##### 2) Number of respondents, who were assessed by 31 March to require support, as a percentage of a total of 35,868 entered responses (3,368 children and 32,500 adults)

##### 3) Including respondents who could not be reached for telephone support due to absence, or who did not provide their phone numbers (mail support)

##### (B) Support based on items other than scores

Category	Participants requiring support <sup>4</sup>	Contact attempts to date <sup>3</sup>	Proportion	Counseling sessions completed	Proportion
Children	2	1	50.0%	0	0%
Adults	117	50	42.7%	34	29.1%
Total	119	51	42.9%	34	28.6%

- 3) Including respondents who could not be reached for telephone support due to absence, or who did not provide their phone numbers (mail support)
- 4) Number of participants who met one of the following criteria
- Adults suffering from hypertension or diabetes but not receiving treatment with a BMI  $\geq 27.5$
  - Adults suffering from hypertension or diabetes and consume, on average, 6 drinks or more a day (42 drinks in total per week)
  - Adults who consume, on average, 6 drinks or more a day (42 drinks in total per week) with a CAGE score of 4
  - Children and adults who were identified based on the content of free-answer questions and in urgent need of support

# **1. Outline of Mental Health and Lifestyle Survey for FY 2015**

## **1.1 Purpose**

The Great East Japan Earthquake on 11 March 2011 and the following accident at the Fukushima Daiichi Nuclear Power Plant brought the residents of Fukushima Prefecture psychological distress or post-traumatic stress disorder (PTSD) caused by anxiety, evacuation, loss of property, and fearful experiences. The survey started in FY 2011 to understand the residents' mental health and lifestyle, and provide them with appropriate care.

Since results of the Mental Health and Lifestyle Survey for FY 2011-2014 showed that ongoing care was needed by understanding the residents' mental health and lifestyle changes, we continued to conduct the survey in FY 2015 using survey forms.

## **1.2. Methods**

### **1.2-1 Survey Respondents**

The survey respondents of the FY 2015 survey were residents of nationally designated evacuation zones as of 11 March 2011 and born on or before 1 April 2015. Specifically, there were 209,900 who were registered residents of the following municipalities: Hirono, Naraha, Tomioka, Kawauchi, Okuma, Futaba, Namie, Katsurao, Iitate, Minami-soma, Tamura, Kawamata, and the part of Date (specifically recommended for evacuation).

Ages 0-3 Survey:	3,697 individuals born from 2 April 2012 to 1 April 2015
Ages 4-6 Survey:	4,803 individuals born from 2 April 2009 to 1 April 2012
Primary School Survey:	10,655 individuals born from 2 April 2003 to 1 April 2009
Middle School Survey:	5,987 individuals born from 2 April 2000 to 1 April 2003
Adults Survey:	184,758 individuals born before 1 April 2000

### **1.2-2 Survey Methods**

Based on the classifications above, survey sheets (self-administered or completed by parents) were mailed to the participants.

### **1.2-3 Data Tabulation Period**

Data tabulation period lasted from 3 February 2016 through 31 October 2016.

### **1.2-4 Number of Respondents and Valid Responses**

The numbers of respondents (response rates) were the following: 944 (25.5%) for the ages 0-3 survey; 1,348 (28.1%) for the ages 4-6 survey; 2,767 (26.0%) for the primary school survey; 1,387 (23.2%) for the middle school survey; and 44,010 (23.8%) for the general survey.

The numbers of valid responses (valid response rates) were the following: 944 (25.5%) for the ages 0-3 survey; 1,348 (28.1%) for the ages 4-6 survey; 2,740 (25.7%) for the primary school survey; 1,387 (23.2%) for the middle school survey; and 43,970 (23.8%) for adults survey.



The results were collected for each item by questionnaire. As there are missing values in each item, the total may not match the abovementioned valid responses. Since the proportions in the report have been rounded to the nearest whole number, there are instances where the total does not add up to 100%.

### **1.3. Results**

#### **1.3-1 Age 0-3 years**

- Of 3,697 respondents, there were 944 (25.5%) valid responses.
- Regarding health conditions, the result was generally favorable, with 98.7% of responses indicating no particular issues ('very good', 'good', 'normal'), which was similar to the result of FY 2014 (99.0%). However, 1.3% responded indicating that there were issues ('bad', 'very bad').
- Length of sleep was 9 hours and 52 minutes on average, and the average napping time was 1 hour and 56 minutes. These results were almost the same as those of FY 2014 survey (average length of sleep: 9 hours and 56 minutes, average napping time: 1 hour and 53 minutes). The length of sleep was approximately 15 minutes shorter than that of counterparts (3-year-old children) in a national survey<sup>1</sup> (10 hours and 7 minutes).

#### **1.3-2 Age 4-6 years**

- Of 4,803 respondents, there were 1,348 (28.1%) valid responses.
- Regarding health conditions, the result was generally favorable, with 99.1% of responses indicating no particular issues ('very good', 'good', 'normal'), which was almost the same as the FY 2014 survey (98.7%). However, 0.9% responded indicating that there were issues ('bad', 'very bad').
- In the survey on children's emotions and behavior (SDQ Japanese Edition), 10.8% of the 1,347 valid respondents scored 16 or higher, the screening score from the preceding study, and 3.2% scored 20 or higher, the initial support standard. Compared to the FY 2014 survey (13.4% scoring 16 or higher, 5.1% scoring 20 or higher), the proportion has been declining.
- For boys, of the 655 valid respondents, 12.5% scored 16 or higher, and 3.8% scored 20 or higher, while for girls, of the 692 valid respondents, 9.1% scored 16 or higher, and 2.6% scored 20 or higher. Compared to the FY 2014 survey (boys: 13.6% scoring 16 or higher, 4.6% scoring 20 or higher; girls: 13.2% scoring 16 or higher, 5.5% scoring 20 or higher), the proportion of both boys and girls in each score group was decreasing.
- Average length of sleep was 9 hours and 40 minutes, and average length of naps was 1 hour and 30 minutes. Length of sleep and average length of naps were almost the same as the FY 2014 survey (average length of sleep: 9 hours and 43 minutes; average length of naps: 1 hour and 37 minutes). The length of sleep was approximately 15 minutes shorter than that of counterparts (5-year-old children) in a national survey<sup>1</sup> (9 hours and 55 minutes).

### 1.3-3 Primary School

- Of 10,655 respondents, there were 2,740 (25.7%) valid responses.
- Regarding health conditions, the result was generally favorable, with 98.7% of responses indicating no particular issues ('very good', 'good', 'normal'), which was almost the same as the FY 2014 survey (98.4%). On the other hand, 1.3% indicated issues, responding either 'bad' (1.2%) or 'very bad' (0.1%).
- Regarding SDQ scores, of the 2,734 valid respondents, 13.7% scored 16 or higher and 5.7% scored 20 or higher. Comparing them with the FY 2014 survey (15.1% scoring 16 or higher, 5.5% scoring 20 or higher), the proportion of those scored 16 or higher was decreasing, while those scored 20 or higher was almost the same.

Considering boys and girls separately, for boys, of the 1,421 valid respondents, 15.8% scored 16 or higher, and 7.0% scored 20 or higher. Compared to the FY 2014 survey (17.5% scoring 16 or higher, 6.5% scoring 20 or higher), the proportion of those scored 16 or higher declined, but of those scored 20 or higher was almost the same. Among the 1,313 valid responses for girls, 11.4% scored 16 or higher, and 4.3% scored 20 or higher. Compared to the FY 2014 survey (12.5% scoring 16 or higher, 4.4% scoring 20 or higher), the proportion of those scored 16 or higher slightly decreased, while of those scored 20 or higher was almost the same.

- Length of sleep averaged 8 hours and 54 minutes, which was similar to that of FY 2014 survey (8 hours and 54 minutes), and was also almost the same as that in a national survey<sup>2</sup> (boys: 9 hours and 00 minute, girls: 8 hours and 56 minutes).
- Regarding exercise habits, 30.5% of respondents answered that they rarely exercise outside of physical education, which is an improvement since the FY 2014 survey (34.3%). However, compared to the report from a national survey<sup>3</sup> in FY 2013, where the group that responded they occasionally or never exercise outside of physical education classes in school consisted of 11.8% of boys and 23.4% of girls, exercise habits are still insufficient.

### 1.3-4 Middle School

- Of 5,987 participants, there were 1,387 (23.2%) valid responses.
- Regarding health conditions, the result was generally favorable as in FY 2014 (96.5%), with 97.1% of responses indicating no particular issues ('Very good', 'Good', 'Normal'). On the other hand, 2.9% indicated issues, and responded either 'Bad' (2.6%) or 'Very bad' (0.4%).
- Regarding SDQ scores, of the 1,303 valid respondents, 11.6% scored 16 or higher and 4.5% scored 20 or higher. Compared to the FY 2014 survey (13.0% scored 16 or higher and 5.4% scored 20 or higher), the proportion declined.
- Considering boys and girls separately, for boys, of the 657 valid respondents, 11.6% scored 16 or higher, and 4.6% scored 20 or higher. Compared to the FY 2014 survey (14.3% scored 16 or higher and 6.3% scored 20 or higher), the proportion declined. Among the 646 valid responses for girls, 11.6% scored 16 or higher, and 4.5% scored 20 or higher. Compared to the FY 2014 survey (11.7% scoring 16 or higher, 4.4% scoring 20 or higher), the proportion was almost the

same.

- Length of sleep averaged 7 hours and 12 minutes, which was almost the same as the FY 2014 survey (7 hours and 9 minutes).
- Regarding exercise habits, 29.3% responded that they rarely exercise outside of physical education, which was almost the same as the FY 2014 survey (29.6%).

### **General Summary of Children**

- The SDQ was used as an indicator to evaluate children's mental health. The percentage of people scoring 16 or higher on the SDQ was still higher for all groups compared to the percentage (9.5%) in prior research on the general population in unaffected areas of Japan<sup>4</sup>. However, the proportion of high scores of SDQ declined in each age group compared to the FY 2014 survey. Length of sleep was similar to the FY 2014 survey. In regards to exercise habits, the proportion of group that rarely exercises was in a declining tendency.

### **1.3-5 Adults (people born on or before April 1, 2000)**

#### **Mental Health**

- General mental health conditions (K6) apply to 3.0% of Japanese regional residents in normal times if the score of  $\geq 13$  is used as the cut-off value<sup>5</sup>.
- Regarding the K6, 7.1% scored 13 or higher in the FY 2015. The proportion decreased compared to the FY 2014 survey (7.7%), but were still high compared to the proportion during normal times (3.0%). While 6.6% of males scored 13 or higher, 7.5% of females scored 13 or higher. The similar tendency was observed in the FY 2014 survey. Considering the age groups differently, age groups of 20-29 and 30-39 years had the highest proportion of those scored 13 or higher (8.6%), while age group of 10-19 years had the lowest proportion (5.5%). Compared to the FY 2014 survey, the proportion increased in age groups of 10-19 and 20-29 years, and remained the same in age group of 30-39 years, while it declined in age group of 40-49 years..

#### **Lifestyle**

- Asked about their own health (subjective sense of well-being), 17.1% of respondents evaluated themselves as being 'Bad' or 'Very bad', and the proportion declined from the FY 2014 survey (18.4%).
- In comparison with the prior year, 13.8% 'gained 3 kg or more' of body weight, while 8.3% 'lost 3 kg or more.' Compared to the FY 2014 survey (14.6% gained 3 kg or more and 9.6% lost 3 kg or more since the prior year), the proportion declined.
- Asked about their sleep, 60.5% of respondents were dissatisfied with their sleep, which declined from the FY 2014 survey (61.7%).
- Regarding exercise habits, 42.7% of respondents rarely exercised, showing that the percentage declined from the FY 2014 survey (43.8%).

- The percentage of current smokers was 16.8%, which was slightly lower than the FY 2014 survey (17.2%). The percentage of current drinkers was 41.0%, which was lower than the FY 2014 survey (41.5%). However, the percentage of heavy drinkers (those who drink at least four drinks or more per day) was 7.8%, which was similar to the FY 2014 survey (7.9%).

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## **2. Results of Mental Health and Lifestyle Survey for FY 2015**

### **2.1 Purpose**

The Great East Japan Earthquake on 11 March 2011 and the following accident at the Fukushima Daiichi Nuclear Power Plant brought the residents of Fukushima Prefecture psychological distress or post-traumatic stress disorder (PTSD) caused by anxiety, evacuation, loss of property, and fearful experiences. The survey started in FY 2011 to understand the residents' mental health and lifestyle, and provide them with appropriate care.

Since results of the Mental Health and Lifestyle Survey for FY 2011-2014 showed that ongoing care was needed by monitoring the residents' mental health and lifestyle changes, we continued to conduct the survey in FY 2015 using survey forms.

### **2.2. Methods**

#### **2.2-1 Survey Respondents**

The survey respondents of the FY 2015 survey were residents of nationally designated evacuation zones as of 11 March 2011 and born on or before 1 April 2015. Specifically, there were 209,900 who were registered residents of the following municipalities: Hirono, Naraha, Tomioka, Kawauchi, Okuma, Futaba, Namie, Katsurao, Iitate, Minami-soma, Tamura, Kawamata, and the part of Date (specifically recommended for evacuation).

Ages 0-3 Survey:	3,697 individuals born from 2 April 2012 to 1 April 2015
Ages 4-6 Survey:	4,803 individuals born from 2 April 2009 to 1 April 2012
Primary School Survey:	10,655 individuals born from 2 April 2003 to 1 April 2009
Middle School Survey:	5,987 individuals born from 2 April 2000 to 1 April 2003
Adults Survey:	184,758 individuals born before 1 April 2000

#### **2.2-2 Survey Methods**

Based on the classifications above, survey sheets (self-administered or completed by parents) were mailed to the participants.

#### **2.2-3 Data Tabulation Period**

Data tabulation period lasted from 3 February 2016 through 31 October 2016.

#### **2.2-4 Number of Valid Responses**

The numbers of respondents (valid response rates) were the following: 944 (25.5%) for the ages 0-3 survey; 1,348 (28.1%) for the ages 4-6 survey; 2,767 (26.0%) for the primary school survey; 1,387 (23.2%) for the middle school survey; and 44,010 (23.8%) for the general survey.

The numbers of valid responses (response rate) were the following: 944 (25.5%) for the ages 0-3 survey; 1,348 (28.1%) for the ages 4-6 survey; 2,740 (25.7%) for the primary school survey; 1,387 (23.2%) for the middle school survey; and 43,970 (23.8%) for the general survey (Table 1).

The results were collected for each item by questionnaire. As there are missing values in each item, the total may not match the abovementioned valid responses. Since the proportions in the report have

been rounded to the nearest whole number, there are instances where the total does not add up to 100%.

Table 1. Number of participants, respondents and valid responses (%)

	FY 2015	FY 2014	FY 2013	FY 2012		FY 2011
Participants	0-3 years	3,697	3,842	4,164	4,625	Children 1 11,717
	4-6 years	4,803	5,103	5,169	5,047	
	Primary school age	10,655	10,861	11,167	11,413	Children 2 11,791
	Middle school age	5,987	6,066	6,013	6,023	Children 3 6,077
	(Subtotal)	(25,142)	(25,872)	(26,513)	(27,108)	(Subtotal 29,585)
	Adults	184,758	186,881	185,859	184,507	Adults 180,604
	Total	209,900	212,753	212,372	211,615	Total 210,189
Respondents (%)	0-3 years	944 (25.5)	1,077 (28.0)	1,635 (39.3)	2,143 (46.3)	Children 1 7,824 (66.8)
	4-6 years	1,348 (28.1)	1,478 (29.0)	2,033 (39.3)	2,231 (44.2)	
	Primary school age	2,767 (26.0)	2,887 (26.6)	4,005 (35.9)	4,703 (41.2)	Children 2 7,509 (63.7)
	Middle school age	1,387 (23.2)	1,376 (22.7)	1,822 (30.3)	2,126 (35.3)	Children 3 3,412 (56.1)
	(Subtotal)	(6,446 (25.6))	(6,818 (26.4))	(9,495 (35.8))	11,203 (41.3)	(Subtotal 18,745 (63.4))
	Adults	44,010 (23.8)	43,845 (23.5)	46,388 (25.0)	55,076 (29.9)	Adults 73,569 (40.7)
	Total	50,456 (24.0)	50,663 (23.8)	55,883 (26.3)	66,279 (31.3)	Total 92,314 (43.9)
Valid responses (%)	0-3 years	944 (25.5)	1,077 (28.0)	1,634 (39.2)	2,143 (46.3)	Children 1 7,818 (66.7)
	4-6 years	1,348 (28.1)	1,478 (29.0)	2,032 (39.3)	2,230 (44.2)	
	Primary school age	2,740 (25.7)	2,859 (26.3)	3,987 (35.7)	4,683 (41.0)	Children 2 7,464 (63.3)
	Middle school age	1,387 (23.2)	1,324 (21.8)	1,820 (30.3)	2,118 (35.2)	Children 3 3,411 (56.1)
	(Subtotal)	(6,419 (25.5))	(6,738 (26.0))	(9,473 (35.7))	(11,174 (41.2))	(Subtotal 18,693 (63.2))
	Adults	43,970 (23.8)	43,811 (23.4)	46,377 (25.0)	55,064 (29.8)	Adults 73,433 (40.7)
	Total	50,389 (24.0)	50,549 (23.8)	55,850 (26.3)	66,238 (31.3)	Total 92,126 (43.8)

## **Results of the FY 2015 Mental Health and Lifestyle Survey (Age group0-3)**

Among 3,697 people (age group 0-3) in the Mental Health and Lifestyle Survey, the valid response count was 944 (25.5%). The breakdown was 494 (52.3%) boys and 450 (47.7%) girls and the average age was 1.9 years old.

As for the current address, 825 (87.4%) lived within the prefecture and 119 (12.6%) lived outside the prefecture.

### **1. Health Condition of the Child (Q1)**

Breakdown of the health condition was the following: 369 (39.8%) for 'very good'; 364 (39.3%) for 'good'; 182 (19.6%) for 'normal'; 12 (1.3%) for 'bad'; and 0 (0.0%) for 'very bad'.

### **2. Current Height and Weight of the Child (Q2)**

The average height/weight of boys was: 78.9 cm/10.4 kg for 1 year olds as of 1 April 2016; 88.5 cm/13.0 kg for 2 year olds; and 94.9 cm/14.4 kg for 3 year olds. The average height/weight of girls was: 77.6 cm/10.1 kg for 1 year olds; 87.1 cm/12.2 kg for 2 year olds; and 95.3 cm/14.6 kg for 3 year olds.

### **3. Currently Treated Diseases (Q3)**

For currently treated diseases, 696 (74.0%) answered 'no' while 244 (26.0%) answered 'yes.'

The breakdown of diseases for those who answered 'yes' is shown in Table 2 (multiple answers allowed).

### **4. Experience of Hospitalization in the Past Year (Q4)**

For experience of hospitalization in the past year, 812 (86.2%) answered 'no' while 130 (13.8%) answered 'yes.'

The breakdown of diseases for those who answered 'yes' is shown in Table 3 (multiple answers allowed).

Table 2. Breakdown of currently treated diseases

Disease	Count
Common cold	85
Atopic dermatitis	54
Otitis media	38
Asthma	27
Odontopathy	22
Allergic rhinitis	17
Asthma, atopic dermatitis, allergic conditions other than allergic rhinitis	12
Influenza	3
ADHD	2
Sinusitis/ empyema	1
Epilepsy	1
Other	41

Multiple answers

Table 3. Breakdown of diseases during hospitalization  
in the past year

Disease	Count
Common cold	54
Respiratory syncytial virus infection	21
Pneumonia	17
Gastroenteritis	16
Febrile convulsion	12
Influenza	9
Asthma	8
Mycoplasma pneumonia	7
Bronchitis	7
Rotavirus infection	2
Kawasaki disease	2
Inguinal hernia	2
Other	24

Multiple answers

## 5. Sleep Hours and Naps (Q5)

- 1) The average going-to-bed time was 9:10 PM and the average waking time was 7:2 AM. The average sleep hours were 9 hour and 52 minutes.
- 2) For naps (Does your child take naps?), those who answered ‘no’ were 81 (8.7%) and ‘yes’ were 852 (91.3%). The average nap time was 1 hour and 56 minutes.

## 6. Regular Amount of Exercise (Q6)

Regarding exercise (What is the child’s regular amount of exercise?) for two year olds and above at the time of the survey, those who answered ‘almost every day’ were 316 (53.7%); ‘2-4 times a week’ were 198 (33.7%); ‘once a week’ were 46 (7.8%); and ‘barely exercise’ were 28 (4.8%).

## 7. Dietary Habits (Q7)

- 1) For breast milk (Does your child drink breast milk?), those who answered ‘yes’ were 132 (14.0%) and ‘no’ were 808 (86.0%).
- 2) See Table 4 for the dietary habits in the past month (among those who were one year old and above at the time of the survey).



Table 4. Dietary habits in the past month

	Yes	No	Valid responses
1. Does your child consume fish more than three days a week?	481 (53.1%)	424 (46.9%)	905
2. Does your child consume vegetables other than pickles, seaweed, or mushrooms with almost every meal?	630 (69.5%)	277 (30.5%)	907
3. Does your child consume fruit almost every day?	535 (59.1%)	371 (40.9%)	906
4. Does your child consume soy products almost every day?	630 (69.5%)	277 (30.5%)	907
5. Does your child consume dairy almost every day?	698 (77.0%)	209 (23.0%)	907

## 8. Child Rearing (Q8)

For child rearing (Do you ever lose confidence in child rearing?), those who answered ‘yes’ were 108 (11.5%), ‘no’ were 429 (45.5%), and ‘cannot say’ were 405 (43.0%).

## **Results of the FY 2015 Mental Health and Lifestyle Survey (Age group 4-6)**

Among the 4,803 people for the survey (age group 4-6), there were 1,348 (28.1%) valid responses. The breakdown was 655 (48.6%) boys and 693 (51.4%) girls with an average age of 5.0 years old.

As for the current address, 994 (73.7%) lived within the prefecture and 354 (26.3%) lived outside the prefecture.

### **1. Health Condition of the Child (Q1)**

Breakdown of the health condition was the following: 395 (30.6%) for ‘very good’; 514 (39.8%) for ‘good’; 370 (28.7%) for ‘normal’; 12 (0.9%) for ‘bad’; and 0 (0.0%) for ‘very bad.’

### **2. Current Height and Weight of the Child (Q2)**

The average height/weight of boys was the following: 102.9 cm/16.8 kg for 4 year olds as of 1 April 2016, 109.6 cm/19.1 kg for 5 year olds and 116.0 cm/21.4 kg for 6 year olds. The average height/weight for girls was the following: 102.6 cm/16.5 kg for 4 year olds, 108.6 cm/18.3 kg for 5 year olds, and 114.6 cm/20.5 kg for 6 year olds.

### **3. Currently Treated Diseases (Q3)**

For currently treated diseases, 857 (64.0%) answered ‘no’ and 482 (36.0%) answered ‘yes’.

The breakdown of diseases for individuals who answered ‘yes’ is shown in Table 5 (multiple answers allowed).

### **4. Experience of Hospitalization in the Past Year (Q4)**

For experience of hospitalization in the past year, 1,217 (90.8%) answered ‘no’ and 123 (9.2%) answered ‘yes’.

The breakdown of diseases for those who answered ‘yes’ is shown in Table 6 (multiple answers allowed).

Table 5. Breakdown of currently treated diseases

Disease	Count
Common cold	119
Allergic rhinitis	108
Atopic dermatitis	90
Asthma	89
Odontopathy	79
Otitis media	45
Asthma, atopic dermatitis, allergic conditions other than allergic rhinitis	37
Sinusitis/ empyema	34
Influenza	11
Epilepsy	5
ADHD	3
Other	56

Multiple answers

Table 6. Breakdown of diseases during hospitalization in the past year

Disease	Count
Common cold	58
Gastroenteritis	26
Influenza	16
Asthma	10
Pneumonia	10
Mycoplasma pneumonia	7
Respiratory syncytial virus infection	6
Bronchitis	4
Febrile convulsion	4
Rotavirus infection	3
Kawasaki disease	1
Inguinal hernia	1
Other	23

Multiple answers

## 5. Sleep Hours and Naps (Q5)

- 1) The average going-to-bed time was 9:10 PM and the average waking time was 6:51 AM. The average sleep hours were 9 hours and 40 minutes.
- 2) For naps (Does your child take naps?), those who answered 'no' were 872 (65.3%), and 'yes' were 463 (34.7%). The average nap time was 1 hour and 30 minutes.

## 6. Regular Amount of Exercise (Q6)

For exercise (What is your regular amount of exercise?), those who answered 'almost every day' were 778 (58.1%), '2-4 times a week' were 394 (29.4%), 'once a week' were 107 (8.0%), and 'barely exercise' were 61 (4.6%).

## 7. Dietary Habits (Q7)

See Table 7 for the dietary habits in the past month.

Table 7. Dietary habits in the past month

	Faster	Normal/ Slower	Valid responses
1. Does your child eat faster than others?	91 (6.8%)	1,256 (93.2%)	1,347
	Yes	No	Valid Responses
2. Does your child drink sugary beverages almost every day?	419 (31.1%)	928 (68.9%)	1,347
3. Does your child consume fish more than three days a week?	627 (46.5%)	721 (53.5%)	1,348

4. Does your child consume vegetables other than pickles, seaweed, or mushrooms with almost every meal?	852 (63.2%)	496 (36.8%)	1,348
5. Does your child consume fruit almost every day?	669 (49.7%)	678 (50.3%)	1,347
6. Does your child consume soy products almost every day?	734 (54.5%)	614 (45.5%)	1,348
7. Does your child consume dairy almost every day?	1,060 (78.7%)	287 (21.3%)	1,347
8. Does your child consume prepared foods almost every day?	125 (9.3%)	1,222 (90.7%)	1,347
9. Does your child eat out almost every day?	3 (0.2%)	1,344 (99.8%)	1,347

## 8. Child's Emotions and Behavior (Q8)

1) For child's emotions and behavior (SDQ Japanese version), among the 1,347 valid responses, 145 (10.8%) were 16 points and above<sup>1</sup>, and 43 (3.2%) were 20 points and above<sup>2</sup> (Fig. 1). The average total points were 9.0 points.

For boys, among the 655 valid responses, 82 (12.5%) were 16 points and above; 25 (3.8%) were 20 points and above. For girls, among the 692 valid responses, 63 (9.1%) were 16 points and above; and 18 (2.6%) were 20 points and above (Fig. 2). The average total score for boys was 9.4 points while the total score for girls was 8.6.

2) Regarding whether children have any issues in one or more areas (emotions, focus, behavior or interaction with others), those that answered 'no' were 1,047 (77.7%), 'yes (minor issues)' were 245 (18.2%), 'yes (clear issues)' were 48 (3.6%), and 'yes (serious issues)' were 7 (0.5%).

3) Among those who answered 'yes' to the above question, regarding whether or not their child is upset or concerned due to the issue, those who answered 'not at all' were 128 (44.3%); 'only a little' were 147 (50.9%); 'very' were 11 (3.8%); and 'greatly' were 3 (1.0%).

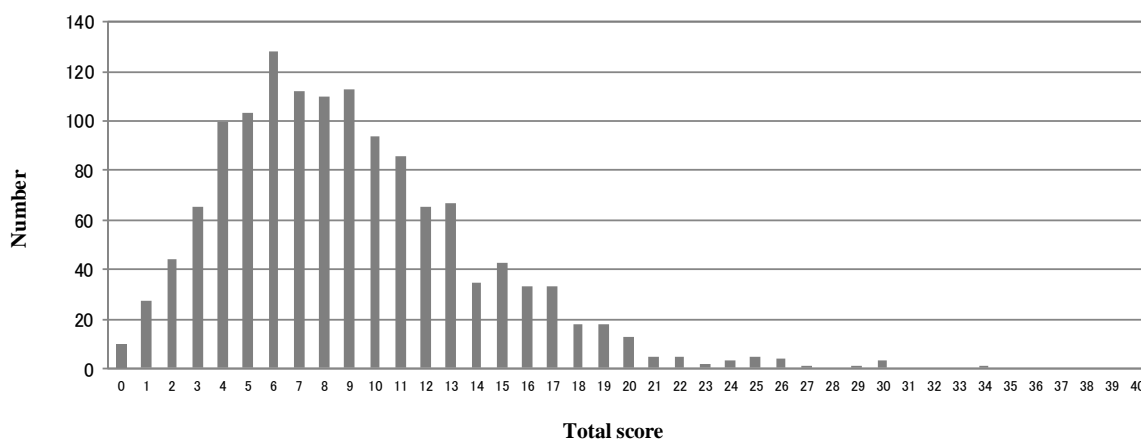


Fig. 1 Children's emotions and behavior for age group 4-6 (SDQ): Overall

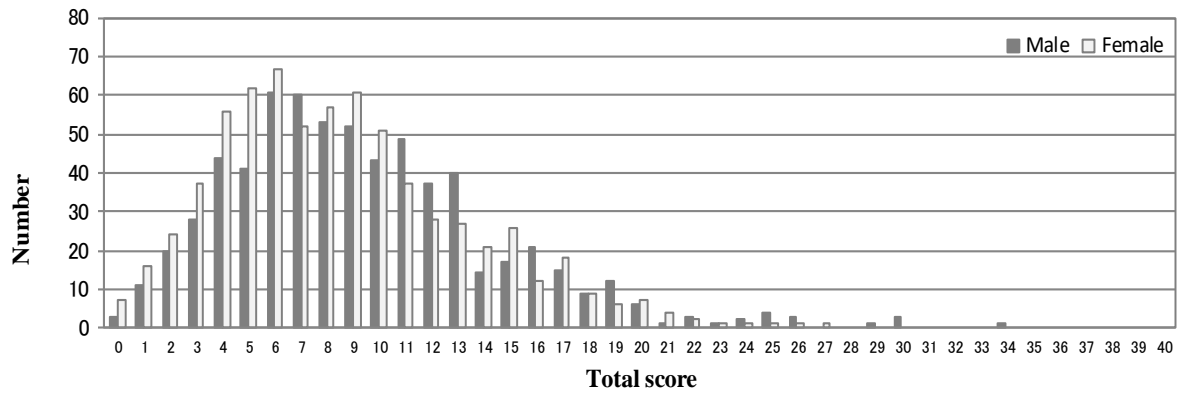


Fig. 2 Children's emotions and behavior for age group 4-6 (SDQ) by sex

- 1) A standard value indicated by previous research
- 2) A standard established by Fukushima Medical University physicians to provide support

## 9. Nursery School and Kindergarten (Q9)

When asked if the child would not go to nursery school or kindergarten, 212 (15.9%) said 'yes,' 1,076 (80.6%) said 'no,' and 47 (3.5%) said 'the child was not attending nursery school or kindergarten at the moment.'

## **Results of the FY 2015 Mental Health and Lifestyle Survey (Primary school age)**

Among 10,655 people of the Mental Health and Lifestyle Survey (for primary school students), 2,740 (25.7%) provided valid responses. The breakdown was 1,426 (52.0%) boys and 1,314 (48.0%) girls with an average age of 9.4 years old.

As for the current address, 2,043 (74.6%) lived within the prefecture and 697 (25.4%) lived outside the prefecture.

### **1. Health Condition of The Child (Q1)**

Breakdown of the health state was the following: 689 (26.9%) for ‘very good’; 1,086 (42.4%) for ‘good’; 751 (29.3%) for ‘normal’; 31 (1.2%) for ‘bad’; and 3 (0.1%) for ‘very bad’.

### **2. Current Height and Weight of the Child (Q2)**

The average height/weight of boys was the following: 121.8 cm/24.5 kg for 1st graders; 127.7 cm/27.9 kg for 2nd graders; 133.1 cm/30.7 kg for 3rd graders; 138.2 cm/34.5 kg for 4th graders; 144.1 cm/38.1 kg for 5th graders; and 152.4 cm/45.3 kg for 6th graders. The average height/weight of girls was the following: 120.6 cm/23.4 kg for 1st graders; 126.0 cm/26.4 kg for 2nd graders; 132.7 cm/30.3 kg for 3rd graders; 138.7 cm/34.2 kg for 4th graders; 144.7 cm/37.6 kg for 5th graders; and 150.9 cm/44.2 kg for 6th graders.

### **3. Currently Treated Diseases (Q3)**

For currently treated diseases, 1,665 (61.1%) answered ‘no’ and 1,058 (38.9%) answered ‘yes.’

The breakdown of diseases for those who answered ‘yes’ is shown in Table 8 (multiple answers allowed).

### **4. Experience of Hospitalization in the Past Year (Q4)**

For experience of hospitalization in the past year, 2,563 (94.0%) answered ‘no’ and 164 (6.0%) answered ‘yes.’

The breakdown of diseases for those who answered ‘yes’ is shown in Table 9 (multiple answers allowed).

Table 8. Breakdown of currently treated diseases

Disease	Count
Allergic rhinitis	421
Odontopathy	250
Atopic dermatitis	145
Asthma	122
Asthma, atopic dermatitis, allergic conditions other than allergic rhinitis	94
Common cold	83
Sinusitis/ empyema	60
Influenza	39
Otitis media	38
ADHD	34
Epilepsy	15
Other	167

Multiple answers

Table 9. Breakdown of diseases during hospitalization in the past year

Disease	Count
Common cold	86
Influenza	31
Gastroenteritis	26
Asthma	16
Mycoplasma pneumonia	10
Pneumonia	7
Febrile convulsion	4
Respiratory syncytial virus infection	2
Bronchitis	2
Inguinal hernia	1
Rotavirus infection	0
Kawasaki disease	0
Other	31

Multiple answers

## 5. Sleep Hours and Naps (Q5)

The average going-to-bed time was 9:31 PM and the average waking time was 6:25 AM. The average sleep hours were 8 hours and 54 minutes.

## 6. Regular Amount of Exercise (Q6)

For exercise (What is the child's regular amount of exercise?), those who answered 'almost every day' were 281 (10.3%); '2-4 times a week' were 921 (33.8%); 'once a week' were 693 (25.4%); and 'barely exercise' were 830 (30.5%).

## 7. Dietary Habits (Q7)

The dietary habits in the past month are shown in Table 10.

Table 10. Dietary habits in the past month

	Faster	Normal/ Slower	Valid responses
1. Does your child eat faster than others?	387 (14.2%)	2,347 (85.8%)	2,734
	Yes	No	Valid Responses
2. Does your child skip breakfast often?	191 (7.0%)	2,543 (93.0%)	2,734
3. Does your child drink sugary beverages almost every day?	689 (25.2%)	2,044 (74.8%)	2,733
4. Does your child consume fish more than three days a week?	1,242 (45.4%)	1,494 (54.6%)	2,736

5. Does your child consume vegetables other than pickles, seaweed, or mushrooms with almost every meal?	1,802 (65.8%)	935 (34.2%)	2,737
6. Does your child consume fruit almost every day?	1,005 (36.7%)	1,731 (63.3%)	2,736
7. Does your child consume soy products almost every day?	1,465 (53.6%)	1,270 (46.4%)	2,735
8. Does your child consume dairy almost every day?	2,319 (84.7%)	418 (15.3%)	2,737
9. Does your child consume prepared foods almost every day?	191 (7.0%)	2,546 (93.0%)	2,737
10. Does your child eat out almost every day?	9 (0.3%)	2,728 (99.7%)	2,737

## 8. Child's Emotions and Behavior (Q8)

- 1) For child's emotions and behavior (SDQ Japanese version), among the 2,734 valid responses, 374 (13.7%) were 16 points and above<sup>1</sup>, and 156 (5.7%) were 20 points and above<sup>2</sup> (Fig. 3). The average total point was 9.1.

For boys, among the 1,421 valid responses, 224 (15.8%) were 16 points and above, and 100 (7.0%) were 20 points and above. For girls, among the 1,313 valid responses, 150 (11.4%) were 16 points and above and 56 (4.3%) were 20 points and above (Fig. 4). The average total score for boys was 9.6 points while the total score for girls was 8.5 points.

- 2) Regarding whether children have any issues in one or more areas (emotions, focus, behavior or interaction with others), those who answered 'no' were 1,929 (70.9%); 'yes (minor issues)' were 627 (23.0%); 'yes (clear issues)' were 135 (5.0%); and 'yes (serious issues)' were 31 (1.1%).
- 3) Among those who answered 'yes' for the above questions, regarding whether or not the child is upset or concerned due to the issue: those who answered 'not at all' were 216 (28.2%); 'only a little' were 485 (63.2%); 'very' were 48 (6.3%); and 'greatly' were 18 (2.3%).

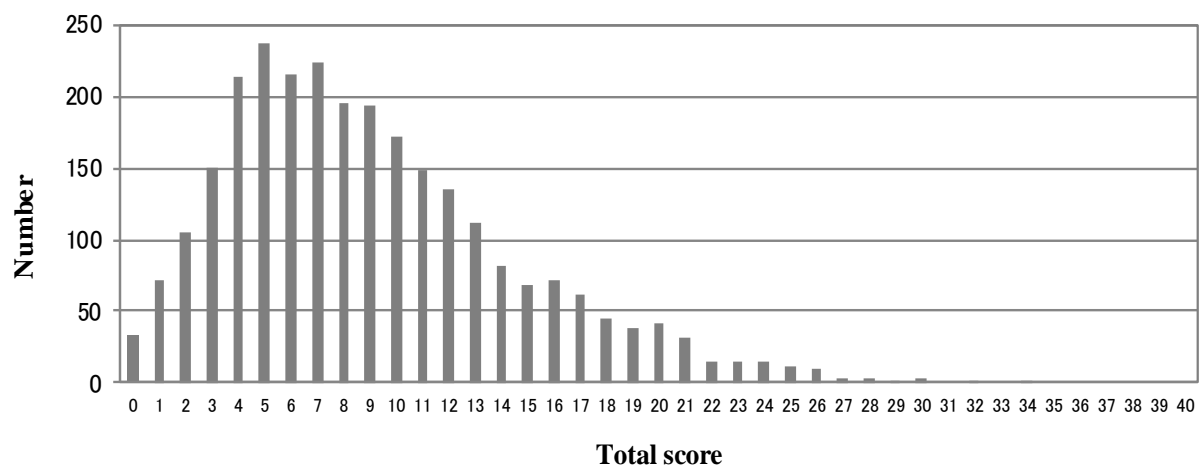


Fig. 3 Children's emotions and behavior among primary school students (SDQ): Overall



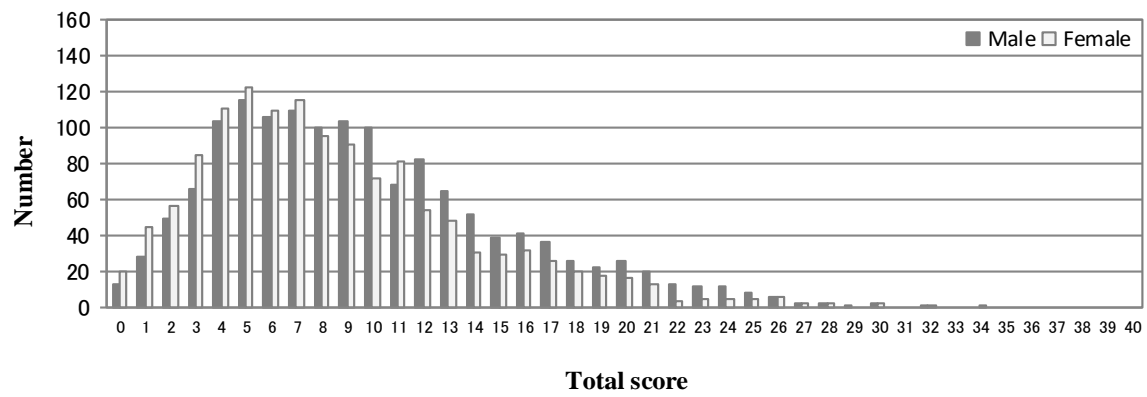


Fig. 4 Children's emotions and behavior among primary school students (SDQ) by sex

- 1) A standard value indicated by previous research
- 2) A standard established by Fukushima Medical University physicians to provide support.

## 9. School (Q9)

When asked if the child would not go to school, 277 (10.3%) said 'yes' and 2,421 (89.7%) said 'no.'

## **Results of the FY 2015 Mental Health and Lifestyle Survey (Middle school age)**

Among the 5,987 people for the survey (for middle school students), there were 1,387 (23.2%) valid responses. The breakdown was 690 (49.7%) boys and 697 (50.3%) girls with an average age of 13.9 years old.

As for the current address, 1,079 (77.8%) lived within the prefecture and 308 (22.2%) lived outside the prefecture.

### **1. Health Condition of the Child (Q1)**

Breakdown of the health condition was the following: 256 (30.0%) for 'very good'; 273 (32.0%) for 'good'; 298 (35.0%) for 'normal'; 22 (2.6%) for 'bad'; and 3 (0.4%) for 'very bad'.

### **2. Current Height and Weight of the Child (Q2)**

The average height/weight of boys was the following: 159.5 cm/49.7 kg for 7th graders; 164.7 cm/53.6 kg for 8th graders; and 167.8 cm/59.1 kg for 9th graders. The average height/weight for girls were the following: 154.1 cm/46.9 kg for 7th graders; 154.7 cm/48.5 kg for 8th graders; and 156.3 cm/51.0 kg for 9th graders.

### **3. Sleep (Q3)**

- 1) The average sleeping hours were 7 hours and 12 minutes.
- 2) For sleep satisfaction, 396 (46.5%) answered 'sufficient', 369 (43.3%) answered 'slightly insufficient', and 87 (10.2%) answered 'insufficient'.

### **4. Regular Amount of Exercise (Q4)**

For exercise (What is your regular amount of exercise aside from physical education classes?), those who answered 'almost every day' were 407 (47.4%), '2-4 times a week' were 124 (14.5%), 'once a week' were 76 (8.9%), and 'barely exercise' were 251 (29.3%).

### **5. Dietary Habits (Q5)**

The dietary habits in the past month are as shown in Table 11 (next page).

Table 11. Dietary habits in the past month

	Faster	Normal/ Slower	Valid responses
1. Do you eat faster than others?	207 (24.2%)	650 (75.8%)	857
	Yes	No	Valid responses
2. Do you skip breakfast often?	117 (13.6%)	741 (86.4%)	858
3. Do you go to sleep within 1-2 hours after dinner?	70 (8.2%)	787 (91.8%)	857
4. Do you drink sugary beverages almost every day?	267 (31.1%)	591 (68.9%)	858
5. Do you consume fish more than three days a week?	387 (45.2%)	470 (54.8%)	857
6. Do you consume vegetables other than pickles, seaweed, or mushrooms with almost every meal?	611 (71.2%)	247 (28.8%)	858
7. Do you consume fruit almost every day?	289 (33.7%)	569 (66.3%)	858
8. Do you consume soy products almost every day?	468 (54.6%)	389 (45.4%)	857
9. Do you consume dairy almost every day?	713 (83.1%)	145 (16.9%)	858
10. Do you consume prepared foods almost every day?	120 (14.0%)	738 (86.0%)	858
11. Do you eat out almost every day?	4 (0.5%)	854 (99.5%)	858

## 6. Currently Treated Diseases (Q6)

For currently treated diseases, 919 (70.5%) answered ‘no’ while 384 (29.5%) answered ‘yes.’

The breakdown of diseases for individuals who answered ‘yes’ is shown in Table 12 (multiple answers allowed).

## 7. Experience of Hospitalization in the Past Year (Q7)

For experience of hospitalization in the past year, 1,271 (97.5%) answered ‘no’ and 32 (2.5%) answered ‘yes.’

The breakdown of those who answered ‘yes’ is shown in Table 13 (multiple answers allowed).

Table 12. Breakdown of currently treated diseases

Disease	Count
Allergic rhinitis	156
Odontopathy	96
Atopic dermatitis	55
Asthma	32
Asthma, atopic dermatitis, allergic conditions other than allergic rhinitis	27
Common cold	20
ADHD	20
Influenza	13
Sinusitis/ empyema	11
Otitis media	5
Epilepsy	5
Other	78

Multiple answers

Table 13. Breakdown of diseases during hospitalization in the past year

Disease	Count
Common cold	13
Gastroenteritis	6
Influenza	5
Asthma	1
Pneumonia	1
Mycoplasma pneumonia	1
Respiratory syncytial virus infection	0
Bronchitis	0
Rotavirus infection	0
Febrile convulsion	0
Kawasaki disease	0
Inguinal hernia	0
Other	11

Multiple answers

## 8. Child's Emotions and Behavior (Q8)

- 1) For child's emotions and behavior (SDQ Japanese version), among the 1,303 valid responses, 151 (11.6%) were 16 points and above<sup>1</sup> and 59 (4.5 %) were 20 points and above<sup>2</sup> (Fig. 5). The average total point was 8.4.

For boys, among the 657 valid responses, 76 (11.6%) were 16 points and above and 30 (4.6%) were 20 points and above. For girls, among the 646 valid responses, 75 (11.6%) were 16 points and above and 29 (4.5%) were 20 points and above (Fig. 6). The average total score for boys was 8.5 points and the total score for girls was 8.2.

- 2) Regarding whether children have any issues in one or more areas (emotions, focus, behavior or interaction with others), those who answered 'no' were 865 (67.0%), 'yes (minor issues)' were 319 (24.7%), 'yes (clear issues)' were 84 (6.5%), and 'yes (serious issues)' were 24 (1.9%).
- 3) Among those that answered 'yes' for the above question, regarding whether or not the child is confused or concerned due to the issue, those who answered 'not at all' were 81 (19.7%), 'only a little' were 274 (66.5%), 'very' were 39 (9.5%), and 'greatly' were 18 (4.4%).

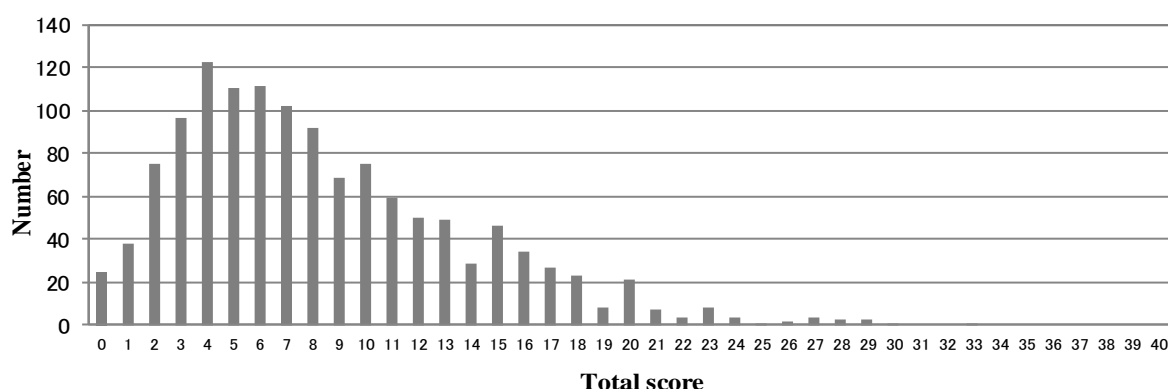


Fig. 5 Children's emotions and behavior for middle school students (SDQ): Overall

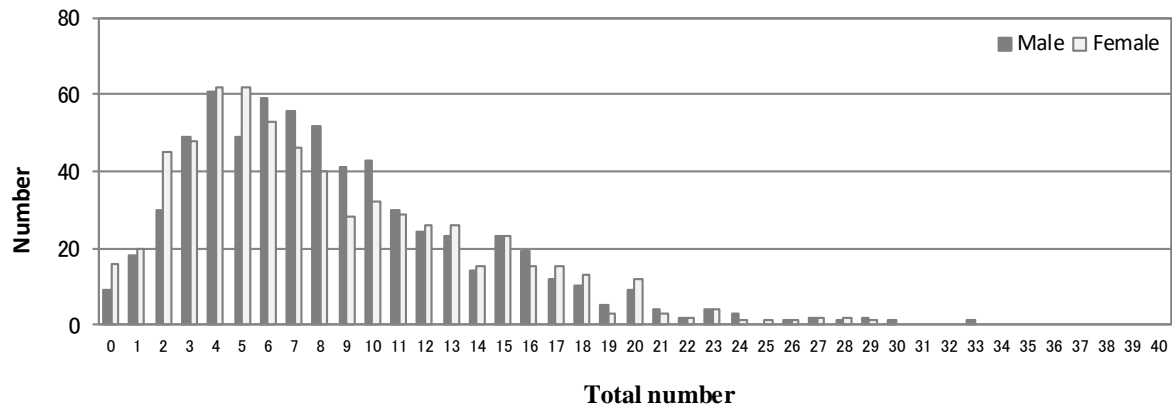


Fig. 6 Children's emotions and behavior for middle school students (SDQ) by sex

- 1) A standard value indicated by previous research
- 2) A standard established by Fukushima Medical University physicians to provide support.

## 9. School (Q9)

When asked if the child would not go to school, 172 (13.6%) said 'yes' and 1,093 (86.4%) said 'no.'

## Results of the FY 2015 Mental Health and Lifestyle Survey (Adults)

Among the 184,758 adults for the Mental Health and Lifestyle Survey, there were 43,970 (23.8%) valid responses. The breakdown was 19,706 (44.8%) males and 24,264 (55.2%) females with an average age of 60.7 years old.

As for the current address, 37,209 (84.6%) lived within the prefecture and 6,761 (15.4%) lived outside the prefecture.

### 1. Health condition (Q1)

Breakdown of the health condition was the following: 1,519 (4.1%) for 'very good'; 6,204 (16.6%) for 'good'; 23,298 (62.3%) for 'normal'; 5,804 (15.5%) for 'bad'; and 578 (1.5%) for 'very bad'.

### 2. Height and Weight (Q2)

- 1) The average height/weight of males was 166.0 cm/66.4 kg and the average BMI was 24.1 kg/m<sup>2</sup>. Among males, those with less than BMI 18.5 kg/m<sup>2</sup> were 687 (3.7%); 18.5 kg/m<sup>2</sup> and above and less than 25.0 kg/m<sup>2</sup> were 11,156 (60.4%); 25.0 kg/m<sup>2</sup> and above and less than 27.5 kg/m<sup>2</sup> were 3,890 (21.1%); 27.5 kg/m<sup>2</sup> and above and less than 30.0 kg/m<sup>2</sup> were 1,793 (9.7%); and 30.0 kg/m<sup>2</sup> and above were 932 (5.0%).

The average height/weight of females was 153.3 cm/54.2 kg and the average BMI was 23.0 kg/m<sup>2</sup>. For females, those with a BMI less than 18.5 kg/m<sup>2</sup> were 1,831 (8.2%); 18.5 kg/m<sup>2</sup> and above and less than 25.0 kg/m<sup>2</sup> were 14,550 (65.5%); 25.0 kg/m<sup>2</sup> and above and less than 27.5 kg/m<sup>2</sup> were 3,238 (14.6%); 27.5 kg/m<sup>2</sup> and above and less than 30.0 kg/m<sup>2</sup> were 1,443 (6.5%); and 30.0 kg/m<sup>2</sup> and above were 1,135 (5.1%).

- 2) For body weight change (Did you have any body weight change compared to last year?), those who answered 'it increased by 3 kg or more' were 5,744 (13.8%); 'it did not change ( $\pm 3$  kg)' were 32,284 (77.8%); and 'it decreased by 3 kg or more' were 3,446 (8.3%).

For body weight change for males, those who answered 'it increased by 3 kg or more' were 2,446 (13.1%); 'it did not change ( $\pm 3$  kg)' were 14,607 (78.2%); and 'it decreased by 3 kg or more' were 1,619 (8.7%).

For body weight change for females, those who answered 'it increased by 3 kg or more' were 3,298 (14.5%); 'it didn't change ( $\pm 3$  kg)' were 17,677 (77.5%); and 'it decreased by 3 kg or more' were 1,827 (8.0%).

### 3. Medical History in the Past Year (Q3)

Medical history in the past year (Have you been diagnosed with some of the following diseases in the past year?) is shown in Table 14.

Table 14. Experience of diagnoses by general illness and the state of attending hospital as outpatient

(Upper row is the number of individuals/lower row is proportion)

Name of illness	Valid responses	Diagnosed or not		Currently attending hospital as outpatient <sup>1</sup>	
		No	Yes	Yes	No
Hypertension (Or high blood pressure)	42,530	25,317 (59.5%)	17,213 (40.5%)	15,774 (93.1%)	1,167 (6.9%)
Diabetes (Or high blood sugar)	41,536	35,498 (85.5%)	6,038 (14.5%)	5,348 (90.8%)	539 (9.2%)
Hyperlipidemia (Or having high cholesterol or neutral fat)	41,725	27,613 (66.2%)	14,112 (33.8%)	10,159 (74.3%)	3,516 (25.7%)
Mental disorder	41,958	37,767 (90.0%)	4,191 (10.0%)	3,351 (82.7%)	700* (17.3%)
Cancer (Including leukemia and lymphoma)	42,070	40,282 (95.7%)	1,788 (4.3%)		
Stroke	42,311	40,719 (96.2%)	1,592 (3.8%)		
(Types of stroke) Multiple answers					
Cerebral infarction			1,078		
Cerebral hemorrhage			175		
Subarachnoid hemorrhage			123		
Other			20		
I don't know			194		
Heart disease	42,505	37,438 (88.1%)	5,067 (11.9%)		
(Types of heart disease) Multiple answers					
Myocardial infarction			578		
Angina			1,347		
Arrhythmia			2,565		
Other			857		
I don't know			388		
Pneumonia	42,469	41,752 (98.3%)	717 (1.7%)		
Bone fracture	42,441	40,623 (95.7%)	1,818 (4.3%)		
Thyroid disease	42,167	40,883 (97.0%)	1,284 (3.0%)		
(Types of thyroid disease) Multiple answers					
Hyperthyroidism (Basedow disease)			234		
Hypothyroidism			514		
Other			467		

1) Proportion of the valid responses

\* Among these, 281 individuals answered that they were not currently attending hospital as outpatient since they have recovered.

#### 4. Sleep (Q4)

- 1) The average sleep hours were 7 hours and 2 minutes.
- 2) As for sleep satisfaction, those who answered ‘sufficient’ were 14,738 (39.5%); ‘slightly insufficient’ were 17,119 (45.9%); ‘very insufficient’ were 4,585 (12.3%); and ‘greatly insufficient or couldn’t go to sleep’ were 841 (2.3%).
- 3) Experiences related to sleep (Have you experienced the following conditions at least three times a week?) are shown in Table 15.

Table 15. Experiences related to sleep among adults

	Yes	No	Valid responses
1. It takes time to fall sleep at night after going to bed.	14,827 (40.0%)	22,251 (60.0%)	37,078
2. I wake up during the night in the middle of sleep	23,916 (64.0%)	13,424 (36.0%)	37,340
3. I wake up before the time I set and can’t go back to sleep.	14,287 (39.1%)	22,271 (60.9%)	36,558
4. Total hour of sleep is not enough.	12,704 (35.4%)	23,206 (64.6%)	35,910
5. I feel depressed during the day.	9,086 (25.5%)	26,591 (74.5%)	35,677
6. My physical and mental activity levels during the day are low.	10,559 (29.3%)	25,520 (70.7%)	36,079
7. I feel sleepy during the day.	17,533 (47.9%)	19,091 (52.1%)	36,624

#### 5. Exercise (Q5)

Those who answered they exercised ‘almost every day’ were 6,960 (16.2%), ‘2-4 times per week’ were 10,672 (24.8%), ‘once a week’ were 6,967 (16.2%), and ‘almost never’ were 18,355 (42.7%).

#### 6. Smoking (Q6)

As for smoking (Do you smoke tobacco or cigarettes except for cigars and pipes?), those who answered ‘have never smoked’ were 23,592 (57.7%); ‘I quit’ were 10,445 (25.5%); and ‘yes’ were 6,885 (16.8%).

Among those who responded ‘yes’, the average number of cigarettes was 16.2 per day.

#### 7. Alcohol consumption (Q7)

- 1) For alcohol consumption (Do you currently drink alcohol?), those who answered ‘no, or barely drink (less than once a month)’ were 22,419 (54.6%); ‘I quit’ were 1,798 (4.4%); and ‘yes (at least once a month)’ were 16,836 (41.0%).



- 2) Among those who answered ‘yes (at least once per month)’, those who answered ‘one day a week’ were 2,341 (14.9%); ‘two days a week’ were 1,629 (10.4%); ‘three days a week’ were 1,617 (10.3%); ‘four days a week’ were 999 (6.4%); ‘five days a week’ were 1,661 (10.6%); ‘six days a week’ were 1,909 (12.2%); and ‘seven days a week’ were 5,528 (35.2%).
- 3) The average alcohol consumption per day was around 198 ml per day. Among the 41,053 valid responses for alcohol consumption (Q7-1), 3,207 (7.8%) consumed excessively (360 ml and above).
- 4) For experience related to alcohol consumption (Answer the following questions about the past 30 days. CAGE screens for alcoholism.), the responses of each item are shown in Table 16. ‘Yes’ was 1 point and the total points of the four items were calculated.

The results by age group are shown in Table 17. Overall, those with 0 points were 9,612 (63.3%); 1 point was 3,374 (22.2%); 2 points were 1,367 (9.0%); 3 points were 613 (4.0%); and 4 points were 229 (1.5%).

For males, those with 0 points were 5,902 (57.5%); 1 point were 2,603 (25.3%); 2 points were 1,074 (10.5%); 3 points were 514 (5.0%); and 4 points were 178 (1.7%). For females, 0 points were 3,710 (75.3%); 1 point were 771 (15.7%); 2 points were 293 (6.0%); 3 points were 99 (2.0%); and 4 points were 51 (1.0%).

Table 16. Experience related to alcohol consumption (Upper row is the number of individuals/lower row is percentage)

		No	Yes	Valid responses
1	Have you ever felt you should cut down on your drinking?	10,706 (69.8%)	4,632 (30.2%)	15,338
2	Have people annoyed you by criticizing your drinking?	13,910 (91.2%)	1,339 (8.8%)	15,249
3	Have you ever felt bad or guilty about your drinking?	13,394 (87.7%)	1,886 (12.3%)	15,280
4	Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (eye-opener)?	14,155 (92.6%)	1,133 (7.4%)	15,288

Since there are missing values for each item, totals may not match.

Table 17. Experience related to alcohol consumption by age group

(Upper row is the number of individuals/lower row is percentage)

	0 points	1 point	2 points	3 points	4 points	Valid responses
20s	538 (77.5%)	104 (15.0%)	34 (4.9%)	11 (1.6%)	7 (1.0%)	694
30s	922 (65.9%)	257 (18.4%)	135 (9.6%)	62 (4.4%)	23 (1.6%)	1,399
40s	1,156 (62.4%)	400 (21.6%)	165 (8.9%)	94 (5.1%)	38 (2.1%)	1,853
50s	1,581 (60.8%)	639 (24.6%)	236 (9.1%)	109 (4.2%)	37 (1.4%)	2,602
60s	2,836 (61.1%)	1,090 (23.5%)	438 (9.4%)	194 (4.2%)	82 (1.8%)	4,640
70s and above	2,579 (64.4%)	884 (22.1%)	359 (9.0%)	143 (3.6%)	42 (1.0%)	4,007
Overall	9,612 (63.3%)	3,374 (22.2%)	1,367 (9.0%)	613 (4.0%)	229 (1.5%)	15,195

## 8. Appetite (Q8)

When asked about their appetite (How often have you lost appetite in the last two weeks?), 32,271 (76.6%) said zero, 7,662 (18.2%) said a few days, 1,298 (3.1%) said more than a week, and 884 (2.1%) said almost every day.

## 9. Dietary Habits (Q9)

The dietary habits in the past month are as shown in Table 18.

Table 18. Dietary habits in the past month

	Faster	Normal/ Slower	Valid responses
1. Do you eat faster than others?	11,921(27.5%)	31,430 (72.5%)	43,351
	Yes	No	Valid responses
2. Do you skip breakfast often?	6,848 (15.8%)	36,477 (84.2%)	43,325
3. Do you eat snacks during daytime or late at night almost every day?	12,001(27.8%)	31,122 (72.2%)	43,123
4. Do you consume dinner within 2 hours before going-to-bed more than three times a week?	9,248 (21.5%)	33,742 (78.5%)	42,990
5. Do you consume prepared foods almost every day?	10,413(24.1%)	32,846 (75.9%)	43,259

## 10. Overall mental health (Q10)

- 1) For overall mental health (K6), among the 36,805 valid responses, the number of those with 13 points and above<sup>1</sup> was 2,619 (7.1%) (Fig. 7). The average points were 4.4 points.

For males, among the 16,503 valid responses, the number of those with 13 points and above was 1,097 (6.6%). For females, among the 20,302 valid responses, 13 points and above were 1,522 (7.5%) (Fig. 8). The average points for males and females were 4.2 and 4.6 points respectively.

Table 19 (next page) shows the data by age group.

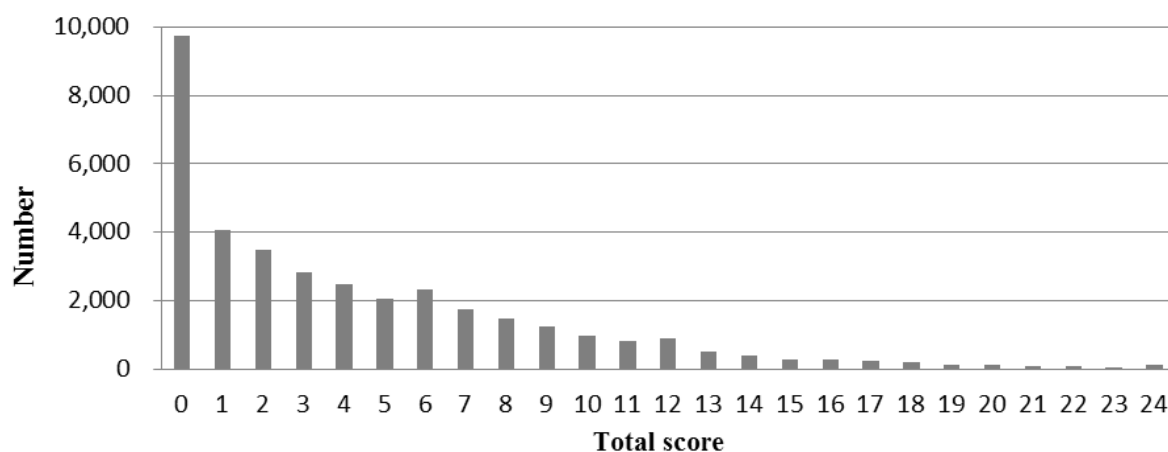


Fig. 7 The general mental health state (K6): Overall

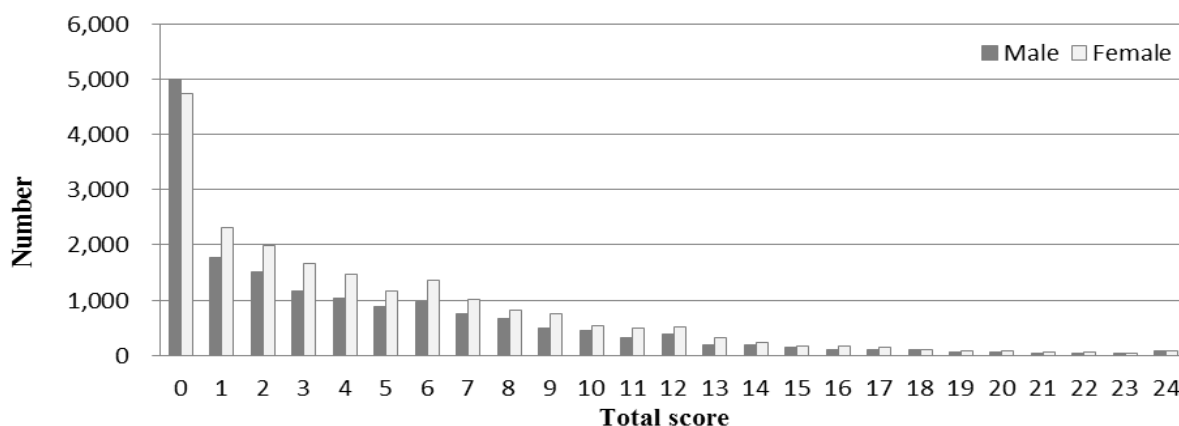


Fig. 8 The general mental health state (K6) by gender

Table 19. General mental health state (K6) by age group

	13 points and above <sup>1</sup>	Valid responses
10s	41 (5.5%)	747
20s	158 (8.6%)	1,843
30s	292 (8.6%)	3,376
40s	326 (8.4%)	3,859
50s	411 (8.2%)	5,032
60s	541 (5.3%)	10,137
70 and above	850 (7.2%)	11,811

1) A standard value indicated by previous research

## 11. Current Living Conditions (Q11)

- 1) For whether or not one had to live separately from family due to disaster, 14,219 (33.1%) answered 'yes' and 28,766 (66.9%) answered 'no'.
- 2) The number of residents in one household (including self) before the disaster was the following: one (living alone), 3,001 (7.5%); two, 9,271 (23.1%); three, 7,982 (19.9%); four, 6,937 (17.3%); five, 5,001 (12.4%); six, 4,076 (10.1%); seven, 2,470 (6.1%); eight, 991 (2.5%); nine, 304 (0.8%); and ten and above, 178 (0.4%).  
The current number of residents in one household was the following: one (living alone), 6,179 (14.7%); two, 14,798 (35.2%); three, 8,351 (19.8%); four, 5,903 (14.0%); five, 3,225 (7.7%); six, 2,021 (4.8%); seven, 1,076 (2.6%); eight, 394 (0.9%); nine, 74 (0.2%); and ten and above, 56 (0.1%).
- 3) For current residence (multiple answers allowed), 7,066 lived in municipally subsidized rental housing, 125 in temporary housing, 10 in restoration public housing, 416 in rented houses or

apartments, 375 in relative's houses, 273 in owned houses, and 444 in other kinds of habitats.

- 4) For the form of employment, 11,675 (27.7%) were full-time or self-employed, 3,471 (8.2%) were part-time, and 27,072 (64.1%) were unemployed (including students and homemakers).
- 5) For how one sees their financial circumstances, 3,908 (9.3%) said 'tough,' 8,968 (21.4%) said 'slightly tough,' 25,854 (61.7%) said 'normal,' 2,285 (5.5%) said 'slightly comfortable,' and 873 (2.1%) said 'comfortable.'
- 6) Asked if they (or their spouse) were pregnant before the disaster, or if they were living together with their child who was underage, 7,249 (19.6%) said 'yes,' and 29,807 (80.4%) said 'no.'  
Among those who said 'yes,' 545 (7.5%) said they (or their spouse) were pregnant, 3,084 (42.5%) said they were living with their pre-school child, 2,870 (39.6%) said they were living with their primary school child, 1,363 (18.8%) said they were living with their middle school child, 1,830 (25.2%) said they were living with their underage child who has graduated from middle school. (Multiple answers allowed.)
- 7) Asked if they (or their spouse) were currently pregnant, or if they were currently living with their child who was underage, 5,706 (15.7%) said 'yes,' and 30,687 (84.3%) said 'no.'  
Among those who said 'yes,' 283 (5.0%) said they (or their spouse) were currently pregnant, 2,326 (40.8%) said they were living with their preschool child, 2,388 (41.9%) said they were living with their primary school child, 1,455 (25.5%) said they were living with their middle school child, and 1,422 (24.9%) said they were living with their underage child who has graduated from middle school. (Multiple answers allowed.)

## 12. Awareness of Health Effects Caused By Radiation (Q12)

- 1) Awareness of health effects caused by radiation is shown in Table 20.

Table 20. Awareness of health effects caused by radiation

(Upper row is the number of individuals/lower row is proportion)

		Possibility is very low	←	→	Possibility is very high	Valid responses
1	How likely do you think health disorders (for example, cancer) will occur in the future due to the current radiation exposure?	12,568 (34.4%)	12,025 (32.9%)	6,934 (19.0%)	5,043 (13.8%)	36,570
2	How likely do you think health disorders will occur in future generations (children or grandchildren) due to the current radiation exposure?	10,436 (29.0%)	11,987 (33.3%)	7,903 (22.0%)	5,619 (15.6%)	35,945

- 2) When asked how frequently they experienced inconveniences in daily life due to the anxieties about radiation for the past month, 1,908 (5.1%) answered 'frequently,' 5,091 (13.7%) said 'sometimes,' 7,776 (20.9%) said 'rarely,' and 22,349 (60.2%) said 'never.'

### 13. Sources of advice (Q13)

When asked if they knew anyone or any organization that they can consult regarding mental or physical issues caused by the Great East Japan Earthquake, 27,179 (73.8%) said ‘yes,’ and 9,644 (26.2%) said ‘no.’

Breakdown of sources of advice for those who answered ‘yes’ is shown in Table 21.

Table 21. Break down of sources of advice

	Number
Family/relatives	23,335
Friends/acquaintances	15,302
Colleagues/superiors	3,283
Municipal consultation service (City public health bureau, health center, etc.)	5,914
Prefectural consultation service (Prefectural public health bureau/public health and welfare office, etc.)	1,321
Mental health and welfare center	641
Fukushima Center for Disaster Mental Health	912
Visiting care/nursing care service organizations	1,708
Medical institutions such as psychosomatic medicine/psychiatry/neurology/mental clinics	3,290
Medical institutions other than the above (general internal medicine, surgical department, ophthalmology, otorhinology, orthopedics, obstetrics and gynecology, etc.	5,507
Facilities related to religion such as temples, shrines, churches, etc.	516
Other	283

(Multiple answers)

## Data from the FY 2015 Mental Health and Lifestyle Survey (Age group 0-3)

			Number	Proportion
Sex	(944 valid responses)	• Boys	494	52.3%
(Average age 1.9)		• Girls	450	47.7%
Address	(944 valid responses)	• Within the prefecture	825	87.4%
		• Outside the prefecture	119	12.6%
Q1 Health condition	(927 valid responses)	• Very good	369	39.8%
		• Good	364	39.3%
		• Normal	182	19.6%
		• Bad	12	1.3%
		• Very bad	0	0.0%
Q2 Height and weight	(Listed in the main document by sex and age)			
Q3 Currently treated diseases	(940 valid responses)	• No	696	74.0%
		• Yes	244	26.0%
	(Breakdown is listed in the main document.)			
Q4 Experience of hospitalization in the past year	(942 valid responses)	• No	812	86.2%
		• Yes	130	13.8%
	(Breakdown is listed in the main document.)			
Q5 Sleep hours and naps				
1) Sleep hours	(937 valid responses)	• Average sleep hours: 9 h 52 min		
	(939 valid responses)	• Average sleep time: 9:10 PM		
	(938 valid responses)	• Average wake-up time: 7:2 AM		
2) Naps	(933 valid responses)	• No	81	8.7%
		• Yes	852	91.3%
	(829 valid responses)	(Average nap time: 1 h 56 min)		
Q6 Usual amount of exercise	(588 valid responses)	• Almost every day	316	53.7%
		• 2-4 times a week	198	33.7%
		• Once a week	46	7.8%
		• Rarely	28	4.8%
Q7 Dietary habits				
1) Breast milk	(940 valid responses)	• Yes	132	14.0%
		• No	808	86.0%
2) Diet in the past month		• Listed in the main document		
Q8 Lack of confidence in child rearing	(942 valid responses)	• Yes	108	11.5%
		• No	429	45.5%
		• Not sure	405	43.0%

\* Brackets indicate included numbers.

## Data from the FY 2015 Mental Health and Lifestyle Survey (Age group 4-6)

			Number	Proportion
Sex	(1,348 valid responses)	• Boys	655	48.6%
(Average age 5.0)		• Girls	693	51.4%
Address	(1,348 valid responses)	• Within the prefecture	994	73.7%
		• Outside the prefecture	354	26.3%
Q1 Health condition	(1,291 valid responses)	• Very good	395	30.6%
		• Good	514	39.8%
		• Normal	370	28.7%
		• Bad	12	0.9%
		• Very bad	0	0.0%
Q2 Height and weight		(Listed in the main document by sex and age)		—
Q3 Currently treated diseases	(1,339 valid responses)	• No	857	64.0%
		• Yes	482	36.0%
		(Breakdown is listed in the main document)		
Q4 Experience of hospitalization in the past year	(1,340 valid responses)	• No	1,217	90.8%
		• Yes	123	9.2%
		(Breakdown is listed in the main document)		
Q5 Sleep hours and naps				
1) Sleep hours	(1,344 valid responses)	• Average sleep hours: 9 h 40 min		
	(1,344 valid responses)	• Average sleep time: 9:10 PM		
	(1,344 valid responses)	• Average wake-up time: 6:51 AM		
2) Naps	(1,335 valid responses)	• No	872	65.3%
		• Yes	463	34.7%
	(426 valid responses)	(Average nap time: 1 h 30 min)		
Q6 Usual amount of exercise	(1,340 valid responses)	• Almost every day	778	58.1%
		• 2-4 times a week	394	29.4%
		• Once a week	107	8.0%
		• Rarely	61	4.6%
Q7 Dietary habits in the past month		• Listed in the main document		
Q8 Child's emotions and behavior (SDQ)				
1) SDQ	(1,347 valid responses)	• Average total score: 9.0 points		
	(655 valid responses)	• Male average total score: 9.4 points		
	(692 valid responses)	• Female average total score: 8.6 points		
		• 16 points and above	145	10.8%
		(Male)	(82)	12.5%
		(Female)	(63)	9.1%
		• 20 points and above	43	3.2%
		(Male)	(25)	3.8%
		(Female)	(18)	2.6%
2) Presence or absence of difficult issues	(1,347 valid responses)	• No	1,047	77.7%
		• Yes (minor issues)	245	18.2%
		• Yes (clear issues)	48	3.6%
		• Yes (serious issues)	7	0.5%
3) Becoming upset	(289 valid responses)	• Not at all	128	44.3%
		• A little	147	50.9%
		• Very	11	3.8%
		• Greatly	3	1.0%
Q9 Child resists going to nursery school or kindergarten.	(1,335 valid responses)	• Yes	212	15.9%
		• No	1,076	80.6%
		• The child is not attending nursery school.	47	3.5%

\* Brackets indicate included numbers.

## Data from the FY 2015 Mental Health and Lifestyle Survey (Primary school age)

			Number	Proportion
Sex	(2,740 valid responses)	• Boys	1,426	52.0%
(Average age: 9.4)		• Girls	1,314	48.0%
Address	(2,740 valid responses)	• Within the prefecture	2,043	74.6%
		• Outside the prefecture	697	25.4%
Q1 Health condition	(2,560 valid responses)	• Very good	689	26.9%
		• Good	1,086	42.4%
		• Normal	751	29.3%
		• Bad	31	1.2%
		• Very bad	3	0.1%
Q2 Height and weight		(Listed in the main document by sex and age)		—
Q3 Currently treated diseases	(2,723 valid responses)	• No	1,665	61.1%
		• Yes	1,058	38.9%
		(Breakdown is listed in the main document)		
Q4 Experience of hospitalization in the past year	(2,727 valid responses)	• No	2,563	94.0%
		• Yes	164	6.0%
		(Breakdown is listed in the main document)		
Q5 Sleep hours	(2,709 valid responses)	• Average sleep hours: 8 h 54 min		
	(2,713 valid responses)	• Average sleep time: 9:31 PM		
	(2,710 valid responses)	• Average wake-up time: 6:25 AM		
Q6 Usual amount of exercise	(2,725 valid responses)	• Almost every day	281	10.3%
		• 2-4 times a week	921	33.8%
		• Once a week	693	25.4%
		• Rarely	830	30.5%
Q7 Dietary habits in the past month		• Listed in the main document		
Q8 Child's emotions and behavior (SDQ)	(2,734 valid responses)	• Average total score: 9.1 points		
1) SDQ	(1,421 valid responses)	• Male average total score: 9.6 points		
	(1,313 valid responses)	• Female average total score: 8.5 points		
		• 16 points and above	374	13.7%
		(Male)	(224)	15.8%
		(Female)	(150)	11.4%
		• 20 points and above	156	5.7%
		(Male)	(100)	7.0%
		(Female)	(56)	4.3%
2) Presence or absence of difficult issues	(2,722 valid responses)	• No	1,929	70.9%
		• Yes (minor issues)	627	23.0%
		• Yes (clear issues)	135	5.0%
		• Yes (serious issues)	31	1.1%
3) Becoming upset	(767 valid responses)	• Not at all	216	28.2%
		• A little	485	63.2%
		• Very	48	6.3%
		• Greatly	18	2.3%
Q9 Child resists going to school.	(2,698 valid responses)	• Yes	277	10.3%
		• No	2,421	89.7%

\* Brackets indicate included numbers.



## Data from the FY 2015 Mental Health and Lifestyle Survey (Middle school age)

			Number	Proportion
Sex	(1,387 valid responses)	• Boys	690	49.7%
(Average age: 13.9)		• Girls	697	50.3%
Address	(1,387 valid responses)	• Within the prefecture	1,079	77.8%
		• Outside the prefecture	308	22.2%
Q1 Health condition	(852 valid responses)	• Very good	256	30.0%
		• Good	273	32.0%
		• Normal	298	35.0%
		• Bad	22	2.6%
		• Very bad	3	0.4%
Q2 Height and weight	(Listed in the main document by sex and age)			
Q3 Sleep				
1) Sleep hours	(823 valid responses)	• Average sleep hours: 7 h 12 min		
2) Sufficiency of sleep over the past month	(852 valid responses)	• Sufficient	396	46.5%
		• Slightly insufficient	369	43.3%
		• Insufficient	87	10.2%
Q4 Usual amount of exercise	(858 valid responses)	• Almost every day	407	47.4%
		• 2-4 times a week	124	14.5%
		• Once a week	76	8.9%
		• Rarely	251	29.3%
Q5 Dietary habits in the past month		• Listed in the main document		
Q6 Currently treated diseases	(1,303 valid responses)	• No	919	70.5%
		• Yes	384	29.5%
		(Breakdown is listed in the main document)		
Q7 Experience of hospitalization in the past year	(1,303 valid responses)	• No	1,271	97.5%
		• Yes	32	2.5%
		(Breakdown is listed in the main document)		
Q8 Child's emotions and behavior (SDQ)	(1,303 valid responses)	• Average total score: 8.4 points		
1) SDQ	(657 valid responses)	• Male average total score: 8.5 points		
	(646 valid responses)	• Female average total score: 8.2 points		
		• 16 points and above	151	11.6%
		(Male)	(76)	11.6%
		(Female)	(75)	11.6%
		• 20 points and above	59	4.5%
		(Male)	(30)	4.6%
		(Female)	(29)	4.5%
2) Presence or absence of difficult issues	(1,292 valid responses)	• No	865	67.0%
		• Yes (minor issues)	319	24.7%
		• Yes (clear issues)	84	6.5%
		• Yes (serious issues)	24	1.9%
3) Becoming upset	(412 valid responses)	• Not at all	81	19.7%
		• A little	274	66.5%
		• Very	39	9.5%
		• Greatly	18	4.4%
Q9 Child resists going to school.	(1,265 valid responses)	• Yes	172	13.6%
		• No	1,093	86.4%

\* Brackets indicate included number

## Data from the FY 2015 Mental Health and Lifestyle Survey (Adults)

			Number	Proportion
Sex	(43,970 valid responses)	• Male	19,706	44.8%
(Average age: 60.7)		• Female	24,264	55.2%
Address	(43,970 valid responses)	• Within the prefecture	37,209	84.6%
		• Outside the prefecture	6,761	15.4%
Q1 Health condition	(37,403 valid responses)	• Very good	1,519	4.1%
		• Good	6,204	16.6%
		• Normal	23,298	62.3%
		• Bad	5,804	15.5%
		• Very bad	578	1.5%
Q2 Height and weight		• Listed in the main document		
Q3 Medical history in the past year		• Listed in the main document		
Q4 Sleep				
1) Sleep hours	(42,771 valid responses)	• Average sleep hours: 7 h 2 min		
2) Sufficiency of sleep over the past month	(37,283 valid responses)	• Sufficient	14,738	39.5%
		• Slightly insufficient	17,119	45.9%
		• Very insufficient	4,585	12.3%
		• Greatly insufficient or couldn't get any sleep	841	2.3%
3) Experience related to sleep	—	• Listed in the main document		
Q5 Usual amount of exercise	(42,954 valid responses)	• Almost every day	6,960	16.2%
		• 2-4 times a week	10,672	24.8%
		• Once a week	6,967	16.2%
		• Rarely	18,355	42.7%
Q6 Smoking	(40,922 valid responses)	• Have never smoked	23,592	57.7%
		• Quit	10,445	25.5%
		• Yes	6,885	16.8%
		(Average cigarettes per day: 16.2)		
Q7 Alcohol				
1) Alcohol consumption	(41,053 valid responses)	• No/ Rarely	22,419	54.6%
		• Quit	1,798	4.4%
		• Yes (more than once a month)	16,836	41.0%
2) Frequency of consumption	(15,684 valid responses)	• Listed in the main document		
3) Daily alcohol consumption	(14,912 valid responses)	• 198 ml on average		
4) Experiences related to alcohol	(15,195 valid responses)	• Listed in the main document		
Q8 Appetite	(42,115 valid responses)	• 0 days	32,271	76.6%
		• A few days	7,662	18.2%
		• More than a week	1,298	3.1%
		• Almost every day	884	2.1%
Q9 Dietary habits in the past month	*Multiple answers	• Listed in the main document		
Q10 Mental health state (K6)	(36,805 valid responses)	• Average score: 4.4 points		
	(16,503 valid responses)	• Male average score: 4.2 points		
	(20,302 valid responses)	• Female average score: 4.6 points		
		• 13 points and above	2,619	7.1%
		(Male)	(1,097)	6.6%
		(Female)	(1,522)	7.5%
		(Listed in the main document by age)		

\*Brackets indicate included numbers.

			Number	Proportion
Q11 Current living conditions				
1) Living conditions with family	(42,985 valid responses)	• Yes	14,219	33.1%
		• No	28,766	66.9%
2) Number of people within household	(40,211 valid responses)	• One (living alone)	3,001	7.5%
Before the disaster		• Two	9,271	23.1%
		• More than three	27,939	69.5%
		*Details are listed in the main document.		
At present	(42,077 valid responses)	• One (living alone)	6,179	14.7%
		• Two	14,798	35.2%
		• More than three	21,100	50.1%
		*Details are listed in the main document.		
3) Current residence	*Multiple answers	• Municipally subsidized rental housing	7,066	—
		• Temporary housing	125	—
		• Restoration public housing	10	—
		• Rented house/apartment	416	—
		• Relative's house	375	—
		• Owned house	273	—
		• Other	444	—
4) Form of employment	(42,218 valid responses)	• Full-time/self-employed	11,675	27.7%
		• Part-time	3,471	8.2%
		• Unemployed (including students and homemakers)	27,072	64.1%
5) Current financial circumstances	(41,888 valid responses)	• Tough	3,908	9.3%
		• Slightly tough	8,968	21.4%
		• Normal	25,854	61.7%
		• Slightly comfortable	2,285	5.5%
		• Comfortable	873	2.1%
6) Lived with a child before the disaster	(37,056 valid responses)	• Yes	7,249	19.6%
		(Pregnant)	(545)	—
		(Preschool child)	(3,084)	—
		(Primary school child)	(2,870)	—
		(Middle school child)	(1,363)	—
		(Minor who graduated from middle school)	(1,830)	—
		• No	29,807	80.4%
7) Currently living with a child	(36,393 valid responses)	• Yes	5,706	15.7%
		• (Pregnant)	(283)	—
		• (Preschool child)	(2,326)	—
		• (Primary school child)	(2,388)	—
		• (Middle school child)	(1,455)	—
		• (Minor who graduated from middle school)	(1,422)	—
		• No	30,687	84.3%
Q12 Health effects caused by radiation				
1) Awareness of health effects caused by radiation		Listed in the main document		
2) Inconveniences in daily life	(37,124 valid responses)	Frequently	1,908	5.1%
		Sometimes	5,091	13.7%
		Rarely	7,776	20.9%
		Never	22,349	60.2%
Q13 Sources of advice	(36,823 valid responses)	• Yes	27,179	73.8%
		• No	9,644	26.2%
		(Breakdown is listed in the main document)		

\*Brackets indicate included numbers.

# Progress Report of the Pregnancy and Birth Survey

Reported on 5 June 2017

## 1. The Pregnancy and Birth Survey in FY 2016

### 1.1 Purpose

Our goal is to comprehend the mental and physical health status of expectant and nursing mothers so that we can alleviate their anxiety and provide them with necessary care. The survey also aims to improve perinatal care in Fukushima Prefecture by listening to their current situation, needs and expectations.

### 1.2 Survey population

- Those who received Maternal and Child Health Handbooks from municipal governments in Fukushima Prefecture between 1 August 2015 and 31 July 2016.
- Those who received Maternal and Child Health Handbooks from locations outside Fukushima during the above time period, and then returned to give birth in Fukushima.

### 1.3 Method

We sent out a survey questionnaire to participants three times from November 2016, based on the time when they received a Maternal and Child Health Handbook. Since the FY 2016 survey, we started a secure online response system for the convenience of respondents, and advised them to either return their paper survey form or respond online. Hereafter, we plan to resend the survey form at the end of June in order to provide another opportunity for those who overlooked their first chance.

### 1.4 Response rates

The response rate went up by roughly 2 points over the survey conducted around the same time in FY 2015. We continue to receive responses from participants.

Survey year	Number of surveys sent	Responses (Response rate)
FY 2016*	14,138	6,069 (42.9)
FY 2015	14,572	7,031 (48.3)
FY 2014	15,125	7,132 (47.2)
FY 2013	15,218	7,260 (47.7)
FY 2012	14,516	7,181 (49.5)
FY 2011	16,001	9,316 (58.2)

\*As of 30 April 2017

### 1.5 Status of support provision

Survey responses were used to identify mothers in need of support, and to provide them with an opportunity to consult midwives and public health nurses through telephone counseling, regarding concerns about their health or childcare-related matters. We have also established a support system through e-mail and a special phone number to give advice to those in need.

a. Telephone counseling (As of 30 April 2017)

Survey year	Responses	Support		
		Participants requiring support (%) <sup>1</sup>	Type of response that prompted support	
			Depressive symptoms* (Proportion of support given) <sup>1</sup>	Free comments (Proportion of support given) <sup>1</sup>
FY 2016	6,069	782 (12.9)	461 (7.6)	321 (5.3)
FY 2015	7,031	913 (13.0)	549 (7.8)	364 (5.2)
FY 2014	7,132	830 (11.6)	645 (9.0)	185 (2.6)
FY 2013	7,260	1,101 (15.2)	744 (10.2)	357 (4.9)
FY 2012	7,181	1,104 (15.4)	751 (10.5)	353 (4.9)
FY 2011	9,316	1,401 (15.0)	1,224 (13.1)	177 (1.9)

1) Percentage of total responses.

\* Participants who said they had depressive mood or had a hard time enjoying things.

b. E-mail counseling (As of 30 April 2017)

Survey year	Number of consultations (Participants)
FY 2016	12 (7)
FY 2015	25 (8)
FY 2014	26 (10)
FY 2013	3 (3)
FY 2012	6 (6)
FY 2011	13 (13)

c. Other matters

Special telephone sessions have been offered, with midwives and public health nurses providing counseling for those who call.

1.6 Interim results: Major survey items (concerning next pregnancy)

Data to be collected:

5,377 valid responses from 22 November 2016 through 31 March 2017

(The number is approximate due to ongoing data examination.)

(FY 2015 survey) 6,999 valid responses from 24 November 2015 through 16 December 2016

(FY 2014 survey) 7,085 valid responses from 20 November 2014 through 18 December 2015

(FY 2013 survey) 7,214 valid responses from 24 December 2013 through 26 December 2014

(FY 2012 survey) 7,139 valid responses from 14 December 2012 through 30 November 2013

Are you planning a next pregnancy?

Response	FY 2016	FY 2015	FY 2014	FY 2013	FY 2012
Yes	2,977 (55.4)	3,730 (53.3)	4,044 (57.1)	3,811 (52.8)	3,775 (52.9)
No	2,338 (43.5)	3,197 (45.7)	2,928 (41.3)	3,292 (45.6)	3,239 (45.4)
No/invalid answer	62 (1.2)	72 (1.0)	113 (1.6)	111 (1.5)	125 (1.8)

### Services requested by those who were planning a pregnancy (Multiple answers allowed)

Response	FY 2016	FY 2015	FY 2014	FY 2013	FY 2012
Improved childcare facilities, extended-hours childcare, sick child care	2,272 (76.3)	2,807 (77.2)	2,866 (73.3)	2,577 (70.5)	2,435 (66.2)
Childcare-/pediatric medicine-related services	1,869 (62.8)	2,491 (68.5)	2,695 (68.9)	2,436 (66.6)	2,613 (71.0)
Improved maternity and parental leave systems	1,808 (60.7)	2,217 (61.0)	2,205 (56.4)	2,086 (57.1)	1,893 (51.4)
Information on radiation and its health risks	710 (23.8)	1,092 (30.0)	1,477 (37.8)	1,508 (41.2)	2,220 (60.3)
Other	251 (8.4)	333 (9.2)	406 (10.4)	259 (7.1)	247 (6.7)

\*Denominator for data from FY 2012 through FY 2015 is the number of valid responses (3,635 in FY 2015; 3,909 in FY 2014; 3,656 in FY 2013; 3,681 in FY 2012), and that for FY 2016 is the number of people who responded *Yes* to the above questionnaire through 31 March 2017 (2,977).

### The reasons for not planning a pregnancy (Multiple answers allowed)

Response	FY 2016	FY 2015	FY 2014	FY 2013	FY 2012
No desire	1,138 (48.7)	1,659 (52.1)	1,830 (62.6)	1,774 (54.4)	1,690 (52.6)
Age- or health-related issue	773 (33.1)	1,235 (38.8)	889 (30.4)	1,173 (35.9)	1,012 (31.5)
Busy with ongoing childcare	791 (33.8)	1,104 (34.7)	834 (28.5)	1,195 (36.6)	1,153 (35.9)
Lack of financial stability	545 (23.3)	803 (25.2)	511 (17.5)	772 (23.7)	828 (25.8)
Lack of support with housework or childcare	247 (10.6)	329 (10.3)	273 (9.3)	343 (10.5)	310 (9.7)
Lack of childcare facilities/services	233 (10.0)	325 (10.2)	183 (6.3)	219 (6.7)	222 (6.9)
Worried about radiation effect	26 (1.1)	51 (1.6)	114 (3.9)	183 (5.6)	475 (14.8)
Living away from family members	54 (2.3)	62 (1.9)	56 (1.9)	59 (1.8)	78 (2.4)
Living as an evacuee	7 (0.3)	9 (0.3)	20 (0.7)	32 (1.0)	78 (2.4)
No desire	370 (15.8)	123 (3.9)	214 (7.3)	81 (2.5)	81 (2.5)

\*Denominator for data from FY 2012 through FY 2015 is the number of valid responses (3,184 in FY 2015; 2,924 in FY 2014; 3,263 in FY 2013; 3,212 in FY 2012), and that for FY 2016 is the number of people who responded *No* to the above questionnaire through 31 March 2017 (2,338).

## 2. Follow-up survey (As of 30 April 2017)

### 2.1 Purpose

The Pregnancy and Birth Survey is a cross-sectional study that collects data of different groups every year. In order to assess the need to provide continued support, we continue to conduct the survey for participants of the FY 2012 Pregnancy and Birth Survey. Also, we assess mental and physical health issues, especially, related to child-rearing, and offer appropriate support.

### 2.2 Survey population

Respondents to the Pregnancy and Birth Survey for FY 2012 who delivered babies and were confirmed to be alive at the time when the survey forms were sent out (5,602).

## 2.3 Survey period

We sent survey questionnaire on 21 November 2016, and continue to receive responses from participants.

## 2.4 Method

We referred to municipal registers for participants' information to confirm that the mothers and their children were alive, and sent them the questionnaire. As to the method of participating, we advise them to either return the paper questionnaire or respond online. Midwives and public health nurses are providing telephone counseling sessions to those who are deemed to be in need of support based on their answers.

## 2.5 Response rates.

Survey year	Number of surveys sent	Responses (Response rate)	
FY 2016	5,602	2,007 (35.8)	Follow-up for survey population in FY 2012
FY 2015	7,252	2,554 (35.2)	Follow-up for survey population in FY 2011

## 2.6 Status of support provision

### a. Telephone counseling

Survey year	Responses	Support		
		Participants requiring support (%) <sup>1</sup>	Type of response that prompted support	
			Depressive symptoms* (Proportion of support given) <sup>1</sup>	Free comments (Proportion of support given) <sup>1</sup>
FY 2016	2,007	255 (12.7)	208 (10.4)	47 (2.3)
FY 2015	2,554	375 (14.7)	299 (11.7)	76 (3.0)

1) Percentage of total responses.

\* Participants who said they had depressive mood or had a hard time enjoying things.

### b. Other matters

Special telephone sessions have been offered, with midwives and public health nurses providing counseling for those who call.

## 2.7 Interim results

Roughly 10% of the participants had low self-reported health (not so healthy or not healthy), and nearly a quarter of the respondents tended to have depressive symptoms. These results stayed almost the same as the follow-up survey results of FY 2011. The most frequently mentioned issue in the free comment section of the FY 2011 survey concerned the effects of radiation on the fetus and child. In contrast, free comments in the FY 2012 survey were predominantly positive, expressing gratitude for the survey and telephone support services. Other mentioned issues included requests for adequate parenting support services.

## 3. Implementation plan for FY 2017 survey

### 3.1 Pregnancy and Birth Survey for FY 2017

#### 3.1-1 Purpose

The response rate of the survey started from FY 2011 has been around 50%, which is high for a postal survey, showing a high public interest in the health of mothers and children. We will continue to conduct the

survey to improve perinatal care in Fukushima Prefecture by addressing the anxiety of pregnant women and mothers, and providing necessary support through assessing their physical and mental health.

### 3.1-2 Survey population

A: Those who receive Maternal and Child Health Handbooks from municipal governments in Fukushima Prefecture between 1 August 2016 and 31 July 2017.

B: Those who receive Maternal and Child Health Handbooks from locations outside Fukushima Prefecture during the above time period, and then returned to give birth in Fukushima.

### 3.1-3 Survey period

We plan to send out the questionnaire to those mentioned above (A) three times from November 2017 through March 2018, depending on the time when they receive the Maternal and Child Health Handbook.

### 3.1-4 Method

To those mentioned above (A), we will refer to 59 municipalities for current information, and mail the self-completed survey questionnaire, excluding stillbirth and miscarriage, for which we will receive only their numbers. For the survey population (B), the survey form will be distributed at obstetrics clinics in Fukushima Prefecture. As to method of answering, we will advise participants to either return the paper survey or respond online. Midwives and public health nurses will provide telephone counseling sessions as well as online and dedicated phone number support services to those who are deemed to require support.

## 3.2 Follow-up survey

### 3.2-1 Purpose

We will continue to conduct the survey for respondents of the FY 2013 survey to provide continued support. We will also monitor the physical and mental health of the participants or their child-care situation to offer appropriate care.

### 3.2-2 Survey population

Respondents of the Pregnancy and Birth Survey for FY 2013 who delivered babies and are confirmed to be alive at the time when the survey forms are sent out (approximately 6,700).

### 3.2-3 Survey period

January 2018 (TBA)

### 3.2-4 Method

We will refer to municipal registers for the participants' information, to confirm that the mothers and their children are alive, and send them the questionnaire. As to method of answering, we advise them to either return the paper questionnaire or respond online. Midwives and public health nurses will provide telephone counseling sessions as well as online and dedicated phone number support services to those who are assessed to require support based on their answers.



# Thyroid Ultrasound Examination (Preliminary Baseline Screening)

## Supplemental Report of the FY 2016 Survey

Reported on 5 June 2017

### 1. Summary

#### 1.1 Purpose

One of the health problems caused by the Chernobyl nuclear power plant accident was thyroid cancer in childhood caused by internal exposure to radioactive iodine.

In response to the Tokyo Electric Power Company's (TEPCO's) Fukushima Daiichi nuclear accident, Fukushima Prefecture started a Thyroid Ultrasound Examination program to monitor the long-term health of children.

Preliminary Baseline Screening (Initial Screening) aims to check the baseline condition of participants' thyroid glands.

#### 1.2 Group

Residents of Fukushima Prefecture aged 0-18 years (born between 2 April 1992 and 1 April 2011) as of 11 March 2011.

#### 1.3 Implementation Period

The Preliminary Baseline Screening (Initial Screening) started from 9 October 2011 and was planned to end on 31 March 2014. However, we continued the examination until notice of the Full-scale Thyroid Screening program (2<sup>nd</sup> screening) was sent to residents in order to provide an opportunity for nonparticipants. The primary examination ended on 30 April 2015.

The reported data of confirmatory testing were as of 31 March 2017.

#### 1.4 Responsible Organizations

Fukushima Prefecture commissioned Fukushima Medical University to conduct the survey in cooperation with institutions inside and outside Fukushima Prefecture.

We started the primary examination from 1 November 2012 outside Fukushima, and 98 institutions have agreed to cooperate as of 30 June 2015.

The confirmatory examination has been conducted in Koriyama and Iwaki in Fukushima Prefecture from July 2013, Aizuwakamatsu from August 2014, Date from October 2016, and several institutions outside Fukushima Prefecture from November 2013. As of 31 March 2017, a total of 36 institutions have conducted confirmatory examinations.

## 1.5 Method

### 1.5-1 Primary Examination

We use ultrasonography for examination of the thyroid gland.

Assessments were made by specialists on the basis of the following criteria.

#### -Diagnostic Criteria: A

Those with A1 and A2 test results were recommended for watchful waiting until they undergo the next screening starting from April 2014.

(A1) No nodules / cysts

(A2) Nodules  $\leq 5.0$  mm or cysts  $\leq 20.0$  mm

#### -Diagnostic Criteria: B

Those with B test results are advised to take the Confirmatory Examination.

(B) Nodules  $\geq 5.1$  mm or cysts  $\geq 20.1$  mm

Some A2 test results were 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 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

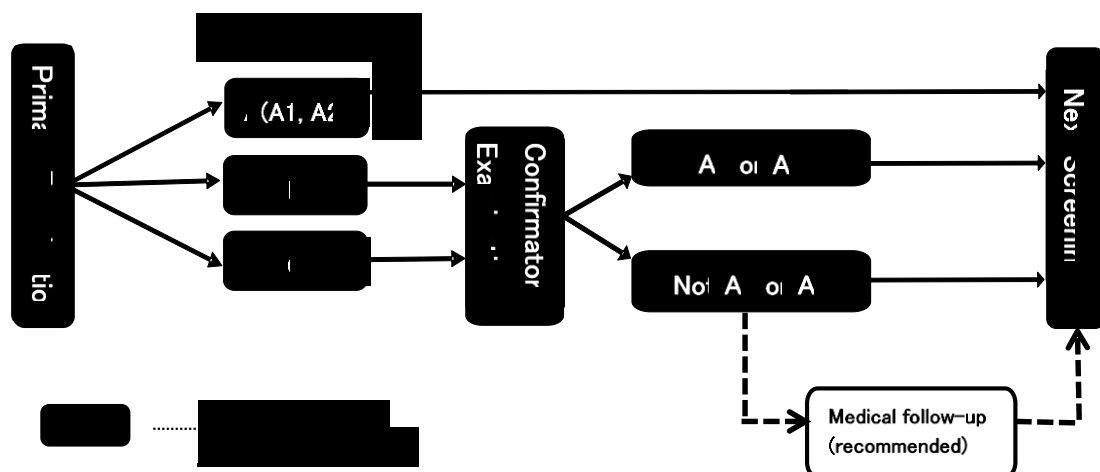


Fig.1 Flow chart

## 1.6 Target Municipalities

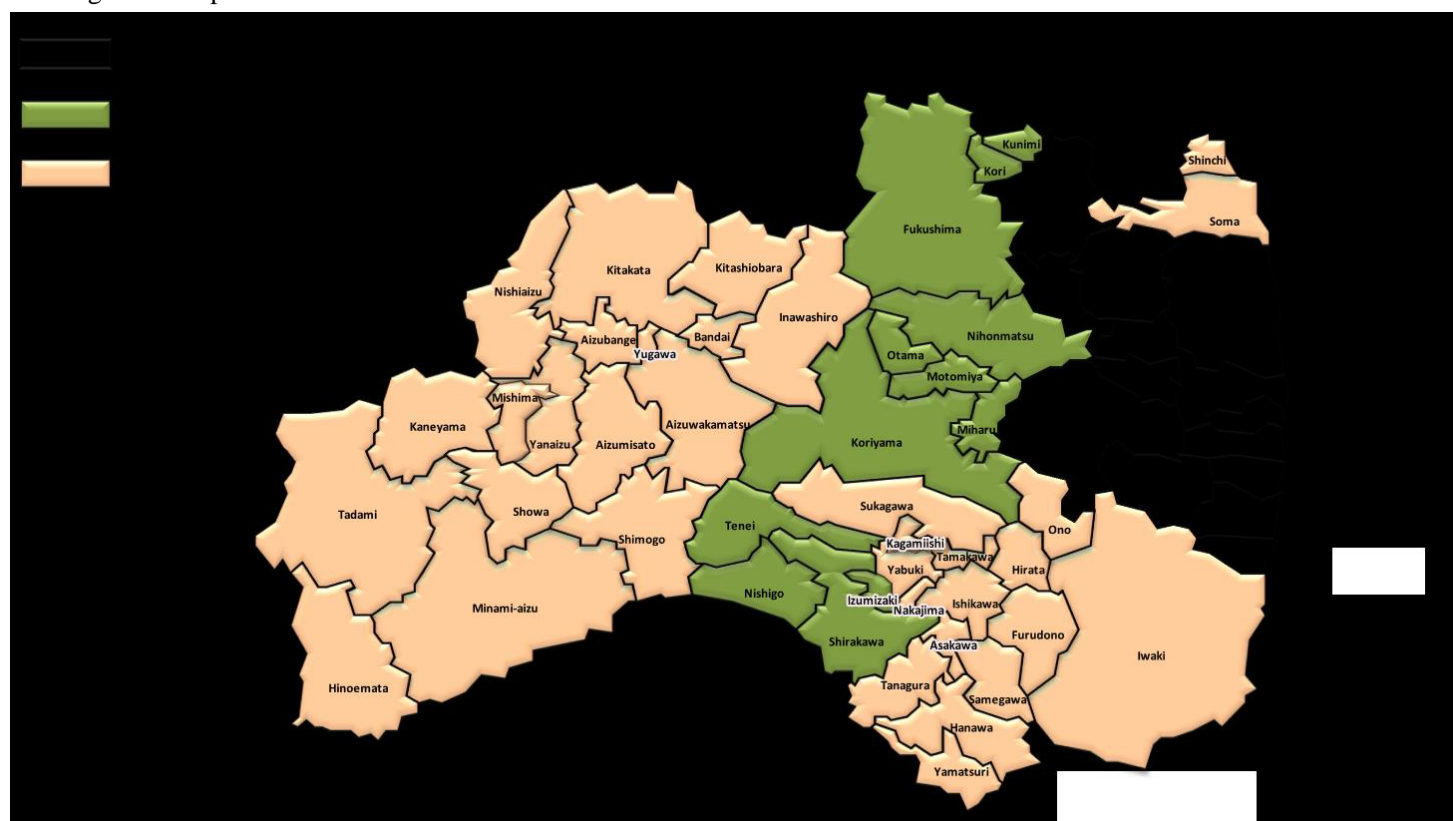


Fig.2 Target Municipalities

## 1.7 Definition of the supplemental report

The data of primary testing were gathered from those who underwent the first screening between 9 October 2011 and 30 April 2015, and released in the final report.

The data of confirmatory testing were tallied from participants with confirmed test results from 1 July 2015 through 31 March 2017 in the supplemental report.

## 2. Results (As of 31 March 2017)

### 2.1 Primary Examination

The participation rate was 81.7% (300,473 of 367,649). (See Appendix 2 and 3.)

The results have been returned to all participants. (See Appendix 4 and 5.)

Those with A1 or A2 test results were 298,179 (99.2%), B were 2,293 (0.8%), and C was 1.

Table 1. Screening test coverage

	Target Population  a	Participants		Proportion (%)  c (c/b)	Test results				
		Proportion (%)  b (b/a)	Screened outside Fukushima		Class				
					A		Requiring confirmatory test		
					A1 d (d/c)	A2 e (e/c)	B f (f/c)	C g (g/c)	
FY 2011	47,769	41,810 (87.5)	2,024	41,810 ( 100.0)	26,375 (63.1)	15,214 (36.4)	221 (0.5)	0 (0.0)	
FY 2012	161,123	139,337 (86.5)	4,267	139,337 ( 100.0)	76,194 (54.7)	62,155 (44.6)	987 (0.7)	1 (0.0)	
FY 2013	158,757	119,326 (75.2)	3,220	119,326 ( 100.0)	52,036 (43.6)	66,205 (55.5)	1,085 (0.9)	0 (0.0)	
Total	367,649	300,473 (81.7)	9,511	300,473 ( 100.0)	154,605 (51.5)	143,574 (47.8)	2,293 (0.8)	1 (0.0)	

Table 2. Number and proportion of participants with nodules/cysts

	Number of confirmed screening results a	Number and proportions of children with nodules/cysts			
		Nodules		Cysts	
		≥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 2011	41,810	219 (0.5)	230 (0.6)	1 (0.0)	15,139 (36.2)
FY 2012	139,337	973 (0.7)	730 (0.5)	9 (0.0)	62,267 (44.7)
FY 2013	119,326	1,083 (0.9)	753 (0.6)	2 (0.0)	66,493 (55.7)
Total	300,473	2,275 (0.8)	1,713 (0.6)	12 (0.0)	143,899 (47.9)

Fractions have been rounded and may not total to 100%.

Because some duplicate records were found, numbers may vary slightly from previous reports.

## 2.2 Confirmatory Examination

### 2.2-1 Progress Report

The number of participants with B or C test results recommended for further testing was 2,293, of whom 2,130 (92.9%) underwent confirmatory testing. The number of those with confirmed test results was 2,090 (98.1%). (See Appendix 6.)

Of 2,090 participants, 711 (34.0%), specifically 132 with A1 and 579 with A2 results (from Table 3), were confirmed to meet A1 or A2 primary diagnostic criteria (including those with other thyroid conditions), and so were advised to take their next regularly scheduled examination (Full-scale thyroid screening program).

Those with neither A1 nor A2 results (from Table 3) were 1,379 (66.0%), and they were recommended to have medical follow-up after 6 to 12-months, or were advised to take their next regularly scheduled examination, though beyond the threshold level of A2. Of 1,379 participants, 547 (39.7%) underwent FNAC.

Table 3. Confirmatory testing coverage and results as of 31 March 2017

	Number of those requiring confirmatory test a	Participants Proportion (%) b (b/a)	Confirmatory test coverage (%) c (c/b)	Confirmed test results			
				A1	A2	Not A1 or A2	
				d (d/c)	e (e/c)	f (f/c)	Cytology g (g/f)
FY 2011	221	199 (90.0)	197 (99.0)	18 (9.1)	36 (18.3)	143 (72.6)	92 (64.3)
FY 2012	988	920 (93.1)	903 (98.2)	57 (6.3)	250 (27.7)	596 (66.0)	264 (44.3)
FY 2013	1,084	1,011 (93.3)	990 (97.9)	57 (5.8)	293 (29.6)	640 (64.6)	191 (29.8)
Total	2,293	2,130 (92.9)	2,090 (98.1)	132 (6.3)	579 (27.7)	1,379 (66.0)	547 (39.7)

2.2-2 Results of Fine Needle Aspiration Biopsy and Cytology (FNAC) Among those who underwent FNAC, 116 had nodules classified as suspicious or malignant.

Thirty-nine of them were male, and 77 were female. Age at the time of the confirmatory testing ranged from 8 to 22 years (mean age:  $17.3 \pm 2.7$  years). The minimum and maximum tumor size was 5.1-45.0 mm in diameter. Mean tumor diameter was  $13.9 \pm 7.8$  mm.

Table 4. Results of FNAC

Target municipalities in FY 2011

Suspicious or malignant	15*
Male to female ratio	5:10
Mean age (SD, min-max)	17.3 (2.0, 13-20) 15.7 (1.9, 11-18) at the time of the disaster
Mean tumor size	13.5 mm (6.9 mm, 6.0-33.0 mm)

Target municipalities in FY 2012

Suspicious or malignant	56*
Male to female ratio	21:35
Mean age (SD, min-max)	17.2 (2.7, 8-21) 14.9 (2.6, 6-18) at the time of the disaster
Mean tumor size	14.5 mm (7.8 mm, 5.2-40.5 mm)

Target municipalities in FY 2013

Suspicious or malignant	45*
Male to female ratio	13: 32
Mean age (SD, min-max)	17.5 (3.0, 11-22) 14.6 (2.8, 8-18) at the time of the disaster
Mean tumor size	13.4 mm (8.3 mm, 5.1-45.0 mm)

Total for cases FY 2011 – FY 2013

Suspicious or malignant	116*
Male to female ratio	39: 77
Mean age(SD, min-max)	17.3 (2.7, 8-22) 14.9 (2.6, 6-18) at the time of the disaster
Mean tumor size	13.9 mm (7.8 mm, 5.1-45.0 mm)

\* See Appendix 7 for details.

### 2.2-3 Suspicious or malignant cases on FNAC by age and sex

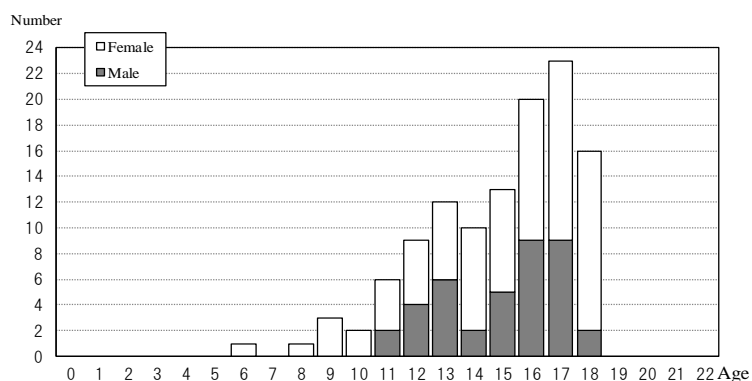


Fig.3 Age as of 11 March 2011

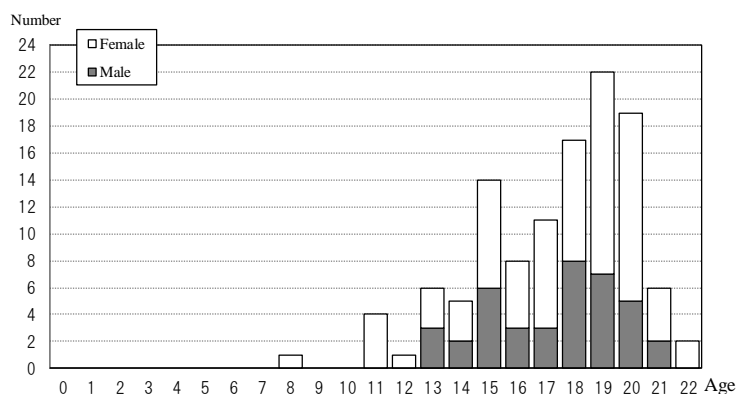


Fig. 4 Age at the date of confirmatory examination

### 2.2-4 Suspicious or malignant cases on FNAC by estimated radiation dose

Sixty-five (56.0%) of the 116 people participated in the Basic Survey (radiation dose estimates) and 65 of them, including 5 with less than four months' data, have received the results. Among those, 46 (70.8%) had estimated radiation exposure dose below 1 mSv, and the highest effective dose was 2.2 mSv.

Table 5. Number of suspicious or malignant cases by estimated radiation dose

As of 31 March 2017

Effective dose (mSv)	Age at the time of disaster									
	0-5		6-10		11-15		16-18		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<1	0	0	0	5(1)	7(1)	8	8(1)	18(2)	15(2)	31(3)
1-1.9	0	0	0	0	3	10	2	3	5	13
2-4.9	0	0	0	0	1	0	0	0	1	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	0	5(1)	11(1)	18	10(1)	21(2)	21(2)	44(3)

Numbers inside the brackets are estimates for participants with less than four months' data.

Estimates are based on effective external radiation doses.

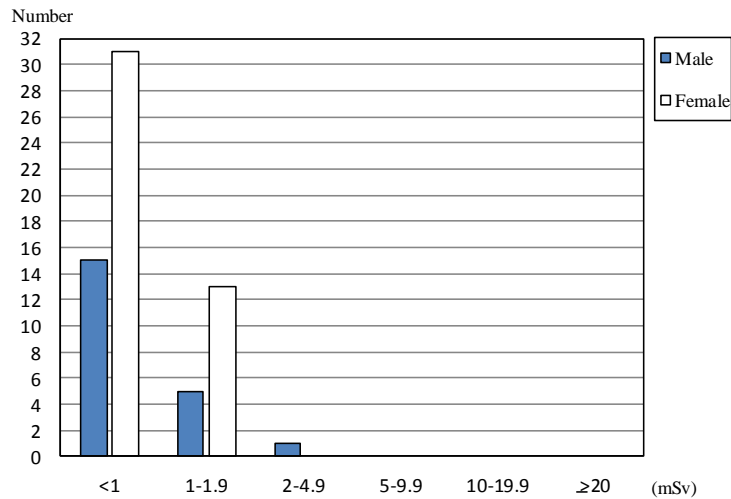


Fig. 5 Effective dose of the respondents

## 2.2-5 Blood and urinary iodine test results as of 31 March 2016

Table 6. 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	2.13-4.07 7)	0.340-3.880	≤32.7	<28.0	<16.0
116 suspicious or malignant	1.2 ± 0.2 (6.0%)	3.4 ± 0.4 (5.2%)	1.3 ± 0.7 (5.2%)	40.5 ± 81.2 (35.3%)	— (26.7%)	— (15.5%)
Other 1,972	1.3 ± 0.3 (6.3%)	3.6 ± 0.9 (6.4%)	1.8 ± 12.0 (8.5%)	33.9 ± 179.9 (18.0%)	— (13.2%)	— (9.8%)

Table 7. Urinary iodine (μg/day)

	Minimum	25th percentile	Median	75th percentile	Maximum
116 suspicious or malignant	42	129.5	216	369.8	6,020
Other 1,969	24	119	195	364	35,700

- 1) FT4: Free Thyroxine; higher among patients with thyrotoxicosis (representative disease: Graves' disease) and lower with hypothyroidism (representative disease: Hashimoto's thyroiditis).
- 2) FT3: Free Triiodothyronine; higher among patients with thyrotoxicosis (representative disease: Graves' disease) and lower with hypothyroidism (representative disease: 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 thyroid cancer 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 range differs according to age.



## 2.2-6 Confirmatory test results by municipality

The proportion of suspicious or malignant diagnoses was 0.03% in FY 2011 target municipalities (13 municipalities in the nationally designated evacuation zones), 0.04% in FY 2012 target municipalities (12 towns of the Kenchu area), and 0.04% in FY 2013 target municipalities (34 towns of Iwaki, the Kennan and Aizu areas).

Table 8.

### Confirmatory test results in FY 2011

(13 municipalities in the nationally designated evacuation zones)

	Number of those screened	Participants who required confirmatory test	Proportion who required confirmatory test (%)	Number who underwent confirmatory test	Suspicious or malignant cases <sup>1</sup>	Proportion of suspicious or malignant cases (%)
Kawamata	2,221	8	0.4	8	2	0.09
Namie	3,249	26	0.8	24	2	0.06
Iitate	943	6	0.6	6	0	0.00
Minami-soma	10,789	52	0.5	48	2	0.02
Date	10,605	50	0.5	45	2	0.02
Tamura	6,325	32	0.5	26	3	0.05
Hirono	838	5	0.6	4	0	0.00
Naraha	1,153	7	0.6	6	0	0.00
Tomioka	2,301	13	0.6	12	1	0.04
Kawauchi	280	4	1.4	4	1	0.36
Okuma	1,973	14	0.7	13	1	0.05
Futaba	949	3	0.3	2	0	0.00
Katsurao	184	1	0.5	1	0	0.00
Subtotal	41,810	221	0.5	199	14	0.03

1) Excluding one suspected case found benign by aspiration biopsy cytology.

### Confirmatory test results by municipality in FY 2012

	Number of those screened	Participants who required confirmatory test	Proportion who required confirmatory test (%)	Number who underwent confirmatory test	Suspicious or malignant cases	Proportion of suspicious or malignant cases (%)
Fukushima	47,306	283	0.6	272	12	0.03
Nihonmatsu	8,856	57	0.6	54	5	0.06
Motomiya	5,234	29	0.6	29	3	0.06
Otama	1,373	7	0.5	7	2	0.15
Koriyama	54,062	458	0.8	415	25	0.05
Kori	1,874	14	0.7	13	0	0.00
Kunimi	1,437	15	1.0	13	0	0.00
Tenei	879	7	0.8	6	0	0.00
Shirakawa	10,810	61	0.6	59	6	0.06
Nishigo	3,618	30	0.8	26	1	0.03
Izumizaki	1,158	5	0.4	5	1	0.09
Miharu	2,730	22	0.8	21	1	0.04
Subtotal	139,337	988	0.7	920	56	0.04

# Confirmatory test results by municipality in FY 2013

	Number of those screened	Participants who required confirmatory test	Proportion who required confirmatory test (%)	Number who underwent confirmatory test	Suspicious or malignant cases	Proportion of suspicious or malignant cases (%)
Iwaki*	49,430	455	0.9	430	24	0.05
Sukagawa	12,081	105	0.9	103	4	0.03
Soma	5,210	47	0.9	43	0	0.00
Kagamiishi	2,029	11	0.5	9	0	0.00
Shinchi	1,150	7	0.6	7	0	0.00
Nakajima	832	2	0.2	2	0	0.00
Yabuki	2,567	19	0.7	17	1	0.04
Ishikawa	2,162	12	0.6	12	1	0.05
Yamatsuri	794	3	0.4	2	0	0.00
Asakawa	1,092	12	1.1	11	0	0.00
Hirata	873	10	1.1	10	1	0.11
Tanagura	2,321	22	0.9	22	1	0.04
Hanawa	1,255	9	0.7	8	1	0.08
Samegawa	522	4	0.8	2	0	0.00
Ono	1,451	15	1.0	13	0	0.00
Tamakawa	1,015	11	1.1	9	0	0.00
Furudono	822	6	0.7	6	0	0.00
Hinoemata	62	0	0.0	0	0	0.00
Minami-aizu	1,869	17	0.9	15	0	0.00
Kaneyama	144	0	0.0	0	0	0.00
Showa	102	0	0.0	0	0	0.00
Mishima	130	1	0.8	1	0	0.00
Shimogo	710	11	1.5	10	1	0.14
Kitakata	5,897	51	0.9	46	0	0.00
Nishiaizu	646	5	0.8	4	0	0.00
Tadami	510	7	1.4	7	0	0.00
Inawashiro	1,945	13	0.7	13	1	0.05
Bandai	428	4	0.9	3	0	0.00
Kitashiobara	392	1	0.3	1	0	0.00
Aizumisato	2,609	27	1.0	25	1	0.04
Aizubange	2,139	25	1.2	23	1	0.05
Yanaizu	387	2	0.5	2	0	0.00
Aizuwakamatsu	15,235	163	1.1	148	7	0.05
Yugawa	515	7	1.4	7	1	0.19
Subtotal	119,326	1,084	0.9	1,011	45	0.04
Total	300,473	2,293	0.8	2,130	115	0.04

\* Including districts of FY 2012

### 3. Primary and confirmatory test results by area

In order to compare the results by area, we divided the area into three regions, Hamadori, Nakadori, and Aizu. Hamadori and Nakadori are divided into 13 municipalities in the nationally designated evacuation zones and otherwise.

Table 9. Proportion of B or C test results, and suspicious or malignant by area

As of 31 March 2017

		13 municipalities <sup>5</sup>	Nakadori <sup>6</sup>	Hamadori <sup>7</sup>	Aizu <sup>8</sup>	Total
Participants		47,769	199,416	70,538	49,926	367,649
Number of participants of Primary Examination	A <sup>1</sup>	41,810	169,153	55,790	33,720	300,473
Mean age at the time of the disaster (SD) Total		9.4 (5.3)	8.9 (5.1)	8.8 (5.0)	8.3 (4.6)	-
Mean age at the time of the disaster (SD) Female		9.5 (5.3)	9.0 (5.2)	8.9 (5.0)	8.5 (4.7)	-
Mean age at the time of the disaster (SD) Male		9.4 (5.2)	8.8 (5.1)	8.6 (4.9)	8.1 (4.5)	-
Mean age at the time of examination (SD) Total		10.4 (5.3)	10.7 (5.1)	11.2 (5.0)	11.2 (4.6)	-
Mean age at the time of examination (SD) Female		10.4 (5.3)	10.8 (5.2)	11.3 (5.1)	11.4 (4.7)	-
Mean age at the time of examination (SD) Male		10.3 (5.2)	10.6 (5.1)	11.0 (5.0)	11.0 (4.6)	-
Female (%)	%	49.0	48.6	48.8	48.9	48.7
B or C test results	B	221	1,229	509	334	2,293
Proportion of B or C test results	(B/A) %	0.53	0.73	0.91	0.99	0.76
Number of participants of Confirmatory Examination	C <sup>2</sup>	197	1,122	472	299	2,090
Proportion of participants	(C/B) %	89.1	91.3	92.7	89.5	91.1
Participants of FNAC	D <sup>3</sup>	94	304	106	50	554
Proportion of those who underwent FNAC	(D/C) %	47.7	27.1	22.5	16.7	26.5
Proportion of those who underwent FNAC	(D/A) %	0.22	0.18	0.19	0.15	0.18
Number of suspicious or malignant	E <sup>4</sup>	14	65	24	12	115
Proportion	(E/D) %	14.9	21.4	22.6	24.0	20.8
Proportion per 100,000	(E/A)	33.5	38.4	43.0	35.6	38.3
	(%)	(0.033)	(0.038)	(0.043)	(0.036)	(0.038)

1) Excluding duplicates.

2) Excluding number of unconfirmed test results.

3) Number of those who underwent FNAC including those with A1 and A2 test results among participants of Confirmatory Examination.

4) Excluding one suspected case found benign by aspiration biopsy cytology.

5) Tamura, Minami-soma, Date, Kawamata, Hirono, Naraha, Tomioka, Kawauchi, Okuma, Futaba, Namie, Katsurao, Iitate

6) Fukushima, Koriyama, Shirakawa, Sukagawa, Nihonmatsu, Motomiya, Kori, Kunimi, Otama, Kagamiishi, Tenei, Nishigo, Izumizaki, Nakajima, Yabuki, Tanagura, Yamatsuri, Hanawa, Samegawa, Ishikawa, Tamakawa, Hirata, Asakawa, Furudono, Mihar, Ono

7) Iwaki, Soma, Shinchi

8) Aizuwakamatsu, Kitakata, Shimogo, Hinoemata, Tadami, Minami-aizu, Kitashiobara, Nishiaizu, Bandai, Inawashiro, Aizubange, Yugawa, Yanaizu, Mishima, Kaneyama, Showa, Aizumisato

#### Summary

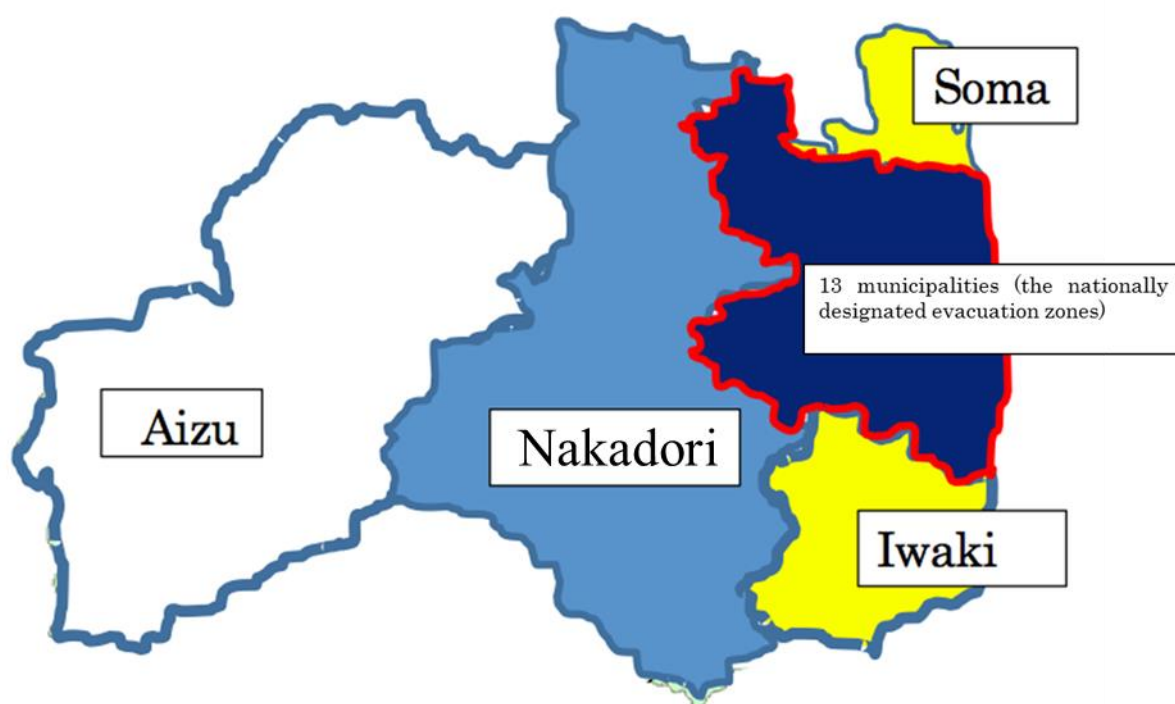
Among the 300,473 participants of Primary Examination, proportion of B or C test results increased in all areas, and was highest in Aizu followed by Hamadori, Nakadori, and 13 municipalities of the nationally designated evacuation zones.

The proportion of suspicious or malignant was almost the same among 13 municipalities in the nationally designated evacuation zones, Nakadori, Hamadori, and Aizu.

#### 4. Mental Health Care

We set up a support team for participants of the confirmatory examination to address their anxiety and concerns by offering various services including online support. In cooperation with teams of medical staff at hospitals, we provide continued support to those who are recommended for a follow-up provided by health insurance.

Since 5 December 2013 through 31 March 2016, a total of 277 participants (70 males and 207 females) have received support. The number of consultations given to them was 656 in total. Of these, 146 (22.3%) received support services on the first time of their examination, 159 (24.2%) at the second time and after, including 53 (8.1%) when undergoing FNAC, 34 (5.2%) when giving informed consent, 218 (33.2%) during follow-up provided by health insurance, including perioperative follow-up, 88 (13.4%) during hospitalization, and 11 (1.7%) on other occasions.



# Appendix 1

Participants by municipality

Participants by municipality	Survey Population	Age group (years)			
		0-5	6-10	11-15	16-18
FY 2011					
Kawamata	2,394	588	631	719	456
Namie	3,643	1,023	920	1,031	669
Iitate	1,084	281	300	301	202
Minami-soma	12,526	3,697	3,418	3,297	2,114
Date	11,400	2,755	3,023	3,401	2,221
Tamura	7,069	1,739	1,807	2,073	1,450
Hirono	1,077	258	250	348	221
Naraha	1,432	351	362	415	304
Tomiooka	2,961	767	740	896	558
Kawauchi	357	90	99	89	79
Okuma	2,385	782	634	619	350
Futaba	1,207	369	300	337	201
Katsurao	234	56	63	67	48
Subtotal	47,769	12,756	12,547	13,593	8,873
FY 2012					
Fukushima	53,551	15,247	14,062	14,880	9,362
Nihonmatsu	10,255	2,783	2,646	2,945	1,881
Motomiya	6,112	1,760	1,583	1,691	1,078
Otama	1,617	486	399	430	302
Koriyama	64,377	19,214	16,910	17,496	10,757
Kori	2,065	526	547	595	397
Kunimi	1,594	381	420	484	309
Tenei	1,061	300	284	280	197
Shirakawa	12,159	3,356	3,258	3,478	2,067
Nishigo	3,976	1,142	1,081	1,075	678
Izumizaki	1,289	353	355	335	246
Miharu	3,067	750	776	931	610
Subtotal	161,123	46,298	42,321	44,620	27,884
FY 2013					
Iwaki*	62,293	17,234	16,182	17,755	11,122
Sukagawa	15,306	4,342	4,096	4,255	2,613
Soma	6,811	1,980	1,778	1,849	1,204
Kagamiishi	2,596	740	706	723	427
Shinchi	1,434	392	394	411	237
Nakajima	1,079	270	282	317	210
Yabuki	3,273	979	850	895	549
Ishikawa	2,842	710	719	830	583
Yamatsuri	1,010	287	236	315	172
Asakawa	1,336	338	378	372	248
Hirata	1,208	330	298	342	238
Tanagura	2,985	865	744	882	494
Hanawa	1,661	415	390	531	325
Samagawa	694	178	172	186	158
Ono	1,932	497	489	566	380
Tamakawa	1,331	384	346	369	232
Furudono	1,040	287	242	315	196
Hinoemata	107	23	30	34	20
Minami-aizu	2,823	713	682	841	587
Kaneyama	203	40	52	72	39
Showa	128	44	38	33	13
Mishima	192	43	55	53	41
Shimogo	1,007	265	252	293	197
Kitakata	8,910	2,293	2,334	2,578	1,705
Nishiaizu	1,019	216	245	334	224
Tadami	710	195	177	201	137
Inawashiro	2,662	704	659	768	531
Bandai	617	180	163	166	108
Kitashiobara	557	159	140	156	102
Aizumisato	3,658	916	909	1,098	735
Aizubange	3,081	766	800	958	557
Yanaizu	590	158	142	175	115
Aizuwakamatsu	22,986	6,261	5,965	6,577	4,183
Yugawa	676	179	177	192	128
Subtotal	158,757	43,383	41,122	45,442	28,810
Total	367,649	102,437	95,990	103,655	65,567

\* Including districts of FY 2012

Because some duplicate records were found, numbers may vary slightly from previous reports.

## Appendix 2

### Thyroid Ultrasound Examination (TUE) coverage by municipality

Screening coverage by municipality in FY 2011 (13 municipalities in the nationally designated zones)

	Survey Population	Participants		Proportion (%)	Number and proportion of participants by age group				Participants living outside Fukushima	Proportion (%)	
		Screened outside Fukushima	5)		b/a						
						0-5	6-10	11-15			16-18
a	b								c 4)	c/b	
Kawamata	2,394	2,221	34	92.8	560	612	687	362	132	5.9	
					95.2	97.0	95.5	79.4			
					25.2	27.6	30.9	16.3			
Namie	3,643	3,249	192	89.2	920	858	918	553	1,190	36.6	
					89.9	93.3	89.0	82.7			
					28.3	26.4	28.3	17.0			
Iitate	1,084	943	16	87.0	248	271	264	160	87	9.2	
					88.3	90.3	87.7	79.2			
					26.3	28.7	28.0	17.0			
Minami-soma	12,526	10,789	874	86.1	3,205	3,052	2,929	1,603	2,832	26.2	
					86.7	89.3	88.8	75.8			
					29.7	28.3	27.1	14.9			
Date	11,400	10,605	155	93.0	2,573	2,977	3,287	1,768	593	5.6	
					93.4	98.5	96.6	79.6			
					24.3	28.1	31.0	16.7			
Tamura	7,069	6,325	61	89.5	1,557	1,762	1,969	1,037	235	3.7	
					89.5	97.5	95.0	71.5			
					24.6	27.9	31.1	16.4			
Hirono	1,077	838	57	77.8	204	216	294	124	151	18.0	
					79.1	86.4	84.5	56.1			
					24.3	25.8	35.1	14.8			
Naraha	1,432	1,153	77	80.5	285	319	353	196	223	19.3	
					81.2	88.1	85.1	64.5			
					24.7	27.7	30.6	17.0			
Tomioka	2,961	2,301	237	77.7	594	638	719	350	621	27.0	
					77.4	86.2	80.2	62.7			
					25.8	27.7	31.2	15.2			
Kawauchi	357	280	22	78.4	72	92	70	46	52	18.6	
					80.0	92.9	78.7	58.2			
					25.7	32.9	25.0	16.4			
Okuma	2,385	1,973	183	82.7	656	579	529	209	507	25.7	
					83.9	91.3	85.5	59.7			
					33.2	29.3	26.8	10.6			
Futaba	1,207	949	113	78.6	289	246	277	137	418	44.0	
					78.3	82.0	82.2	68.2			
					30.5	25.9	29.2	14.4			
Katsurao	234	184	3	78.6	43	56	57	28	16	8.7	
					76.8	88.9	85.1	58.3			
					23.4	30.4	31.0	15.2			
Subtotal	47,769	41,810	2,024	87.5	11,206	11,678	12,353	6,573	7,057	16.9	
					87.8	93.1	90.9	74.1			
					26.8	27.9	29.5	15.7			

1) Number of participants. 2) Number of participants/Number in the target population by age group.

3) Number of participants in the age group/Number of participants.

4) Number of participants currently living outside Fukushima.

5) Number of participants who underwent the test outside Fukushima.

Fractions have been rounded and may not total to 100%. Ages are at the time of the disaster.

Because some duplicate records were found, numbers may vary slightly from previous reports.

While some participants who underwent the test at their schools had been categorized according to the municipalities of their schools in the previous survey, they were recategorized into the municipalities they belonged at the time of the disaster.

Screening coverage by municipality in FY 2012

	Survey Population  a	Participants		Proportion (%)  b/a	Number and proportion of participants by age group				Participants living outside Fukushima  c 4)	Proportion (%)  c/b
		Screened outside Fukushima 5)	b		0-5	6-10	11-15	16-18		
Fukushima	53,551	47,306	1,238	88.3	13,369	13,565	13,670	6,702	3,649	7.7
					87.7	96.5	91.9	71.6		
					28.3	28.7	28.9	14.2		
Nihonmatsu	10,255	8,856	174	86.4	2,527	2,589	2,672	1,068	439	5.0
					90.8	97.8	90.7	56.8		
					28.5	29.2	30.2	12.1		
Motomiya	6,112	5,234	110	85.6	1,534	1,554	1,506	640	233	4.5
					87.2	98.2	89.1	59.4		
					29.3	29.7	28.8	12.2		
Otama	1,617	1,373	18	84.9	447	397	385	144	48	3.5
					92.0	99.5	89.5	47.7		
					32.6	28.9	28.0	10.5		
Koriyama	64,377	54,062	2,218	84.0	16,316	16,147	15,493	6,106	4,621	8.5
					84.9	95.5	88.6	56.8		
					30.2	29.9	28.7	11.3		
Kori	2,065	1,874	34	90.8	494	541	570	269	76	4.1
					93.9	98.9	95.8	67.8		
					26.4	28.9	30.4	14.4		
Kunimi	1,594	1,437	29	90.2	349	412	464	212	54	3.8
					91.6	98.1	95.9	68.6		
					24.3	28.7	32.3	14.8		
Tenei	1,061	879	13	82.8	286	281	229	83	36	4.1
					95.3	98.9	81.8	42.1		
					32.5	32.0	26.1	9.4		
Shirakawa	12,159	10,810	296	88.9	3,083	3,193	3,242	1,292	615	5.7
					91.9	98.0	93.2	62.5		
					28.5	29.5	30.0	12.0		
Nishigo	3,976	3,618	83	91.0	1,088	1,062	1,012	456	204	5.6
					95.3	98.2	94.1	67.3		
					30.1	29.4	28.0	12.6		
Izumizaki	1,289	1,158	14	89.8	340	346	311	161	46	4.0
					96.3	97.5	92.8	65.4		
					29.4	29.9	26.9	13.9		
Miharu	3,067	2,730	40	89.0	696	760	859	415	106	3.9
					92.8	97.9	92.3	68.0		
					25.5	27.8	31.5	15.2		
Subtotal	161,123	139,337	4,267	86.5	40,529	40,847	40,413	17,548	10,127	7.3
					87.5	96.5	90.6	62.9		
					29.1	29.3	29.0	12.6		

Screening coverage by municipality in FY 2013

	Survey Population  a	Participants		Proportion (%)  b/a	Number and proportion of participants by age group				Participants living outside Fukushima  c 4)	Proportion (%)  c/b
		b	Screened outside Fukushima 5)							
					0-5	6-10	11-15	16-18		
Iwaki*	62,293	49,430	1,704	79.4	14,400 83.6 29.1	15,513 95.9 31.4	14,294 80.5 28.9	5,223 47.0 10.6	2,766	5.6
Sukagawa	15,306	12,081	270	78.9	3,774 86.9 31.2	3,987 97.3 33.0	3,286 77.2 27.2	1,034 39.6 8.6	445	3.7
Soma	6,811	5,210	234	76.5	1,701 85.9 32.6	1,662 93.5 31.9	1,361 73.6 26.1	486 40.4 9.3	438	8.4
Kagamiishi	2,596	2,029	33	78.2	641 86.6 31.6	685 97.0 33.8	545 75.4 26.9	158 37.0 7.8	48	2.4
Shinchi	1,434	1,150	65	80.2	353 90.1 30.7	379 96.2 33.0	320 77.9 27.8	98 41.4 8.5	74	6.4
Nakajima	1,079	832	9	77.1	230 85.2 27.6	275 97.5 33.1	267 84.2 32.1	60 28.6 7.2	16	1.9
Yabuki	3,273	2,567	55	78.4	886 90.5 34.5	830 97.6 32.3	683 76.3 26.6	168 30.6 6.5	56	2.2
Ishikawa	2,842	2,162	58	76.1	667 93.9 30.9	692 96.2 32.0	620 74.7 28.7	183 31.4 8.5	59	2.7
Yamatsuri	1,010	794	17	78.6	270 94.1 34.0	233 98.7 29.3	237 75.2 29.8	54 31.4 6.8	21	2.6
Asakawa	1,336	1,092	25	81.7	319 94.4 29.2	374 98.9 34.2	305 82.0 27.9	94 37.9 8.6	32	2.9
Hirata	1,208	873	15	72.3	284 86.1 32.5	284 95.3 32.5	235 68.7 26.9	70 29.4 8.0	11	1.3
Tanagura	2,985	2,321	43	77.8	772 89.2 33.3	730 98.1 31.5	652 73.9 28.1	167 33.8 7.2	60	2.6
Hanawa	1,661	1,255	27	75.6	374 90.1 29.8	382 97.9 30.4	392 73.8 31.2	107 32.9 8.5	31	2.5
Samegawa	694	522	14	75.2	175 98.3 33.5	170 98.8 32.6	137 73.7 26.2	40 25.3 7.7	16	3.1
Ono	1,932	1,451	38	75.1	430 86.5 29.6	472 96.5 32.5	422 74.6 29.1	127 33.4 8.8	41	2.8
Tamakawa	1,331	1,015	13	76.3	346 90.1 34.1	341 98.6 33.6	255 69.1 25.1	73 31.5 7.2	14	1.4
Furudono	1,040	822	25	79.0	269 93.7 32.7	240 99.2 29.2	245 77.8 29.8	68 34.7 8.3	26	3.2

\*Including districts of FY 2012



Screening coverage by municipality in FY 2013

	Survey Population  a	Participants		Proportion (%)  b/a	Number and proportion of participants by age group				Participants living outside Fukushima  c 4)	Proportion (%)  c/b
		Screened outside Fukushima 5)			0-5	6-10	11-15	16-18		
Hinoemata	107	62	3	57.9	15 65.2 24.2	27 90.0 43.5	19 55.9 30.6	1 5.0 1.6	3	4.8
Minami-aizu	2,823	1,869	22	66.2	618 86.7 33.1	643 94.3 34.4	484 57.6 25.9	124 21.1 6.6	54	2.9
Kaneyama	203	144	8	70.9	37 92.5 25.7	51 98.1 35.4	50 69.4 34.7	6 15.4 4.2	10	6.9
Showa	128	102	0	79.7	37 84.1 36.3	38 100.0 37.3	26 78.8 25.5	1 7.7 1.0	6	5.9
Mishima	192	130	1	67.7	30 69.8 23.1	54 98.2 41.5	37 69.8 28.5	9 22.0 6.9	0	0.0
Shimogo	1,007	710	13	70.5	246 92.8 34.6	234 92.9 33.0	184 62.8 25.9	46 23.4 6.5	22	3.1
Kitakata	8,910	5,897	74	66.2	1,719 75.0 29.2	2,238 95.9 38.0	1,534 59.5 26.0	406 23.8 6.9	113	1.9
Nishiaizu	1,019	646	4	63.4	203 94.0 31.4	238 97.1 36.8	177 53.0 27.4	28 12.5 4.3	9	1.4
Tadami	710	510	4	71.8	169 86.7 33.1	169 95.5 33.1	152 75.6 29.8	20 14.6 3.9	16	3.1
Inawashiro	2,662	1,945	34	73.1	623 88.5 32.0	643 97.6 33.1	513 66.8 26.4	166 31.3 8.5	83	4.3
Bandai	617	428	10	69.4	139 77.2 32.5	159 97.5 37.1	98 59.0 22.9	32 29.6 7.5	21	4.9
Kitashiobara	557	392	9	70.4	144 90.6 36.7	137 97.9 34.9	98 62.8 25.0	13 12.7 3.3	13	3.3
Aizumisato	3,658	2,609	26	71.3	838 91.5 32.1	877 96.5 33.6	713 64.9 27.3	181 24.6 6.9	52	2.0
Aizubange	3,081	2,139	29	69.4	629 82.1 29.4	754 94.3 35.3	601 62.7 28.1	155 27.8 7.2	42	2.0
Yanaizu	590	387	3	65.6	131 82.9 33.9	129 90.8 33.3	106 60.6 27.4	21 18.3 5.4	6	1.6
Aizuwakamatsu	22,986	15,235	328	66.3	4,423 70.6 29.0	5,663 94.9 37.2	4,175 63.5 27.4	974 23.3 6.4	480	3.2
Yugawa	676	515	7	76.2	167 93.3 32.4	177 100.0 34.4	131 68.2 25.4	40 31.3 7.8	8	1.6
Subtotal	158,757	119,326	3,220	75.2	36,059 83.1 30.2	39,480 96.0 33.1	33,354 73.4 28.0	10,433 36.2 8.7	5,092	4.3
Total	367,649	300,473	9,511	81.7	87,794 85.7 29.2	92,005 95.8 30.6	86,120 83.1 28.7	34,554 52.7 11.5	22,276	7.4

### Appendix 3

#### Thyroid Ultrasound Examination (TUE) coverage by prefecture

Prefecture	Number of test venues	Participants*	Prefecture	Number of test venues	Participants*	Prefecture	Number of test venues	Participants*
Hokkaido	5	<b>335</b>	Fukui	1	<b>22</b>	Hiroshima	1	<b>39</b>
Aomori	1	<b>163</b>	Yamanashi	2	<b>82</b>	Yamaguchi	1	<b>24</b>
Iwate	3	<b>189</b>	Nagano	2	<b>133</b>	Tokushima	1	<b>10</b>
Miyagi	2	<b>1,534</b>	Gifu	1	<b>43</b>	Kagawa	1	<b>29</b>
Akita	1	<b>213</b>	Shizuoka	2	<b>112</b>	Ehime	1	<b>23</b>
Yamagata	3	<b>458</b>	Aichi	3	<b>180</b>	Kochi	1	<b>14</b>
Ibaraki	4	<b>457</b>	Mie	1	<b>38</b>	Fukuoka	3	<b>84</b>
Tochigi	6	<b>455</b>	Shiga	1	<b>20</b>	Saga	1	<b>7</b>
Gunma	2	<b>186</b>	Kyoto	3	<b>97</b>	Nagasaki	2	<b>26</b>
Saitama	2	<b>253</b>	Osaka	6	<b>210</b>	Kumamoto	1	<b>25</b>
Chiba	3	<b>284</b>	Hyogo	1	<b>135</b>	Oita	1	<b>35</b>
Tokyo	12	<b>1,805</b>	Nara	1	<b>26</b>	Miyazaki	1	<b>35</b>
Kanagawa	4	<b>758</b>	Wakayama	1	<b>13</b>	Kagoshima	1	<b>31</b>
Niigata	1	<b>620</b>	Tottori	1	<b>14</b>	Okinawa	1	<b>121</b>
Toyama	1	<b>34</b>	Shimane	1	<b>13</b>			
Ishikawa	1	<b>45</b>	Okayama	3	<b>81</b>			
						<b>Total</b>	<b>98</b>	<b>9,511</b>

\* Those who underwent testing at venues outside Fukushima carried out either by Fukushima Medical University staff (twice in Niigata and Kanagawa respectively, and three times in Yamagata) or by local specialists.

## Appendix 4

### Thyroid Ultrasound Examination (TUE) results by municipality

Primary test results in FY 2011 (13 municipalities in the nationally designated zones)

	Participants a	Confirmed results b Proportion (%) b/a (%)	Number by test results				Nodules		Cysts	
			Proportion (%)				Proportion (%)		Proportion (%)	
			A		B	C	≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm
			A1	A2						
Kawamata	2,221	2,221	1,520	693	8	0	8	17	0	681
		100.0	68.4	31.2	0.4	0.0	0.4	0.8	0.0	30.7
Nemie	3,249	3,249	2,119	1,104	26	0	26	42	0	1,088
		100.0	65.2	34.0	0.8	0.0	0.8	1.3	0.0	33.5
Iitate	943	943	693	244	6	0	6	15	0	233
		100.0	73.5	25.9	0.6	0.0	0.6	1.6	0.0	24.7
Minami-soma	10,789	10,789	6,789	3,948	52	0	52	86	0	3,905
		100.0	62.9	36.6	0.5	0.0	0.5	0.8	0.0	36.2
Date	10,605	10,605	6,749	3,806	50	0	48	30	1	3,808
		100.0	63.6	35.9	0.5	0.0	0.5	0.3	0.0	35.9
Tamura	6,325	6,325	4,000	2,293	32	0	32	11	0	2,299
		100.0	63.2	36.3	0.5	0.0	0.5	0.2	0.0	36.3
Hirono	838	838	521	312	5	0	5	3	0	313
		100.0	62.2	37.2	0.6	0.0	0.6	0.4	0.0	37.4
Naraha	1,153	1,153	651	495	7	0	7	4	0	498
		100.0	56.5	42.9	0.6	0.0	0.6	0.3	0.0	43.2
Tomioka	2,301	2,301	1,350	938	13	0	13	8	0	938
		100.0	58.7	40.8	0.6	0.0	0.6	0.3	0.0	40.8
Kawauchi	280	280	156	120	4	0	4	1	0	120
		100.0	55.7	42.9	1.4	0.0	1.4	0.4	0.0	42.9
Okuma	1,973	1,973	1,140	819	14	0	14	7	0	816
		100.0	57.8	41.5	0.7	0.0	0.7	0.4	0.0	41.4
Futaba	949	949	570	376	3	0	3	3	0	375
		100.0	60.1	39.6	0.3	0.0	0.3	0.3	0.0	39.5
Katsurao	184	184	117	66	1	0	1	3	0	65
		100.0	63.6	35.9	0.5	0.0	0.5	1.6	0.0	35.3
Subtotal	41,810	41,810	26,375	15,214	221	0	219	230	1	15,139
		100.0	63.1	36.4	0.5	0.0	0.5	0.6	0.0	36.2

Fractions are rounded and may not total to 100%.

Because some duplicate records were found, numbers may vary slightly from previous reports.

While some participants who underwent the test at their schools had been categorized according to the municipalities of their schools in the previous survey, they were recategorized into the municipalities they belonged at the time of the disaster.

Primary test results in FY 2012

Primary test results in FY 2012										
	Participants  a	Confirmed results b  Proportion (%) b/a (%)	Number by test results				Nodules		Cysts	
			Proportion (%)							
			A		B	C	Proportion (%)		Proportion (%)	
			A1	A2			≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm
Fukushima	47,306	47,306	26,961	20,062	283	0	276	196	3	20,078
		100.0	57.0	42.4	0.6	0.0	0.6	0.4	0.0	42.4
Nihonmatsu	8,856	8,856	5,198	3,601	56	1	56	46	1	3,604
		100.0	58.7	40.7	0.6	0.0	0.6	0.5	0.0	40.7
Motomiya	5,234	5,234	2,955	2,250	29	0	27	25	1	2,254
		100.0	56.5	43.0	0.6	0.0	0.5	0.5	0.0	43.1
Otama	1,373	1,373	816	550	7	0	7	8	0	550
		100.0	59.4	40.1	0.5	0.0	0.5	0.6	0.0	40.1
Koriyama	54,062	54,062	27,927	25,677	458	0	454	332	3	25,760
		100.0	51.7	47.5	0.8	0.0	0.8	0.6	0.0	47.6
Kori	1,874	1,874	1,025	835	14	0	14	9	0	836
		100.0	54.7	44.6	0.7	0.0	0.7	0.5	0.0	44.6
Kunimi	1,437	1,437	763	659	15	0	14	9	1	663
		100.0	53.1	45.9	1.0	0.0	1.0	0.6	0.1	46.1
Tenei	879	879	528	344	7	0	7	4	0	349
		100.0	60.1	39.1	0.8	0.0	0.8	0.5	0.0	39.7
Shirakawa	10,810	10,810	6,111	4,638	61	0	61	54	0	4,635
		100.0	56.5	42.9	0.6	0.0	0.6	0.5	0.0	42.9
Nishigo	3,618	3,618	2,084	1,504	30	0	30	21	0	1,504
		100.0	57.6	41.6	0.8	0.0	0.8	0.6	0.0	41.6
Izumizaki	1,158	1,158	525	628	5	0	5	11	0	624
		100.0	45.3	54.2	0.4	0.0	0.4	0.9	0.0	53.9
Miharu	2,730	2,730	1,301	1,407	22	0	22	15	0	1,410
		100.0	47.7	51.5	0.8	0.0	0.8	0.5	0.0	51.6
Subtotal	139,337	139,337	76,194	62,155	987	1	973	730	9	62,267
		100.0	54.7	44.6	0.7	0.0	0.7	0.5	0.0	44.7

Primary test results in FY 2013

	Participants a	Confirmed results b Proportion (%) b/a (%)	Number by test results				Nodules		Cysts	
			Proportion (%)				Proportion (%)		Proportion (%)	
			A		B	C	Proportion (%)		Proportion (%)	
			A1	A2			≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm
Iwaki*	49,430	49,430	21,829	27,146	455	0	454	297	1	27,252
		100.0	44.2	54.9	0.9	0.0	0.9	0.6	0.0	55.1
Sukagawa	12,081	12,081	5,495	6,481	105	0	105	56	0	6,512
		100.0	45.5	53.6	0.9	0.0	0.9	0.5	0.0	53.9
Soma	5,210	5,210	2,468	2,695	47	0	47	46	0	2,706
		100.0	47.4	51.7	0.9	0.0	0.9	0.9	0.0	51.9
Kagamiishi	2,029	2,029	955	1,063	11	0	11	8	0	1,065
		100.0	47.1	52.4	0.5	0.0	0.5	0.4	0.0	52.5
Shinchi	1,150	1,150	522	621	7	0	7	6	0	625
		100.0	45.4	54.0	0.6	0.0	0.6	0.5	0.0	54.3
Nakajima	832	832	392	438	2	0	2	9	0	436
		100.0	47.1	52.6	0.2	0.0	0.2	1.1	0.0	52.4
Yabuki	2,567	2,567	1,082	1,465	20	0	20	8	0	1,475
		100.0	42.2	57.1	0.8	0.0	0.8	0.3	0.0	57.5
Ishikawa	2,162	2,162	983	1,167	12	0	12	15	0	1,167
		100.0	45.5	54.0	0.6	0.0	0.6	0.7	0.0	54.0
Yamatsuri	794	794	325	466	3	0	3	4	0	463
		100.0	40.9	58.7	0.4	0.0	0.4	0.5	0.0	58.3
Asakawa	1,092	1,092	469	611	12	0	12	10	0	617
		100.0	42.9	56.0	1.1	0.0	1.1	0.9	0.0	56.5
Hirata	873	873	396	467	10	0	10	2	0	473
		100.0	45.4	53.5	1.1	0.0	1.1	0.2	0.0	54.2
Tanagura	2,321	2,321	1,027	1,272	22	0	22	11	0	1,280
		100.0	44.2	54.8	0.9	0.0	0.9	0.5	0.0	55.1
Hanawa	1,255	1,255	513	733	9	0	9	10	0	736
		100.0	40.9	58.4	0.7	0.0	0.7	0.8	0.0	58.6
Samegawa	522	522	244	274	4	0	4	5	0	274
		100.0	46.7	52.5	0.8	0.0	0.8	1.0	0.0	52.5
Ono	1,451	1,451	566	870	15	0	15	13	0	873
		100.0	39.0	60.0	1.0	0.0	1.0	0.9	0.0	60.2
Tamakawa	1,015	1,015	453	551	11	0	11	6	0	556
		100.0	44.6	54.3	1.1	0.0	1.1	0.6	0.0	54.8
Furudono	822	822	395	421	6	0	6	7	0	424
		100.0	48.1	51.2	0.7	0.0	0.7	0.9	0.0	51.6

\* Including districts of FY 2012

Primary test results in FY 2013

	Participants a	Confirmed results b Proportion (%) b/a (%)	Number by test results				Nodules		Cysts	
			Proportion (%)				Proportion (%)		Proportion (%)	
			A		B	C	Proportion (%)		Proportion (%)	
			A1	A2			≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm
Hinoemata	62	62	26	36	0	0	0	3	0	34
		100.0	41.9	58.1	0.0	0.0	0.0	4.8	0.0	54.8
Minami-aizu	1,869	1,869	773	1,079	17	0	17	15	0	1,080
		100.0	41.4	57.7	0.9	0.0	0.9	0.8	0.0	57.8
Kaneyama	144	144	66	78	0	0	0	1	0	78
		100.0	45.8	54.2	0.0	0.0	0.0	0.7	0.0	54.2
Showa	102	102	57	45	0	0	0	0	0	45
		100.0	55.9	44.1	0.0	0.0	0.0	0.0	0.0	44.1
Mishima	130	130	39	90	1	0	1	0	0	91
		100.0	30.0	69.2	0.8	0.0	0.8	0.0	0.0	70.0
Shimogo	710	710	328	371	11	0	11	4	0	374
		100.0	46.2	52.3	1.5	0.0	1.5	0.6	0.0	52.7
Kitakata	5,897	5,897	2,364	3,482	51	0	51	42	0	3,493
		100.0	40.1	59.0	0.9	0.0	0.9	0.7	0.0	59.2
Nishiaizu	646	646	247	394	5	0	5	5	0	396
		100.0	38.2	61.0	0.8	0.0	0.8	0.8	0.0	61.3
Tadami	510	510	212	291	7	0	7	3	0	293
		100.0	41.6	57.1	1.4	0.0	1.4	0.6	0.0	57.5
Inawashiro	1,945	1,945	804	1,128	13	0	13	16	0	1,128
		100.0	41.3	58.0	0.7	0.0	0.7	0.8	0.0	58.0
Bandai	428	428	174	250	4	0	4	2	0	252
		100.0	40.7	58.4	0.9	0.0	0.9	0.5	0.0	58.9
Kitashiobara	392	392	165	226	1	0	1	3	0	226
		100.0	42.1	57.7	0.3	0.0	0.3	0.8	0.0	57.7
Aizumisato	2,609	2,609	1,086	1,496	27	0	27	17	0	1,509
		100.0	41.6	57.3	1.0	0.0	1.0	0.7	0.0	57.8
Aizubange	2,139	2,139	867	1,247	25	0	25	9	0	1,257
		100.0	40.5	58.3	1.2	0.0	1.2	0.4	0.0	58.8
Yanaizu	387	387	185	200	2	0	2	0	0	202
		100.0	47.8	51.7	0.5	0.0	0.5	0.0	0.0	52.2
Aizuwakamatsu	15,235	15,235	6,338	8,734	163	0	162	118	1	8,781
		100.0	41.6	57.3	1.1	0.0	1.1	0.8	0.0	57.6
Yugawa	515	515	191	317	7	0	7	2	0	320
		100.0	37.1	61.6	1.4	0.0	1.4	0.4	0.0	62.1
Subtotal	119,326	119,326	52,036	66,205	1,085	0	1,083	753	2	66,493
		100.0	43.6	55.5	0.9	0.0	0.9	0.6	0.0	55.7

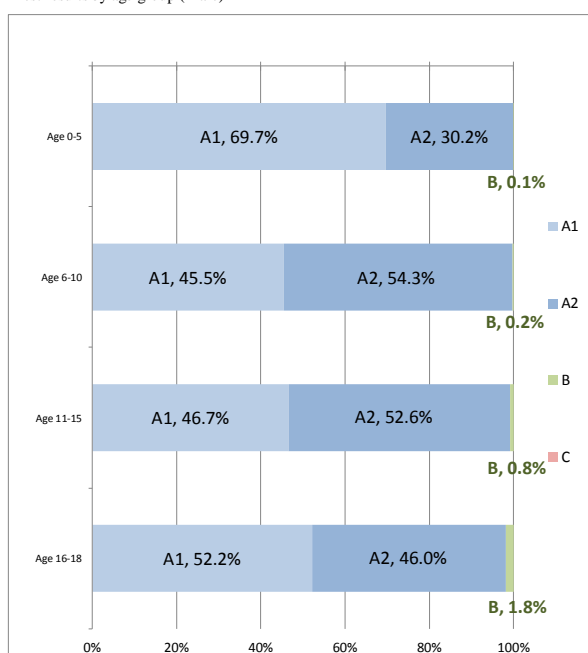
Total	300,473	300,473	154,605	143,574	2,293	1	2,275	1,713	12	143,899
		100.0	51.5	47.8	0.8	0.0	0.8	0.6	0.0	47.9

## Appendix 5

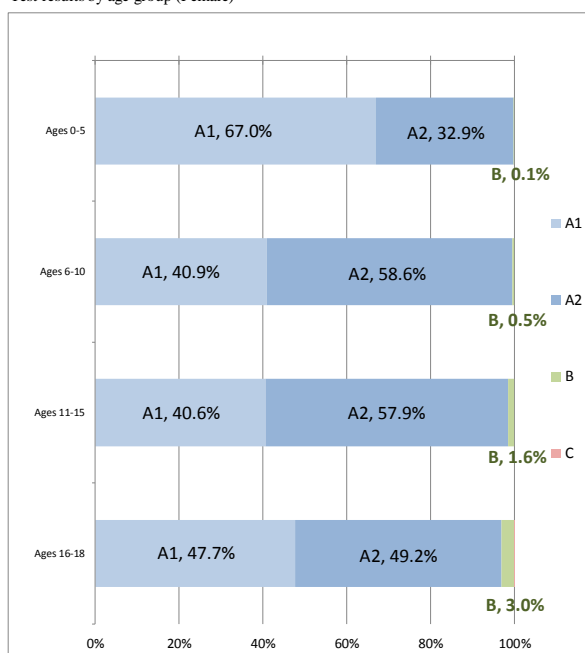
### 1. Thyroid Ultrasound Examination results by age and sex

Ages	A						B			C			Total		
	A1			A2			Male	Female	Total	Male	Female	Total	Male	Female	Total
	Male	Female	Total	Male	Female	Total									
0-5	31,416	28,610	60,026	13,607	14,063	27,670	41	57	98	0	0	0	45,064	42,730	87,794
6-10	21,453	18,321	39,774	25,630	26,248	51,878	117	236	353	0	0	0	47,200	44,805	92,005
11-15	20,226	17,362	37,588	22,798	24,743	47,541	327	664	991	0	0	0	43,351	42,769	86,120
16-18	8,392	8,825	17,217	7,386	9,099	16,485	290	561	851	0	1	1	16,068	18,486	34,554
Total	81,487	73,118	154,605	69,421	74,153	143,574	775	1,518	2,293	0	1	1	151,683	148,790	300,473

Test results by age group (Male)



Test results by age group (Female)

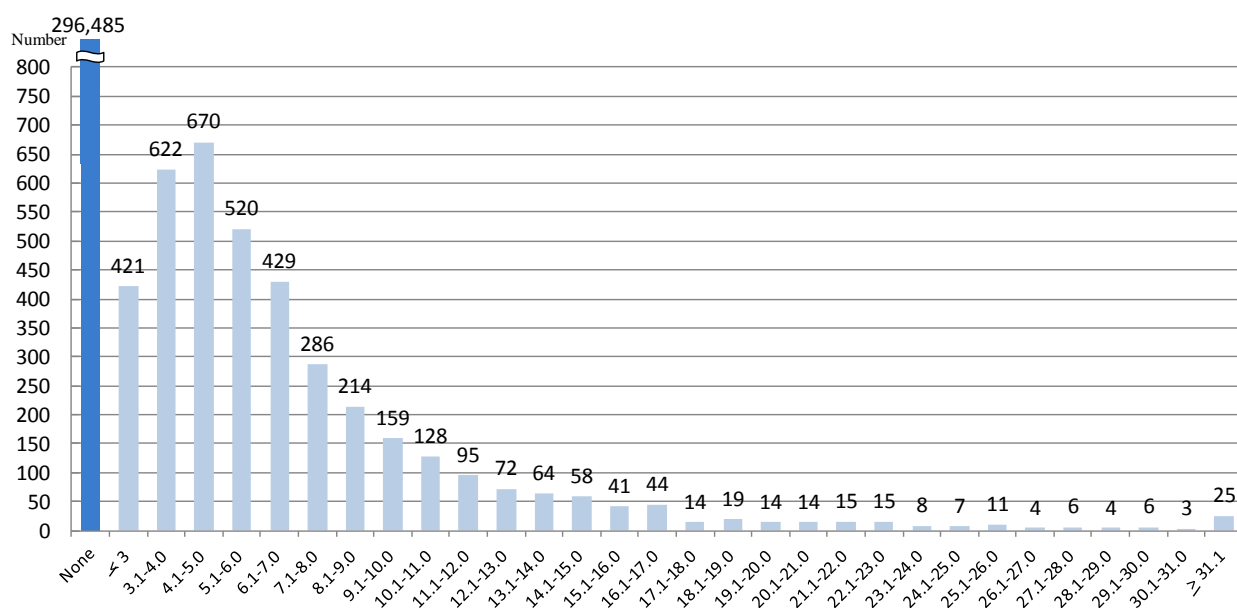
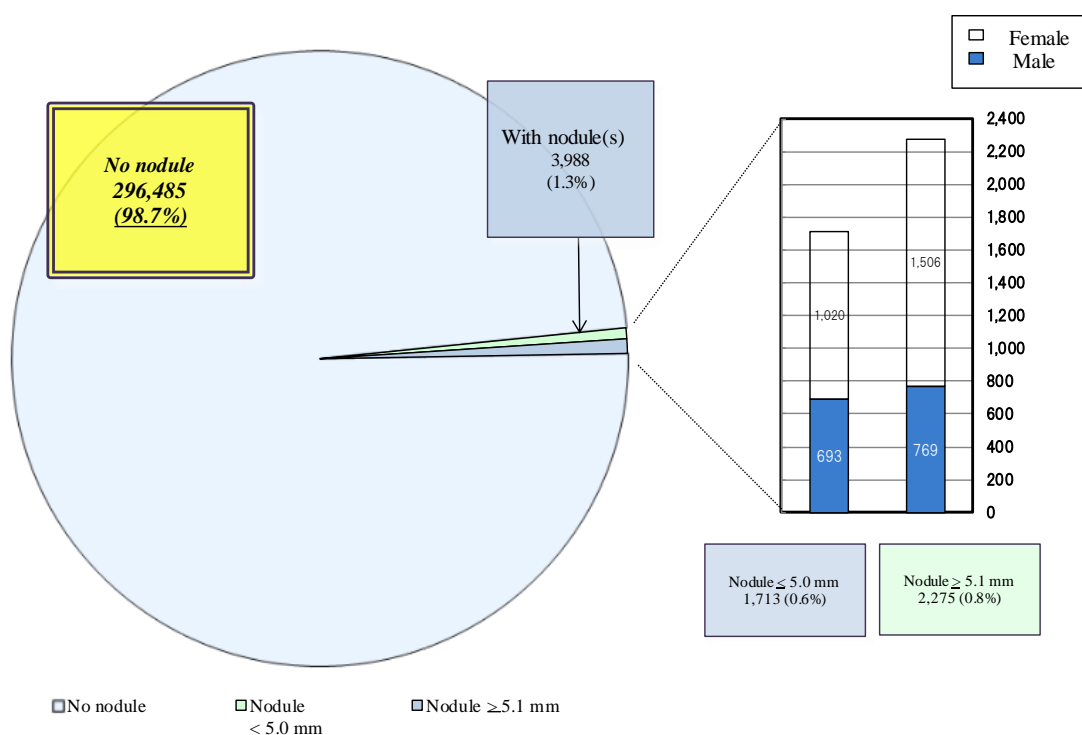


Percentages have been rounded and may not total to 100%.

Ages are as of 11 March 2011.

## 2. Nodule size

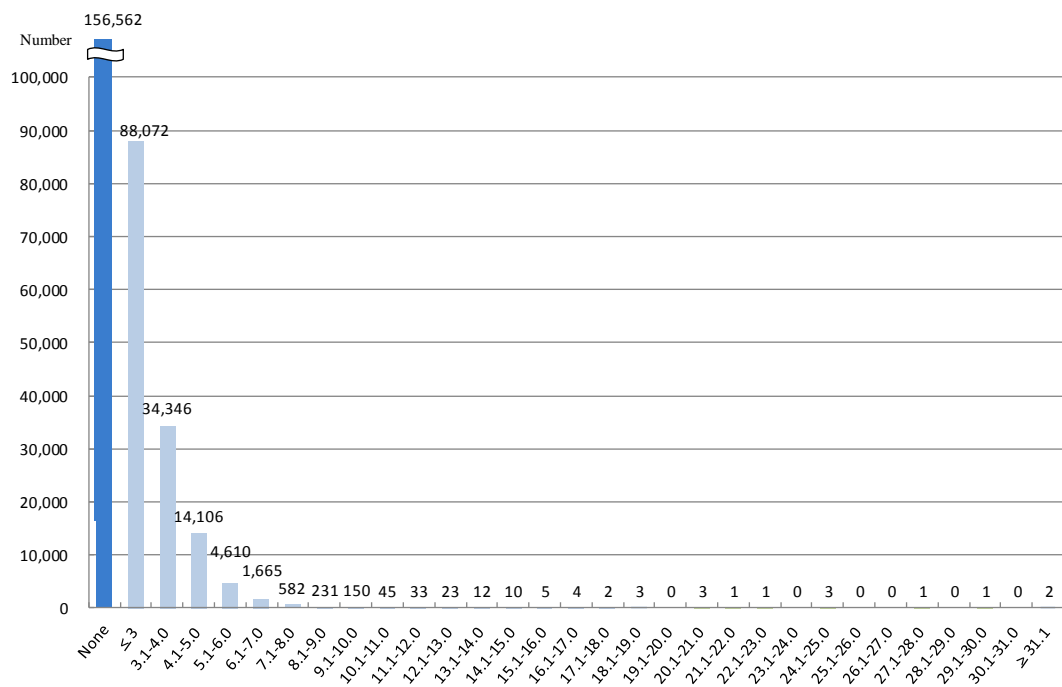
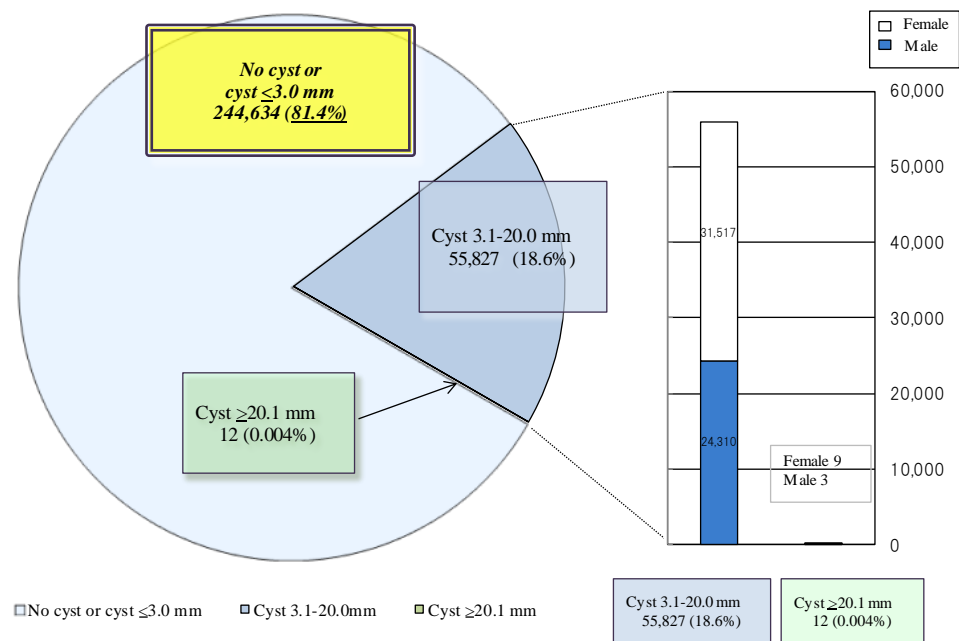
Nodule size	Total			Test result	Proportion
	Male	Female			
None	296,485	150,221	146,264	A1	98.7%
≤ 3.0 mm	421	189	232	A2	0.6%
3.1-5.0 mm	1,292	504	788		
5.1-10.0 mm	1,608	578	1,030	B	0.8%
10.1-15.0 mm	417	118	299		
15.1-20.0 mm	132	39	93		
20.1-25.0 mm	59	17	42		
≥ 25.1 mm	59	17	42		
Total	300,473	151,683	148,790		





### 3. Cyst size

Cyst size	Total	Class		%
		Male	Female	
None	156,562	82,240	74,322	81.4%
≤ 3.0 mm	88,072	45,130	42,942	
3.1-5.0 mm	48,452	21,693	26,759	18.6%
5.1-10.0 mm	7,238	2,575	4,663	
10.1-15.0 mm	123	41	82	
15.1-20.0 mm	14	1	13	
20.1-25.0 mm	8	1	7	0.004%
≥ 25.1 mm	4	2	2	
Total	300,473	151,683	148,790	



## Appendix 6

### Confirmatory test results by municipality

As of 31 March 2017

Confirmatory test results by municipality								Number of confirmed results				
	Number of those screened  a	Participants who required confirmatory test  b  Proportion (%) b/a	Number of those who underwent confirmatory test by age					Total  h  h/c	Number of confirmed results			
			Total  c  c/b	Ages 0-5  d  d/c	Ages 6-10  e  e/c	Ages 11-15  f  f/c	Ages 16-18  g  g/c		A1  i  i/h	A2  j  j/h	Not A1 or A2	
											k  k/h	Aspiration biopsy cytology l  l/h
Target municipalities for Confirmatory test in FY 2011												
Kawamata	2,221	8 0.4	8 100.0	0 0.0	1 12.5	3 37.5	4 50.0	7 87.5	1 14.3	0 0.0	6 85.7	5 83.3
Namie	3,249	26 0.8	24 92.3	1 4.2	3 12.5	8 33.3	12 50.0	23 95.8	1 4.3	4 17.4	18 78.3	12 66.7
Itate	943	6 0.6	6 100.0	0 0.0	2 33.3	1 16.7	3 50.0	6 100.0	0 0.0	3 50.0	3 50.0	3 100.0
Minami-soma	10,789	52 0.5	48 92.3	6 12.5	5 10.4	16 33.3	21 43.8	48 100.0	7 14.6	8 16.7	33 68.8	20 60.6
Date	10,605	50 0.5	45 90.0	0 0.0	3 6.7	16 35.6	26 57.8	45 100.0	5 11.1	7 15.6	33 73.3	23 69.7
Tamura	6,325	32 0.5	26 81.3	1 3.8	3 11.5	12 46.2	10 38.5	26 100.0	0 0.0	4 15.4	22 84.6	14 63.6
Hirono	838	5 0.6	4 80.0	0 0.0	1 25.0	1 25.0	2 50.0	4 100.0	1 25.0	1 25.0	2 50.0	0 0.0
Naraha	1,153	7 0.6	6 85.7	1 16.7	0 0.0	1 16.7	4 66.7	6 100.0	0 0.0	2 33.3	4 66.7	2 50.0
Tomioka	2,301	13 0.6	12 92.3	0 0.0	1 8.3	5 41.7	6 50.0	12 100.0	1 8.3	1 8.3	10 83.3	7 70.0
Kawauchi	280	4 1.4	4 100.0	0 0.0	1 25.0	0 0.0	3 75.0	4 100.0	0 0.0	1 25.0	3 75.0	2 66.7
Okuma	1,973	14 0.7	13 92.9	1 7.7	1 7.7	6 46.2	5 38.5	13 100.0	2 15.4	4 30.8	7 53.8	2 28.6
Futaba	949	3 0.3	2 66.7	0 0.0	0 0.0	1 50.0	1 50.0	2 100.0	0 0.0	0 0.0	2 100.0	2 100.0
Katsurao	184	1 0.5	1 100.0	0 0.0	1 100.0	0 0.0	0 0.0	1 100.0	0 0.0	1 100.0	0 0.0	0 0.0
Subtotal	41,810	221 0.5	199 90.0	10 5.0	22 11.1	70 35.2	97 48.7	197 99.0	18 9.1	36 18.3	143 72.6	92 64.3
Target municipalities for Confirmatory test in FY 2012												
Fukushima	47,306	283 0.6	272 96.1	6 2.2	28 10.3	106 39.0	132 48.5	266 97.8	13 4.9	71 26.7	182 68.4	95 52.2
Nihonmatsu	8,856	57 0.6	54 94.7	0 0.0	5 9.3	27 50.0	22 40.7	53 98.1	5 9.4	8 15.1	40 75.5	24 60.0
Motomiya	5,234	29 0.6	29 100.0	1 3.4	4 13.8	14 48.3	10 34.5	28 96.6	0 0.0	10 35.7	18 64.3	7 38.9
Otama	1,373	7 0.5	7 100.0	0 0.0	0 0.0	4 57.1	3 42.9	7 100.0	0 0.0	1 14.3	6 85.7	4 66.7
Koriyama	54,062	458 0.8	415 90.6	21 5.1	65 15.7	172 41.4	157 37.8	406 97.8	24 5.9	126 31.0	256 63.1	100 39.1
Kori	1,874	14 0.7	13 92.9	1 7.7	2 15.4	3 23.1	7 53.8	13 100.0	0 0.0	2 15.4	11 84.6	3 27.3
Kunimi	1,437	15 1.0	13 86.7	2 15.4	2 15.4	2 15.4	7 53.8	13 100.0	1 7.7	2 15.4	10 76.9	4 40.0
Tenei	879	7 0.8	6 85.7	1 16.7	2 33.3	1 16.7	2 33.3	6 100.0	1 16.7	2 33.3	3 50.0	0 0.0
Shirakawa	10,810	61 0.6	59 96.7	2 3.4	10 16.9	27 45.8	20 33.9	59 100.0	7 11.9	15 25.4	37 62.7	15 40.5
Nishigo	3,618	30 0.8	26 86.7	2 7.7	6 23.1	9 34.6	9 34.6	26 100.0	2 7.7	7 26.9	17 65.4	5 29.4
Izumizaki	1,158	5 0.4	5 100.0	0 0.0	2 40.0	0 0.0	3 60.0	5 100.0	1 20.0	2 40.0	2 40.0	1 50.0
Miharu	2,730	22 0.8	21 95.5	0 0.0	1 4.8	11 52.4	9 42.9	21 100.0	3 14.3	4 19.0	14 66.7	6 42.9
Subtotal	139,337	988 0.7	920 93.1	36 3.9	127 13.8	376 40.9	381 41.4	903 98.2	57 6.3	250 27.7	596 66.0	264 44.3

h) Excluding participants who have not receive the test results.

i, j) Those who have taken the Full-scale thyroid screening program since April 2014.

k) Those who were recommended to have a medical examination after 6 to 12-months, or who were advised to take their next regularly scheduled examination, though beyond the threshold level of A2.

Fractions have been rounded and may not total to 100%.

Ages are as of 11 March 2011.

While some participants who underwent the test at their schools had been categorized according to the municipalities of their schools in the previous survey, they were recategorized into the municipalities they belonged at the time of the disaster.

Confirmatory test results by municipality

As of 31 March 2017

	Number of those screened	Participants who required confirmatory test	Number of those who underwent confirmatory test by age					Number of confirmed results				
			Total	Ages 0-5	Ages 6-10	Ages 11-15	Ages 16-18	Total	A1	A2	Not A1 or A2	
											Aspiration biopsy cytology	
a	b	c	d	e	f	g	h	i	j	k	l	
		Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	
		b/a	c/b	d/c	e/c	f/c	g/c	h/c	i/h	j/h	k/h	l/h
Target municipalities for Confirmatory test in FY 2013												
Iwaki*	49,430	455	430	21	60	205	144	424	25	133	266	95
		0.9	94.5	4.9	14.0	47.7	33.5	98.6	5.9	31.4	62.7	35.7
Sukagawa	12,081	105	103	6	16	55	26	101	7	34	60	12
		0.9	98.1	5.8	15.5	53.4	25.2	98.1	6.9	33.7	59.4	20.0
Soma	5,210	47	43	3	9	19	12	42	3	16	23	6
		0.9	91.5	7.0	20.9	44.2	27.9	97.7	7.1	38.1	54.8	26.1
Kagamiishi	2,029	11	9	0	4	4	1	9	0	2	7	1
		0.5	81.8	0.0	44.4	44.4	11.1	100.0	0.0	22.2	77.8	14.3
Shinchi	1,150	7	7	0	3	3	1	6	0	0	6	3
		0.6	100.0	0.0	42.9	42.9	14.3	85.7	0.0	0.0	100.0	50.0
Nakajima	832	2	2	0	0	1	1	2	0	0	2	1
		0.2	100.0	0.0	0.0	50.0	50.0	100.0	0.0	0.0	100.0	50.0
Yabuki	2,567	19	17	0	3	7	7	16	0	6	10	3
		0.7	89.5	0.0	17.6	41.2	41.2	94.1	0.0	37.5	62.5	30.0
Ishikawa	2,162	12	12	0	4	4	4	12	0	1	11	6
		0.6	100.0	0.0	33.3	33.3	33.3	100.0	0.0	8.3	91.7	54.5
Yamatsuri	794	3	2	0	0	1	1	2	0	0	2	0
		0.4	66.7	0.0	0.0	50.0	50.0	100.0	0.0	0.0	100.0	0.0
Asakawa	1,092	12	11	1	1	6	3	11	0	2	9	2
		1.1	91.7	9.1	9.1	54.5	27.3	100.0	0.0	18.2	81.8	22.2
Hirata	873	10	10	0	4	3	3	9	1	1	7	1
		1.1	100.0	0.0	40.0	30.0	30.0	90.0	11.1	11.1	77.8	14.3
Tanagura	2,321	22	22	2	5	9	6	20	2	2	16	6
		0.9	100.0	9.1	22.7	40.9	27.3	90.9	10.0	10.0	80.0	37.5
Hanawa	1,255	9	8	0	1	4	3	7	0	2	5	2
		0.7	88.9	0.0	12.5	50.0	37.5	87.5	0.0	28.6	71.4	40.0
Samegawa	522	4	2	0	1	0	1	2	0	0	2	1
		0.8	50.0	0.0	50.0	0.0	50.0	100.0	0.0	0.0	100.0	50.0
Ono	1,451	15	13	1	2	6	4	13	1	4	8	0
		1.0	86.7	7.7	15.4	46.2	30.8	100.0	7.7	30.8	61.5	0.0
Tamakawa	1,015	11	9	1	2	3	3	9	0	3	6	1
		1.1	81.8	11.1	22.2	33.3	33.3	100.0	0.0	33.3	66.7	16.7
Furudono	822	6	6	0	1	4	1	6	0	2	4	1
		0.7	100.0	0.0	16.7	66.7	16.7	100.0	0.0	33.3	66.7	25.0
Hinoemata	62	0	0	0	0	0	0	0	0	0	0	0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minami-aizu	1,869	17	15	0	7	7	1	13	1	3	9	2
		0.9	88.2	0.0	46.7	46.7	6.7	86.7	7.7	23.1	69.2	22.2
Kaneyama	144	0	0	0	0	0	0	0	0	0	0	0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Showa	102	0	0	0	0	0	0	0	0	0	0	0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mishima	130	1	1	0	1	0	0	1	0	0	1	0
		0.8	100.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0
Shimogo	710	11	10	0	1	6	3	10	0	3	7	3
		1.5	90.9	0.0	10.0	60.0	30.0	100.0	0.0	30.0	70.0	42.9
Kitakata	5,897	51	46	1	11	20	14	46	3	11	32	11
		0.9	90.2	2.2	23.9	43.5	30.4	100.0	6.5	23.9	69.6	34.4
Nishiaizu	646	5	4	0	2	1	1	3	0	0	3	0
		0.8	80.0	0.0	50.0	25.0	25.0	75.0	0.0	0.0	100.0	0.0
Tadami	510	7	7	0	3	4	0	7	0	2	5	1
		1.4	100.0	0.0	42.9	57.1	0.0	100.0	0.0	28.6	71.4	20.0
Inawashiro	1,945	13	13	1	1	8	3	13	2	3	8	1
		0.7	100.0	7.7	7.7	61.5	23.1	100.0	15.4	23.1	61.5	12.5
Bandai	428	4	3	1	0	1	1	3	1	0	2	0
		0.9	75.0	33.3	0.0	33.3	33.3	100.0	33.3	0.0	66.7	0.0
Kitashiobara	392	1	1	1	0	0	0	1	0	1	0	0
		0.3	100.0	100.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0
Aizumisato	2,609	27	25	1	4	12	8	25	1	10	14	4
		1.0	92.6	4.0	16.0	48.0	32.0	100.0	4.0	40.0	56.0	28.6
Aizubange	2,139	25	23	3	4	9	7	23	0	4	19	4
		1.2	92.0	13.0	17.4	39.1	30.4	100.0	0.0	17.4	82.6	21.1
Yanaizu	387	2	2	0	0	2	0	2	0	1	1	0
		0.5	100.0	0.0	0.0	100.0	0.0	100.0	0.0	50.0	50.0	0.0
Aizuwakamatsu	15,235	163	148	6	31	80	31	145	9	47	89	23
		1.1	90.8	4.1	20.9	54.1	20.9	98.0	6.2	32.4	61.4	25.8
Yugawa	515	7	7	0	1	3	3	7	1	0	6	1
		1.4	100.0	0.0	14.3	42.9	42.9	100.0	14.3	0.0	85.7	16.7
Subtotal	119,326	1,084	1,011	49	182	487	293	990	57	293	640	191
		0.9	93.3	4.8	18.0	48.2	29.0	97.9	5.8	29.6	64.6	29.8
Total	300,473	2,293	2,130	95	331	933	771	2,090	132	579	1,379	547
		0.8	92.9	4.5	15.5	43.8	36.2	98.1	6.3	27.7	66.0	39.7

\*Including districts of FY 2012

## Appendix 7

### Surgical cases of malignant or suspicious for malignancy

#### 1. Target municipalities in FY 2011

Suspicious or malignant: 15 (15 surgical cases: 1 of benign thyroid nodules; 14 of papillary thyroid carcinoma)

#### 2. Target municipalities in FY 2012

Suspicious or malignant: 56 (52 surgical cases: 52 of papillary thyroid carcinoma;)

#### 3. Target municipalities in FY 2013

Suspicious or malignant: 45 (35 surgical cases: 34 of papillary thyroid carcinoma; 1 poorly differentiated thyroid carcinoma)

#### 4. Total for cases FY 2011 – FY 2013

Suspicious or malignant: 116 (102 surgical cases: 1 of benign thyroid nodules; 100 of papillary thyroid carcinoma; 1 poorly differentiated thyroid carcinoma)

# Report of Second-Round Thyroid Ultrasound Examinations (Second Full-Scale Thyroid Screening Program)

Reported on 5 June 2017

## 1. Summary

### 1.1 Purpose

In order to monitor the long-term health of children, we are now engaged in a Full-Scale Thyroid Screening Program (second round), to assess the condition of their thyroid glands following first round Preliminary Baseline Screening.

### 1.2 Group

Residents of Fukushima Prefecture including visitors who were born between 2 April 1992 and 1 April 2011 (Preliminary Baseline Screening), and those who were born between 2 April 2011 and 1 April 2012.

### 1.3 Implementation Period

Full-scale Screening started 2 April 2014 and proceeded for two years.

Thereafter we will repeat the examination every two years until the age of 20, and every five years afterwards. We will endeavor to make sure they do not let more than five years pass between the exams through age 25.

### 1.4 Responsible Organizations

Fukushima Prefecture commissioned Fukushima Medical University (FMU) to conduct the survey in cooperation with institutions inside and outside Fukushima.

As of 31 March 2017, we provide the primary examination at 59 medical institutions under contract, and try to have more institutions inside Fukushima Prefecture.

One hundred five institutions outside Fukushima Prefecture have agreed to cooperate as of 31 March 2017.

The confirmatory examination has been conducted in Koriyama and Iwaki in Fukushima Prefecture from July 2013, Aizuwakamatsu from August 2014, Date from October 2016, and several institutions outside Fukushima Prefecture from November 2013. There are 36 institutions that provide the examination as of 31 March 2017.

### 1.5 Method

#### 1.5-1 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 and A2 test results are recommended for watchful waiting until they undergo the next screening starting from April 2016.

A1: No nodules / cysts

A2: Nodules  $\leq 5.0$  mm or cysts  $\leq 20.0$  mm

#### -Diagnostic Criteria (B)

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

B: Nodules  $\geq 5.1$  mm or cysts  $\geq 20.1$  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 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

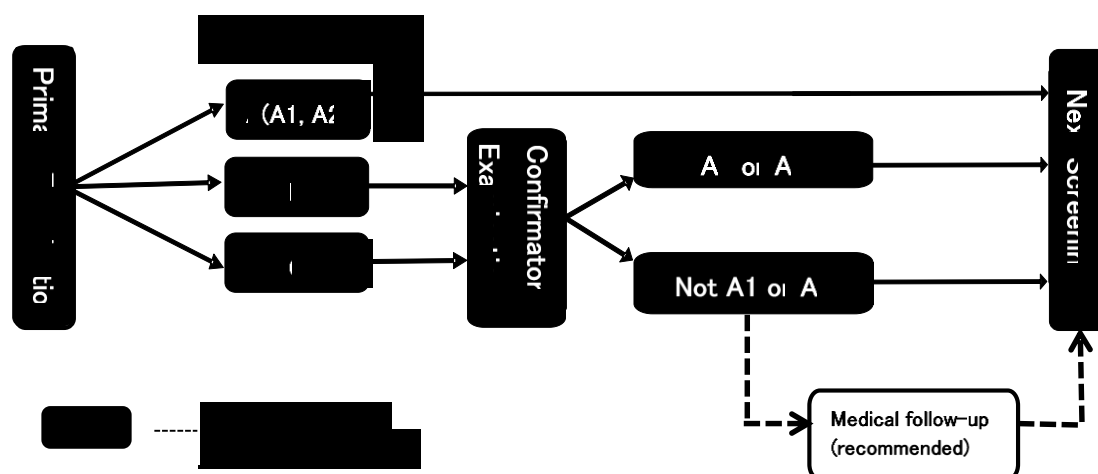


Fig.1 Flow chart

This map illustrates the administrative divisions of Fukushima Prefecture, Japan. It shows the locations of 22 cities, towns, and villages. The map is divided into two main regions: the northern region (Fukushima City and surrounding areas) and the southern region (Mito City and surrounding areas). The northern region includes cities like Fukushima, Maebashi, and Maebashi. The southern region includes cities like Maebashi, Maebashi, and Maebashi. The map is labeled with the names of the cities, towns, and villages in Japanese.

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## 2. Results as of 31 March 2017

### 2.1-1 Progress Report

The Primary Examination started 2 April 2014, and the participation rate is 71.0% (270,511 of 381,256) from 59 municipalities (25 municipalities in FY 2014, and 34 in FY 2015). (See Appendix 1 and 2.)

The results have been returned to 100.0% (270,497) of the participants. (See Appendix 3.)

Those with A1 or A2 test results were 268,271 (99.2%), B were 2,226 (0.8%), and C was 0.

Table 1. Screening test coverage as of 31 March 2017

	Survey Population  a	Participants		Proportion (%)  c (c/b)	Test results			
		Proportion (%)  b (b/a)	Screened outside Fukushima		Class (%)			
					A		Requiring confirmatory test	
					A1 d (d/c)	A2 e (e/c)	B f (f/c)	C g (g/c)
FY 2014	216,869	159,163 (73.4)	11,417	159,154 ( 100.0)	66,438 (41.7)	91,409 (57.4)	1,307 (0.8)	0 (0.0)
FY 2015	164,387	111,348 (67.7)	4,227	111,343 ( 100.0)	42,259 (38.0)	68,165 (61.2)	919 (0.8)	0 (0.0)
Total	381,256	270,511 (71.0)	15,644	270,497 ( 100.0)	108,697 (40.2)	159,574 (59.0)	2,226 (0.8)	0 (0.0)

Table 2. Number and proportion of children with nodules/cysts as of 31 March 2017

	Number of confirmed screening results a	Number and proportion of children with nodules/cysts			
		Nodules		Cysts	
		≥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 2014	159,154	1,303 (0.8)	1,007 (0.6)	2 (0.0)	91,825 (57.7)
FY 2015	111,343	915 (0.8)	563 (0.5)	4 (0.0)	68,527 (61.5)
Total	270,497	2,218 (0.8)	1,570 (0.6)	6 (0.0)	160,352 (59.3)

Fractions have been rounded and may not total to 100%.

Because some duplicate records were found, numbers may vary slightly from previous reports.

In the case of residents age 25 with no prior visits for the First Full-Scale Thyroid Screening, they are added to the number of participants, so the numbers are expected to increase.



## 2.1-2 Participation rates by age group

Participation rate of age group 18-21 (as of 1 April 2014) in target municipalities for FY 2014 was 27.9%, which was lower than other age groups.

Participation rate of age group 18-22 (as of 1 April 2015) in target municipalities for FY 2015 was 23.4%, which was lower than other age groups.

Participation rate of the age group of 18 and older in target municipalities for FY 2014 and FY 2015 in total was 25.7 %, which was lower than other age groups.

Table 3. Participation rates in target municipalities by age group

As of 31 March 2017

		Total	Age group (years)			
FY 2014 target municipalities	Age group (years)		2-7	8-12	13-17	18-21
	Survey population (a)	216,869	56,479	53,374	57,781	49,235
	Participants (b)	159,163	45,328	49,783	50,338	13,714
	Proportion (%) (b/a)	73.4	80.3	93.3	87.1	27.9
FY 2015 target municipalities	Age group (years)		3-7	8-12	13-17	18-22
	Survey population (a)	164,387	33,761	38,755	44,014	47,857
	Participants (b)	111,348	25,838	36,187	38,106	11,217
	Proportion (%) (b/a)	67.7	76.5	93.4	86.6	23.4
Total	Survey population (a)	381,256	90,240	92,129	101,795	97,092
	Participants (b)	270,511	71,166	85,970	88,444	24,931
	Proportion (%) (b/a)	71.0	78.9	93.3	86.9	25.7

## 2.1-3 Comparison with the Preliminary Baseline Screening (Initial Screening)

Among 245,309 participants who were diagnosed as A1 or A2 in the Preliminary Baseline Screening, 243,977 (99.5%) had A1 or A2 results, and 1,332 (0.5%) were diagnosed as B from the Full-scale Survey.

Among 1,369 participants who were diagnosed as B in the Preliminary Baseline Screening, 638 (46.6%) had A1 or A2 results, and 731 (53.4%) were diagnosed as B from the Full-scale Thyroid Screening Program.

Table 4. Comparison with the Preliminary Baseline Screening

As of 31 March 2017

			Number of test results of the Preliminary Baseline Screening* (%) a	Results of the Full-scale Thyroid Screening			
				A		B d d/a (%)	C e e/a (%)
				A1 b b/a (%)	A2 c c/a (%)		
Results of the Preliminary Baseline Screening	A	A1	125,914 (100.0)	83,481 ( 66.3)	42,040 ( 33.4)	393 ( 0.3)	0 ( 0.0)
		A2	119,395 (100.0)	11,495 ( 9.6)	106,961 ( 89.6)	939 ( 0.8)	0 ( 0.0)
		B	1,369 (100.0)	108 ( 7.9)	530 ( 38.7)	731 ( 53.4)	0 ( 0.0)
		C	0 (0.0)	0 ( 0.0)	0 ( 0.0)	0 ( 0.0)	0 ( 0.0)
		Non-participants	23,819 (100.0)	13,613 ( 57.2)	10,043 ( 42.2)	163 ( 0.7)	0 ( 0.0)
Total			270,497 (100.0)	108,697 ( 40.2)	159,574 ( 59.0)	2,226 ( 0.8)	0 ( 0.0)

\* Results of the participants with confirmed test results of the Full-scale survey.

This is not the breakdown of the total (300,437) of confirmed screening results from the Preliminary Baseline Screening.

## 2.2 Results of Confirmatory Examination

### 2.2-1 Progress Report

The number of those who required further testing (started in June 2014) was 2,226, of whom 1,832 (82.3%) underwent confirmatory testing. Among them, 1,748 (95.4%) have completed the tests. (See Appendix 5.)

Of 1,748 participants, 418 (A1 and A2 results from Table 5) were confirmed to meet A1 or A2 primary diagnostic criteria (including those with other thyroid conditions), and so were advised to take their next regularly scheduled examination (23.9%).

Those with neither A1 nor A2 results (from Table 5) were 1,330 (76.1%), and they were recommended to have medical follow-up after 6 to 12-months, or were advised to take their next regularly scheduled examination, though beyond the threshold level of A2.

Table 5. Confirmatory testing coverage and results as of 31 March 2017

	Number of those requiring confirmatory test a	Participants Proportion (%) b (b/a)	Confirmed test results				
			Confirmatory test coverage (%) c (c/b)	A1 d (d/c)	A2 e (e/c)	Not A1 or A2	
						f (f/c)	Cytology g (g/f)
FY 2014	1,307	1,090 (83.4)	1,059 (97.2)	38 (3.6)	241 (22.8)	780 (73.7)	150 (19.2)
FY 2015	919	742 (80.7)	689 (92.9)	23 (3.3)	116 (16.8)	550 (79.8)	50 (9.1)
Total	2,226	1,832 (82.3)	1,748 (95.4)	61 (3.5)	357 (20.4)	1,330 (76.1)	200 (15.0)

### 2.2-2 Results of Fine Needle Aspiration Biopsy and Cytology (FNAC)

Among those who underwent FNAC, 71 had nodules classified as suspicious or malignant.

Thirty-two of them were male, and 39 were female. Age at the time of the confirmatory testing ranged from 9 to 23 years (mean age:  $16.9 \pm 3.2$  years). The minimum and maximum tumor size was 5.3-35.6 mm in diameter. Mean tumor diameter was  $11.1 \pm 5.6$  mm.

Results from the Preliminary Baseline Screening show that 65 of the 71 participants were categorized as A (A1: 33; A2: 32), 5 as B and one other had no record.

Table 6. Results of FNAC

Target municipalities in FY 2014

Suspicious or malignant	52 *
Male to female ratio	21: 31
Mean age (SD, min-max)	17.3 (3.2, 10-23) 13.2 (3.1, 6-18) at the time of the disaster
Mean tumor size	9.4 mm (3.1 mm, 5.3-17.4 mm)

### Target municipalities in FY 2015

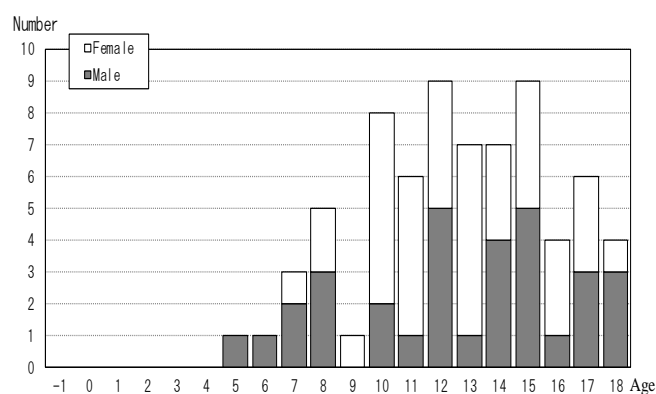
Suspicious or malignant	19 *
Male to female ratio	11: 8
Mean age (SD, min-max)	16.1 (3.4, 9-21) 11.2 (3.1, 5-16) at the time of the disaster
Mean tumor size	15.8 mm (8.0 mm, 5.7-35.6 mm)

### Target municipalities in FY 2014-2015

Suspicious or malignant	71 *
Male to female ratio	32: 39
Mean age (SD, min-max)	16.9 (3.2, 9-23) 12.6 (3.2, 5-18) at the time of the disaster
Mean tumor size	11.1 mm (5.6 mm, 5.3-35.6 mm)

\* See Appendix 6 for details.

### 2.2-3 Suspicious or malignant cases per FNAC by age and sex



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

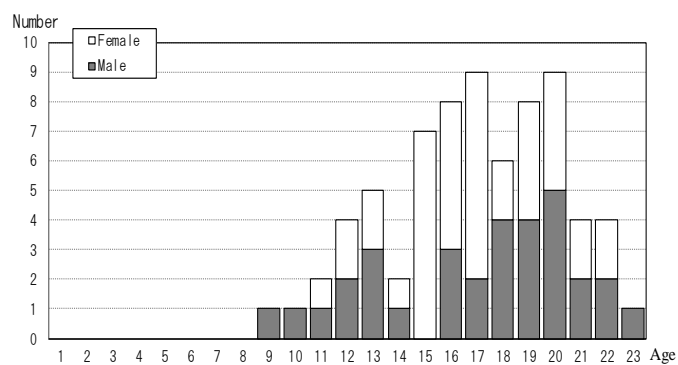


Fig. 4 Age as the date of confirmatory examination

#### 2.2-4 Suspicious or malignant cases per FNAC by estimated radiation dose

Thirty-six (50.7%) of the 71 people participated in the Basic Survey (radiation dose estimates), and 36 received the results. The highest effective dose documented was 2.1 mSv.

Table 7. A breakdown of dose estimates for participants of the Basic Survey

As of 31 March 2017

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	4	1	3	5	2	0	9	6
1-1.9	0	0	0	1	4	4	3	4	7	9
2-4.9	0	0	1	0	0	2	1	1	2	3
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	5	2	7	11	6	5	18	18

Estimates are based on effective external radiation doses.

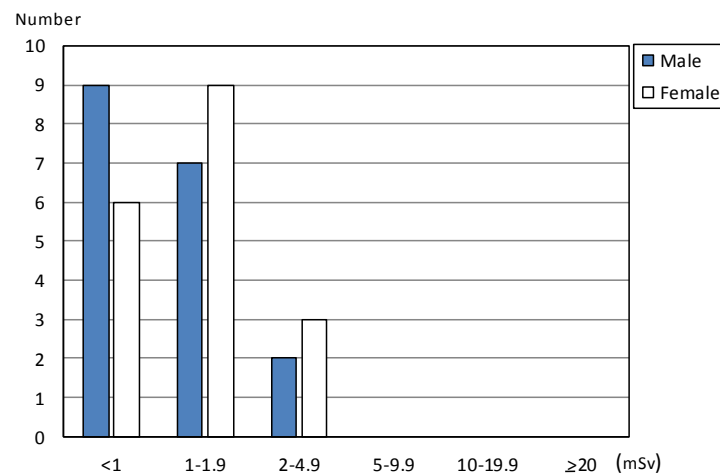


Fig. 5 Effective dose of the respondents

## 2.2-5 Blood and urinary iodine test results as of 31 March 2017

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)	≤32.7	<28.0	<16.0
71 suspicious or malignant	1.2 ± 0.1 (4.2%)	3.5 ± 0.4 (2.8%)	1.7 ± 1.0 (12.7%)	43.8 ± 109.1 (21.1%)	— (22.5%)	— (15.5%)
Other 1,675	1.2 ± 0.2 (7.3%)	3.5 ± 0.7 (6.2%)	1.3 ± 0.9 (8.3%)	28.6 ± 135.9 (13.9%)	— (9.6%)	— (8.5%)

Table 9. Urinary iodine (μg/day)

	Minimum	25th percentile	Median	75th percentile	Maximum
71 suspicious or malignant	43	126	190	441	2520
Other 1,669	17	116	184	357	36600

- 1) FT4: Free Thyroxine; higher among patients with thyrotoxicosis (representative disease: Graves' disease) and lower with hypothyroidism (representative disease: Hashimoto's thyroiditis).
- 2) FT3: Free Triiodothyronine; higher among patients with thyrotoxicosis (representative disease: Graves' disease) and lower with hypothyroidism (representative disease: 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 thyroid cancer produces thyroglobulin.  
Laboratory reference range revised to ≤33.7 ng/mL as of 30 March 2015.
- 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 range differs according to age.

## 2.2-6 Confirmatory test results by municipality as of 31 March 2017

The proportion of suspicious or malignant diagnoses was 0.03% in FY 2014 target municipalities (13 municipalities in the nationally designated evacuation zones and 12 towns of the Kempoku area), 0.02% in FY 2015 target municipalities (34 towns of Iwaki, the Kennan and Aizu areas).

Table 10.

Confirmatory test results by municipality in FY 2014

	Number of those screened	Participants who required confirmatory test	Proportion who required confirmatory test (%)	Number who underwent confirmatory test	Suspicious or malignant cases	Proportion of suspicious or malignant cases (%)
Kawamata	1,763	23	1.3	20	0	0.00
Namie	2,511	28	1.1	22	2	0.08
Iitate	765	14	1.8	11	0	0.00
Minami-soma	8,910	81	0.9	71	4	0.04
Date	9,111	86	0.9	78	7	0.08
Tamura	5,008	51	1.0	43	2	0.04
Hirono	680	9	1.3	9	0	0.00
Naraha	1,002	5	0.5	5	0	0.00
Tomioka	2,001	25	1.2	21	0	0.00
Kawauchi	213	2	0.9	2	0	0.00
Okuma	1,758	16	0.9	15	2	0.11
Futaba	685	2	0.3	1	0	0.00
Katsurao	150	2	1.3	2	0	0.00
Fukushima	42,704	349	0.8	297	10	0.02
Nihonmatsu	7,885	59	0.7	51	1	0.01
Motomiya	4,810	31	0.6	26	3	0.06
Otama	1,264	6	0.5	6	0	0.00
Koriyama	48,044	365	0.8	297	18	0.04
Kori	1,635	14	0.9	10	1	0.06
Kunimi	1,241	9	0.7	8	0	0.00
Tenei	793	11	1.4	6	0	0.00
Shirakawa	9,666	63	0.7	49	1	0.01
Nishigo	3,179	28	0.9	22	1	0.03
Izumizaki	998	4	0.4	3	0	0.00
Miharu	2,387	24	1.0	15	0	0.00
Subtotal	159,163	1,307	0.8	1,090	52	0.03

Confirmatory test results by municipality in FY 2015

	Number of those screened	Participants who required confirmatory test	Proportion who required confirmatory test (%)	Number who underwent confirmatory test	Suspicious or malignant cases	Proportion of suspicious or malignant cases (%)
Iwaki	45,265	377	0.8	308	9	0.02
Sukagawa	11,450	105	0.9	89	1	0.01
Soma	4,750	32	0.7	27	1	0.02
Kagamiishi	1,978	16	0.8	15	1	0.05
Shinchi	1,038	13	1.3	11	0	0.00
Nakajima	754	5	0.7	4	1	0.13
Yabuki	2,412	16	0.7	15	0	0.00
Ishikawa	2,027	14	0.7	12	0	0.00
Yamatsuri	740	6	0.8	4	0	0.00
Asakawa	1,030	9	0.9	8	0	0.00
Hirata	855	7	0.8	7	0	0.00
Tanagura	2,160	17	0.8	12	1	0.05
Hanawa	1,166	11	0.9	11	0	0.00
Samegawa	495	6	1.2	5	0	0.00
Ono	1,262	12	1.0	10	0	0.00
Tamakawa	964	9	0.9	5	0	0.00
Furudono	794	5	0.6	5	0	0.00
Hinoemata	66	0	0.0	0	0	0.00
Minami-aizu	1,762	16	0.9	12	0	0.00
Kaneyama	121	0	0.0	0	0	0.00
Showa	93	0	0.0	0	0	0.00
Mishima	121	1	0.8	1	0	0.00
Shimogo	614	4	0.7	2	0	0.00
Kitakata	5,729	44	0.8	37	3	0.05
Nishiaizu	654	5	0.8	4	0	0.00
Tadami	458	7	1.5	4	1	0.22
Inawashiro	1,730	12	0.7	10	0	0.00
Bandai	401	4	1.0	4	0	0.00
Kitashiobara	377	2	0.5	2	0	0.00
Aizumisato	2,538	21	0.8	18	0	0.00
Aizubange	2,063	18	0.9	15	0	0.00
Yanaizu	386	0	0.0	0	0	0.00
Aizuwakamatsu	14,579	121	0.8	83	1	0.01
Yugawa	516	4	0.8	2	0	0.00
Subtotal	111,348	919	0.8	742	19	0.02
Total	270,511	2,226	0.8	1,832	71	0.03

Priority is given to those in urgent clinical need.

## **2.3 Mental Health Care**

### **2.3-1 Support for participants of primary examination**

Summary support results from the First and Second Full-Scale Thyroid Screening Programs are aggregated into the Report of Third-Round Thyroid Ultrasound Examinations.

### **2.3-2 Support for participants of confirmatory examination**

Summary support results from the First and Second Full-Scale Thyroid Screening Programs are aggregated into the Report of Third-Round Thyroid Ultrasound Examinations.



# Appendix 1

Thyroid Ultrasound Examination (TUE) coverage by municipality

As of 31 March 2017

	Survey Population	Participants		Proportion (%)	Number and proportion of participants by age group				Participants living outside Fukushima	Proportion (%)
		Screened outside Fukushima 3)								
			2-7		8-12	13-17	≥18			
	a	b	3)	b/a					c	c/b
Screening coverage by municipality in FY 2014										
Kawamata	2,460	1,763	57	71.7	428	574	596	165	76	4.3
					24.3	32.6	33.8	9.4		
Namie	3,772	2,511	725	66.6	655	723	761	372	794	31.6
					26.1	28.8	30.3	14.8		
Iitate	1,123	765	38	68.1	186	275	239	65	49	6.4
					24.3	35.9	31.2	8.5		
Minami-soma	12,982	8,910	1,833	68.6	2,314	2,924	2,668	1,004	1,878	21.1
					26.0	32.8	29.9	11.3		
Date	11,741	9,111	348	77.6	2,263	2,748	2,972	1,128	391	4.3
					24.8	30.2	32.6	12.4		
Tamura	7,320	5,008	150	68.4	1,160	1,638	1,693	517	160	3.2
					23.2	32.7	33.8	10.3		
Hirono	1,108	680	111	61.4	167	194	220	99	97	14.3
					24.6	28.5	32.4	14.6		
Naraha	1,490	1,002	140	67.2	238	296	327	141	147	14.7
					23.8	29.5	32.6	14.1		
Tomioka	3,100	2,001	461	64.5	473	548	665	315	491	24.5
					23.6	27.4	33.2	15.7		
Kawauchi	360	213	23	59.2	49	75	69	20	22	10.3
					23.0	35.2	32.4	9.4		
Okuma	2,499	1,758	396	70.3	536	541	481	200	437	24.9
					30.5	30.8	27.4	11.4		
Futaba	1,258	685	260	54.5	182	229	190	84	266	38.8
					26.6	33.4	27.7	12.3		
Katsurao	241	150	15	62.2	34	56	47	13	12	8.0
					22.7	37.3	31.3	8.7		
Fukushima	55,736	42,704	2,467	76.6	11,034	12,769	13,355	5,546	3,088	7.2
					25.8	29.9	31.3	13.0		
Nihonmatsu	10,596	7,885	321	74.4	1,925	2,499	2,665	796	339	4.3
					24.4	31.7	33.8	10.1		
Motomiya	6,345	4,810	172	75.8	1,229	1,510	1,550	521	187	3.9
					25.6	31.4	32.2	10.8		
Otama	1,684	1,264	31	75.1	355	398	387	124	40	3.2
					28.1	31.5	30.6	9.8		
Koriyama	66,759	48,044	3,181	72.0	11,416	15,487	15,464	5,677	3,976	8.3
					23.8	32.2	32.2	11.8		
Kori	2,137	1,635	67	76.5	380	503	551	201	61	3.7
					23.2	30.8	33.7	12.3		
Kunimi	1,624	1,241	46	76.4	238	382	443	178	46	3.7
					19.2	30.8	35.7	14.3		
Tenei	1,101	793	27	72.0	214	264	251	64	29	3.7
					27.0	33.3	31.7	8.1		
Shirakawa	12,740	9,666	335	75.9	2,546	2,942	3,124	1,054	429	4.4
					26.3	30.4	32.3	10.9		
Nishigo	4,173	3,179	122	76.2	890	1,006	944	339	154	4.8
					28.0	31.6	29.7	10.7		
Izumizaki	1,337	998	24	74.6	265	315	304	114	26	2.6
					26.6	31.6	30.5	11.4		
Miharu	3,183	2,387	67	75.0	534	682	808	363	75	3.1
					22.4	28.6	33.9	15.2		
Subtotal	216,869	159,163	11,417	73.4	39,711	49,578	50,774	19,100	13,270	8.3
					24.9	31.1	31.9	12.0		

1) Number of participants. 2) Number of participants in the age group/Number of participants.

3) Number of participants who underwent the test outside Fukushima, as of 28 February 2017.

Fractions have been rounded and may not total to 100%. Ages are at the time when the participants underwent the testing.

Because some duplicate records were found, numbers may vary slightly from previous reports.

## Thyroid Ultrasound Examination (TUE) coverage by municipality

As of 31 March 2017

	Survey Population	Participants		Proportion (%)	Number and proportion of participants by age group				Participants living outside Fukushima	Proportion (%)
		b	Screened outside Fukushima 3)		2-7	8-12	13-17	≥18		
Screening coverage by municipality in FY 2015										
Iwaki	64,309	45,265	2,252	70.4	8,299 18.3	14,274 31.5	15,528 34.3	7,164 15.8	2,513	5.6
Sukagawa	15,877	11,450	309	72.1	2,651 23.2	3,675 32.1	3,738 32.6	1,386 12.1	374	3.3
Soma	7,086	4,750	291	67.0	1,122 23.6	1,540 32.4	1,597 33.6	491 10.3	379	8.0
Kagamiishi	2,704	1,978	35	73.2	526 26.6	625 31.6	623 31.5	204 10.3	57	2.9
Shinchi	1,476	1,038	45	70.3	205 19.7	347 33.4	373 35.9	113 10.9	57	5.5
Nakajima	1,115	754	8	67.6	135 17.9	251 33.3	290 38.5	78 10.3	15	2.0
Yabuki	3,422	2,412	68	70.5	629 26.1	757 31.4	800 33.2	226 9.4	69	2.9
Ishikawa	2,951	2,027	43	68.7	482 23.8	591 29.2	718 35.4	236 11.6	64	3.2
Yamatsuri	1,056	740	26	70.1	195 26.4	225 30.4	232 31.4	88 11.9	15	2.0
Asakawa	1,388	1,030	43	74.2	209 20.3	317 30.8	362 35.1	142 13.8	49	4.8
Hirata	1,271	855	17	67.3	202 23.6	274 32.0	297 34.7	82 9.6	20	2.3
Tanagura	3,087	2,160	63	70.0	519 24.0	681 31.5	723 33.5	237 11.0	76	3.5
Hanawa	1,715	1,166	30	68.0	246 21.1	362 31.0	409 35.1	149 12.8	38	3.3
Samegawa	723	495	19	68.5	128 25.9	157 31.7	153 30.9	57 11.5	19	3.8
Ono	1,986	1,262	29	63.5	238 18.9	420 33.3	440 34.9	164 13.0	32	2.5
Tamakawa	1,371	964	15	70.3	208 21.6	339 35.2	319 33.1	98 10.2	13	1.3
Furudono	1,084	794	32	73.2	194 24.4	224 28.2	255 32.1	121 15.2	26	3.3
Hinoemata	110	66	4	60.0	8 12.1	20 30.3	35 53.0	3 4.5	3	4.5
Minami-aizu	2,913	1,762	48	60.5	365 20.7	578 32.8	640 36.3	179 10.2	44	2.5
Kaneyama	203	121	5	59.6	16 13.2	43 35.5	49 40.5	13 10.7	5	4.1
Showa	134	93	3	69.4	24 25.8	28 30.1	32 34.4	9 9.7	4	4.3
Mishima	197	121	0	61.4	15 12.4	45 37.2	50 41.3	11 9.1	2	1.7
Shimogo	1,011	614	15	60.7	101 16.4	204 33.2	240 39.1	69 11.2	14	2.3
Kitakata	9,236	5,729	131	62.0	1,016 17.7	1,939 33.8	2,176 38.0	598 10.4	141	2.5
Nishiaizu	1,055	654	10	62.0	136 20.8	175 26.8	271 41.4	72 11.0	13	2.0
Tadami	735	458	6	62.3	98 21.4	157 34.3	158 34.5	45 9.8	9	2.0
Inawashiro	2,757	1,730	51	62.7	349 20.2	570 32.9	602 34.8	209 12.1	64	3.7
Bandai	628	401	10	63.9	77 19.2	151 37.7	128 31.9	45 11.2	10	2.5
Kitashiobara	581	377	11	64.9	99 26.3	126 33.4	119 31.6	33 8.8	11	2.9
Aizumisato	3,790	2,538	57	67.0	522 20.6	801 31.6	903 35.6	312 12.3	64	2.5
Aizubange	3,183	2,063	39	64.8	388 18.8	669 32.4	760 36.8	246 11.9	42	2.0
Yanaizu	612	386	4	63.1	81 21.0	132 34.2	136 35.2	37 9.6	4	1.0
Aizuwakamatsu	23,925	14,579	492	60.9	2,533 17.4	4,951 34.0	5,430 37.2	1,665 11.4	608	4.2
Yugawa	696	516	16	74.1	109 21.1	156 30.2	183 35.5	68 13.2	18	3.5
Subtotal	164,387	111,348	4,227	67.7	22,125 19.9	35,804 32.2	38,769 34.8	14,650 13.2	4,872	4.4
Total	381,256	270,511	15,644	71.0	61,836 22.9	85,382 31.6	89,543 33.1	33,750 12.5	18,142	6.7

## Appendix 2

### Thyroid Ultrasound Examination (TUE) coverage by prefecture

As of 28 February 2017

Prefecture	Number of test venues	Participants*	Prefecture	Number of test venues	Participants*	Prefecture	Number of test venues	Participants*
Hokkaido	6	<b>415</b>	Fukui	1	<b>20</b>	Hiroshima	1	<b>42</b>
Aomori	1	<b>179</b>	Yamanashi	2	<b>147</b>	Yamaguchi	1	<b>20</b>
Iwate	3	<b>362</b>	Nagano	2	<b>157</b>	Tokushima	1	<b>11</b>
Miyagi	2	<b>2,937</b>	Gifu	1	<b>37</b>	Kagawa	1	<b>22</b>
Akita	1	<b>281</b>	Shizuoka	2	<b>136</b>	Ehime	1	<b>17</b>
Yamagata	3	<b>808</b>	Aichi	3	<b>245</b>	Kochi	1	<b>14</b>
Ibaraki	4	<b>896</b>	Mie	1	<b>37</b>	Fukuoka	3	<b>90</b>
Tochigi	7	<b>908</b>	Shiga	1	<b>27</b>	Saga	1	<b>15</b>
Gunma	2	<b>266</b>	Kyoto	3	<b>124</b>	Nagasaki	2	<b>36</b>
Saitama	2	<b>785</b>	Osaka	7	<b>272</b>	Kumamoto	1	<b>29</b>
Chiba	4	<b>837</b>	Hyogo	1	<b>142</b>	Oita	1	<b>35</b>
Tokyo	12	<b>2,664</b>	Nara	2	<b>31</b>	Miyazaki	1	<b>36</b>
Kanagawa	5	<b>1,375</b>	Wakayama	1	<b>8</b>	Kagoshima	1	<b>26</b>
Niigata	2	<b>907</b>	Tottori	1	<b>10</b>	Okinawa	1	<b>81</b>
Toyama	1	<b>25</b>	Shimane	1	<b>6</b>			
Ishikawa	1	<b>61</b>	Okayama	3	<b>65</b>			
						<b>Total</b>	<b>105</b>	<b>15,644</b>

\* Participants who underwent testing at venues outside Fukushima carried out either by Fukushima Medical University staff (once in Niigata and Yamagata, Saitama, Chiba, and twice in Kanagawa) or by local specialists.

## Appendix 3

Results of primary examination by municipality

As of 31 March 2017

	Participants a	Confirmed results b Proportion (%) b/a (%)	Number by test results				Nodules		Cysts	
			Proportion (%)				Proportion (%)		Proportion (%)	
			A		B	C	Proportion (%)		Proportion (%)	
			A1	A2			≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm

Screening coverage by municipality in FY 2014

Kawamata	1,763	1,763	779	961	23	0	22	13	1	972
		100.0	44.2	54.5	1.3	0.0	1.2	0.7	0.1	55.1
Nanie	2,511	2,510	1,025	1,457	28	0	28	18	0	1,467
		100.0	40.8	58.0	1.1	0.0	1.1	0.7	0.0	58.4
Iitate	765	765	360	391	14	0	14	3	0	396
		100.0	47.1	51.1	1.8	0.0	1.8	0.4	0.0	51.8
Minami-soma	8,910	8,909	3,815	5,013	81	0	81	62	0	5,038
		100.0	42.8	56.3	0.9	0.0	0.9	0.7	0.0	56.5
Date	9,111	9,111	3,958	5,067	86	0	86	69	0	5,092
		100.0	43.4	55.6	0.9	0.0	0.9	0.8	0.0	55.9
Tamura	5,008	5,006	2,050	2,905	51	0	51	30	0	2,924
		100.0	41.0	58.0	1.0	0.0	1.0	0.6	0.0	58.4
Hirono	680	680	286	385	9	0	9	6	0	385
		100.0	42.1	56.6	1.3	0.0	1.3	0.9	0.0	56.6
Naraha	1,002	1,001	418	578	5	0	5	8	0	578
		99.9	41.8	57.7	0.5	0.0	0.5	0.8	0.0	57.7
Tomioka	2,001	2,001	820	1,156	25	0	25	19	0	1,165
		100.0	41.0	57.8	1.2	0.0	1.2	0.9	0.0	58.2
Kawauchi	213	213	69	142	2	0	2	1	0	143
		100.0	32.4	66.7	0.9	0.0	0.9	0.5	0.0	67.1
Okuma	1,758	1,758	760	982	16	0	16	12	0	985
		100.0	43.2	55.9	0.9	0.0	0.9	0.7	0.0	56.0
Futaba	685	685	283	400	2	0	2	7	0	399
		100.0	41.3	58.4	0.3	0.0	0.3	1.0	0.0	58.2
Katsurao	150	150	74	74	2	0	2	1	0	74
		100.0	49.3	49.3	1.3	0.0	1.3	0.7	0.0	49.3
Fukushima	42,704	42,702	18,067	24,286	349	0	347	265	0	24,412
		100.0	42.3	56.9	0.8	0.0	0.8	0.6	0.0	57.2
Nihonmatsu	7,885	7,885	3,436	4,390	59	0	59	55	0	4,400
		100.0	43.6	55.7	0.7	0.0	0.7	0.7	0.0	55.8
Motomiya	4,810	4,809	2,090	2,688	31	0	31	20	0	2,698
		100.0	43.5	55.9	0.6	0.0	0.6	0.4	0.0	56.1
Otama	1,264	1,264	568	690	6	0	6	8	0	690
		100.0	44.9	54.6	0.5	0.0	0.5	0.6	0.0	54.6
Koriyama	48,044	48,043	19,247	28,431	365	0	365	280	0	28,547
		100.0	40.1	59.2	0.8	0.0	0.8	0.6	0.0	59.4
Kori	1,635	1,635	703	918	14	0	14	11	0	921
		100.0	43.0	56.1	0.9	0.0	0.9	0.7	0.0	56.3
Kunimi	1,241	1,241	492	740	9	0	8	10	1	741
		100.0	39.6	59.6	0.7	0.0	0.6	0.8	0.1	59.7
Tenei	793	793	328	454	11	0	11	11	0	462
		100.0	41.4	57.3	1.4	0.0	1.4	1.4	0.0	58.3
Shirakawa	9,666	9,666	4,162	5,441	63	0	63	50	0	5,460
		100.0	43.1	56.3	0.7	0.0	0.7	0.5	0.0	56.5
Nishigo	3,179	3,179	1,356	1,795	28	0	28	25	0	1,803
		100.0	42.7	56.5	0.9	0.0	0.9	0.8	0.0	56.7
Izumizaki	998	998	370	624	4	0	4	10	0	624
		100.0	37.1	62.5	0.4	0.0	0.4	1.0	0.0	62.5
Miharu	2,387	2,387	922	1,441	24	0	24	13	0	1,449
		100.0	38.6	60.4	1.0	0.0	1.0	0.5	0.0	60.7
Subtotal	159,163	159,154	66,438	91,409	1,307	0	1,303	1,007	2	91,825
		100.0	41.7	57.4	0.8	0.0	0.8	0.6	0.0	57.7

Fractions have been rounded and may not total to 100%.

	Participants a	Confirmed results b Proportion (%) b/a (%)	Number by test results				Nodules		Cysts	
			Proportion (%)				Proportion (%) ≥5.1 mm      ≤5.0 mm		Proportion (%) ≥20.1 mm      ≤20.0 mm	
			A		B	C				
			A1	A2						
Screening coverage by municipality in FY 2015										
Iwaki	45,265	45,262	16,909	27,976	377	0	373	233	4	28,102
		100.0	37.4	61.8	0.8	0.0	0.8	0.5	0.0	62.1
Sukagawa	11,450	11,449	4,440	6,904	105	0	105	56	0	6,957
		100.0	38.8	60.3	0.9	0.0	0.9	0.5	0.0	60.8
Soma	4,750	4,750	2,009	2,709	32	0	32	26	0	2,717
		100.0	42.3	57.0	0.7	0.0	0.7	0.5	0.0	57.2
Kagamiishi	1,978	1,978	786	1,176	16	0	16	10	0	1,180
		100.0	39.7	59.5	0.8	0.0	0.8	0.5	0.0	59.7
Shinchi	1,038	1,038	413	612	13	0	13	2	0	619
		100.0	39.8	59.0	1.3	0.0	1.3	0.2	0.0	59.6
Nakajima	754	754	305	444	5	0	5	4	0	444
		100.0	40.5	58.9	0.7	0.0	0.7	0.5	0.0	58.9
Yabuki	2,412	2,412	955	1,441	16	0	16	8	0	1,449
		100.0	39.6	59.7	0.7	0.0	0.7	0.3	0.0	60.1
Ishikawa	2,027	2,027	827	1,186	14	0	14	13	0	1,190
		100.0	40.8	58.5	0.7	0.0	0.7	0.6	0.0	58.7
Yamatsuri	740	740	269	465	6	0	6	1	0	467
		100.0	36.4	62.8	0.8	0.0	0.8	0.1	0.0	63.1
Asakawa	1,030	1,030	444	577	9	0	9	4	0	580
		100.0	43.1	56.0	0.9	0.0	0.9	0.4	0.0	56.3
Hirata	855	855	362	486	7	0	7	3	0	491
		100.0	42.3	56.8	0.8	0.0	0.8	0.4	0.0	57.4
Tanagura	2,160	2,160	862	1,281	17	0	17	10	0	1,289
		100.0	39.9	59.3	0.8	0.0	0.8	0.5	0.0	59.7
Hanawa	1,166	1,166	459	696	11	0	11	8	0	699
		100.0	39.4	59.7	0.9	0.0	0.9	0.7	0.0	59.9
Samegawa	495	495	185	304	6	0	6	4	0	307
		100.0	37.4	61.4	1.2	0.0	1.2	0.8	0.0	62.0
Ono	1,262	1,262	409	841	12	0	12	5	0	844
		100.0	32.4	66.6	1.0	0.0	1.0	0.4	0.0	66.9
Tamakawa	964	964	369	586	9	0	9	8	0	591
		100.0	38.3	60.8	0.9	0.0	0.9	0.8	0.0	61.3
Furudono	794	794	312	477	5	0	5	4	0	479
		100.0	39.3	60.1	0.6	0.0	0.6	0.5	0.0	60.3
Hinoemata	66	66	28	38	0	0	0	1	0	37
		100.0	42.4	57.6	0.0	0.0	0.0	1.5	0.0	56.1
Minami-aizu	1,762	1,762	688	1,058	16	0	16	5	0	1,069
		100.0	39.0	60.0	0.9	0.0	0.9	0.3	0.0	60.7
Kaneyama	121	121	39	82	0	0	0	0	0	82
		100.0	32.2	67.8	0.0	0.0	0.0	0.0	0.0	67.8
Showa	93	93	36	57	0	0	0	1	0	57
		100.0	38.7	61.3	0.0	0.0	0.0	1.1	0.0	61.3
Mishima	121	121	27	93	1	0	1	0	0	94
		100.0	22.3	76.9	0.8	0.0	0.8	0.0	0.0	77.7
Shimogo	614	614	250	360	4	0	4	3	0	362
		100.0	40.7	58.6	0.7	0.0	0.7	0.5	0.0	59.0
Kitakata	5,729	5,728	2,127	3,557	44	0	44	23	0	3,581
		100.0	37.1	62.1	0.8	0.0	0.8	0.4	0.0	62.5
Nishiaizu	654	654	288	361	5	0	5	5	0	361
		100.0	44.0	55.2	0.8	0.0	0.8	0.8	0.0	55.2
Tadami	458	458	176	275	7	0	7	2	0	278
		100.0	38.4	60.0	1.5	0.0	1.5	0.4	0.0	60.7
Inawashiro	1,730	1,730	689	1,029	12	0	12	9	0	1,036
		100.0	39.8	59.5	0.7	0.0	0.7	0.5	0.0	59.9
Bandai	401	401	157	240	4	0	4	1	0	243
		100.0	39.2	59.9	1.0	0.0	1.0	0.2	0.0	60.6
Kitashiobara	377	377	143	232	2	0	2	2	0	232
		100.0	37.9	61.5	0.5	0.0	0.5	0.5	0.0	61.5
Aizumisato	2,538	2,538	1,009	1,508	21	0	21	10	0	1,516
		100.0	39.8	59.4	0.8	0.0	0.8	0.4	0.0	59.7
Aizubange	2,063	2,063	705	1,340	18	0	18	18	0	1,347
		100.0	34.2	65.0	0.9	0.0	0.9	0.9	0.0	65.3
Yanaizu	386	386	154	232	0	0	0	1	0	232
		100.0	39.9	60.1	0.0	0.0	0.0	0.3	0.0	60.1
Aizuwakamatsu	14,579	14,579	5,247	9,211	121	0	121	80	0	9,261
		100.0	36.0	63.2	0.8	0.0	0.8	0.5	0.0	63.5
Yugawa	516	516	181	331	4	0	4	3	0	334
		100.0	35.1	64.1	0.8	0.0	0.8	0.6	0.0	64.7
Subtotal	111,348	111,343	42,259	68,165	919	0	915	563	4	68,527
		100.0	38.0	61.2	0.8	0.0	0.8	0.5	0.0	61.5
Total	270,511	270,497	108,697	159,574	2,226	0	2,218	1,570	6	160,352
		100.0	40.2	59.0	0.8	0.0	0.8	0.6	0.0	59.3

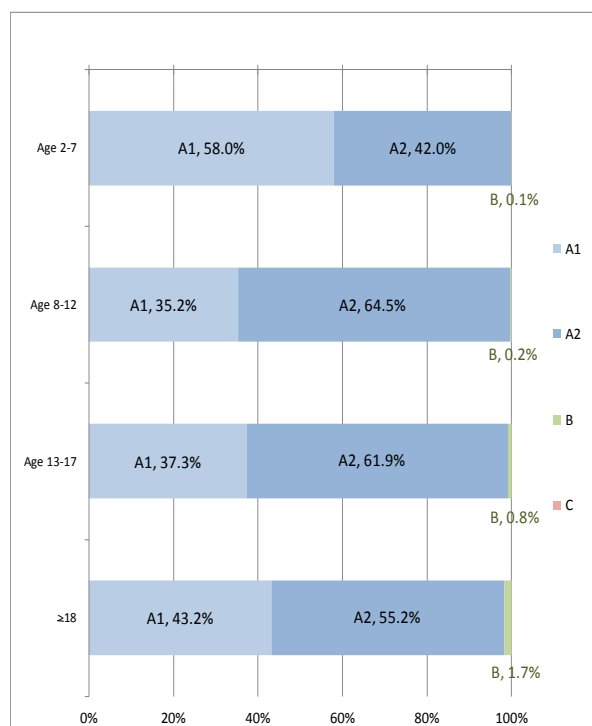
## Appendix 4

### 1. Thyroid Ultrasound Examination results by age and sex

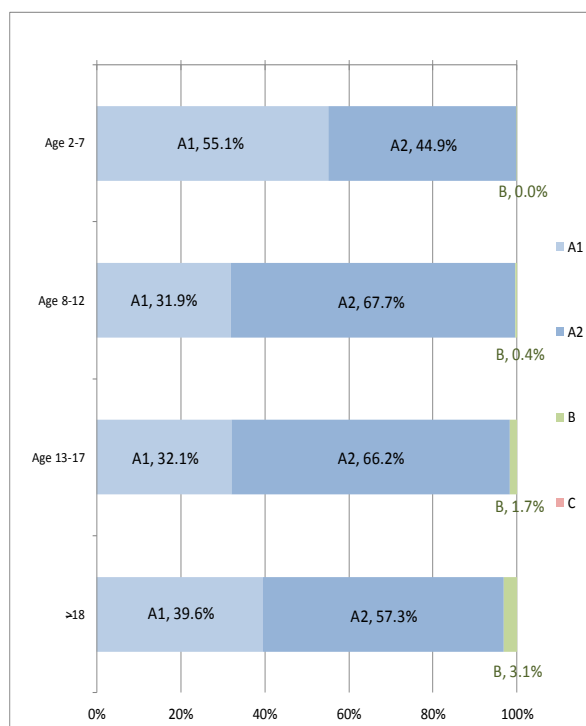
As of 31 March 2017

Ages	A						B			C			Total		
	A1			A2											
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
2-7	18,413	16,562	34,975	13,332	13,496	26,828	19	14	33	0	0	0	31,764	30,072	61,836
8-12	15,392	13,307	28,699	28,184	28,218	56,402	107	174	281	0	0	0	43,683	41,699	85,382
13-17	16,985	14,130	31,115	28,183	29,152	57,335	358	735	1,093	0	0	0	45,526	44,017	89,543
≥18	6,654	7,254	13,908	8,504	10,505	19,009	256	563	819	0	0	0	15,414	18,322	33,736
Total	57,444	51,253	108,697	78,203	81,371	159,574	740	1,486	2,226	0	0	0	136,387	134,110	270,497

Test results by age group (Male)



Test results by age group (Female)



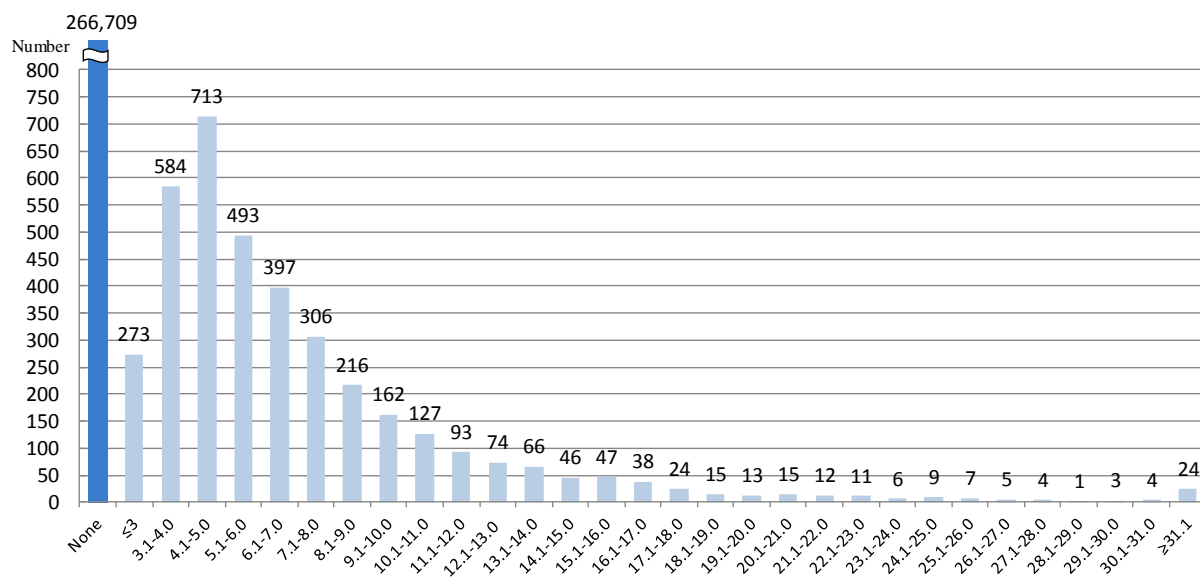
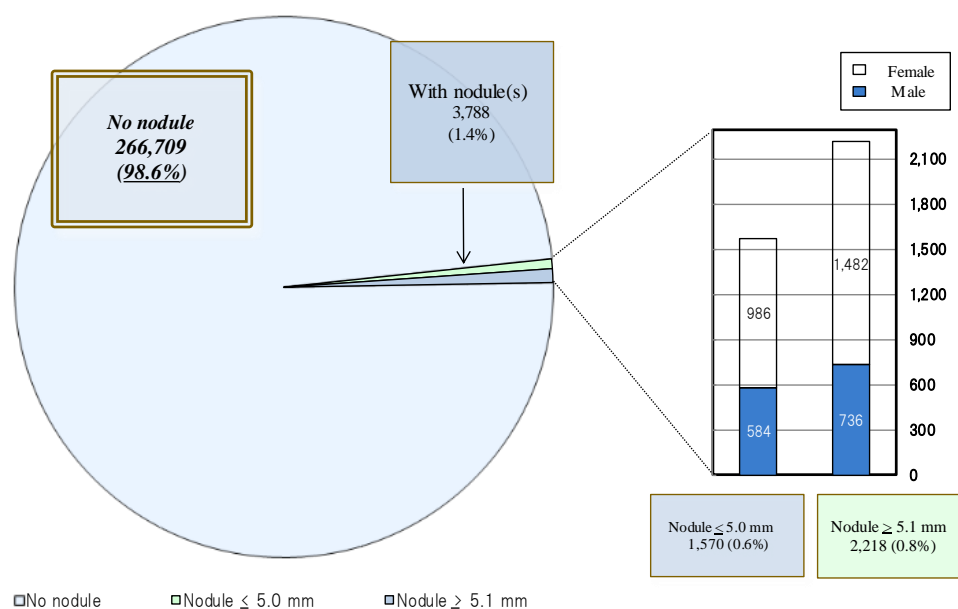
Percentages have been rounded and may not total to 100%.

Ages are at the time when the participants underwent the testing.

## 2. Nodule size

As of 31 March 2017

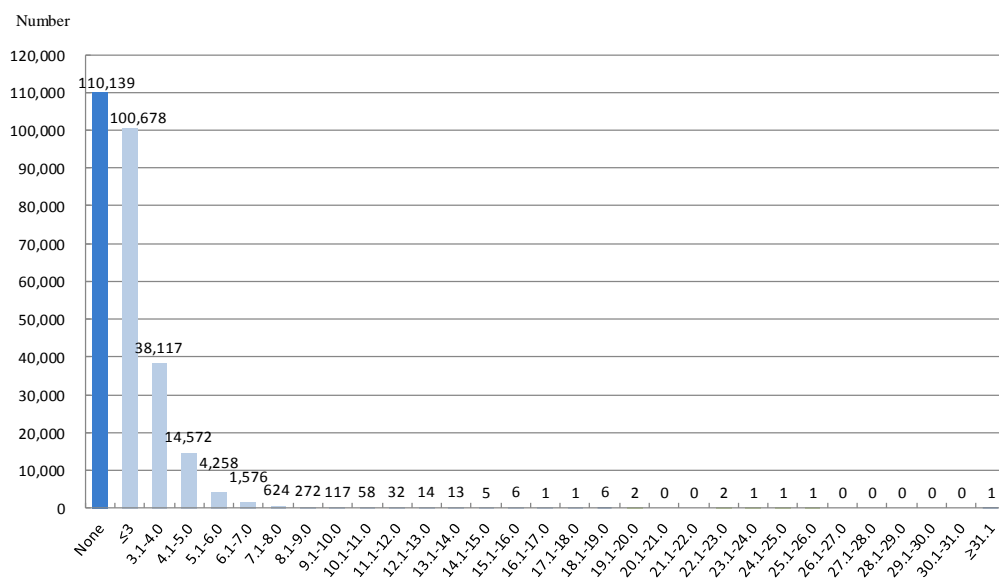
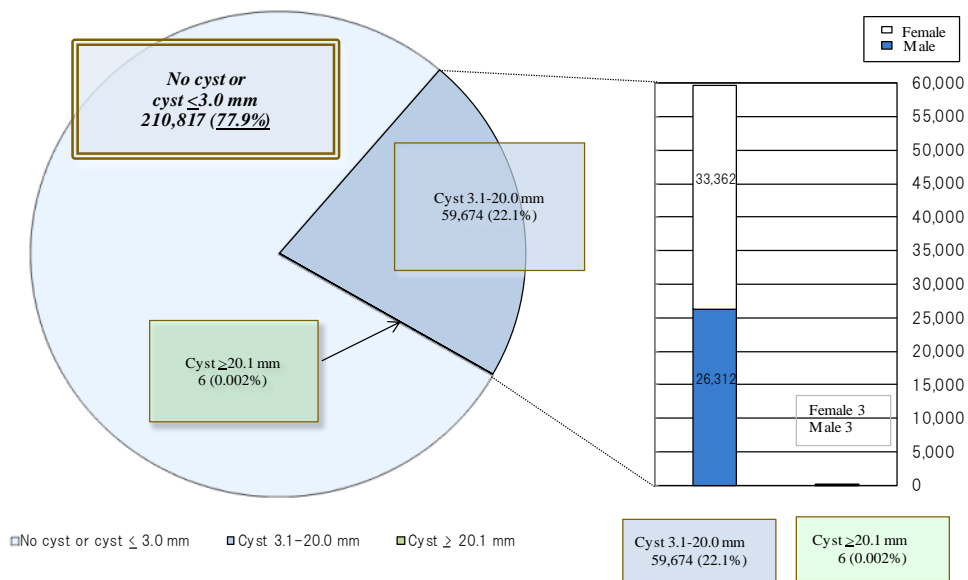
Nodule size	Total	Gender		Class	Proportion
		Male	Female		
None	266,709	135,067	131,642	A 1	98.6%
≤ 3.0 mm	273	117	156	A 2	0.6%
3.1-5.0 mm	1,297	467	830		
5.1-10.0 mm	1,574	515	1,059	B	0.8%
10.1-15.0 mm	406	144	262		
15.1-20.0 mm	137	55	82		
20.1-25.0 mm	53	8	45		
≥ 25.1 mm	48	14	34		
Total	270,497	136,387	134,110		



### 3. Cyst size

As of 31 March 2017

Cyst size	Total	Gender		Class	Proportion
		Male	Female		
None	110,139	57,965	52,174	A 1	77.9%
≤ 3.0 mm	100,678	52,107	48,571	A 2	
3.1-5.0 mm	52,689	23,933	28,756		
5.1-10.0 mm	6,847	2,336	4,511		
10.1-15.0 mm	122	39	83		
15.1-20.0 mm	16	4	12	B	22.1%
20.1-25.0 mm	4	2	2		
≥ 25.1 mm	2	1	1		
Total	270,497	136,387	134,110		





## Appendix 5

Confirmatory test results by municipality

District	Number of those screened a	Participants who required confirmatory test b Proportion (%) b/a	Number of those who underwent confirmatory test				
			Total c Proportion (%) c/b	Ages 2-7 d Proportion (%) d/c	Ages 8-12 e Proportion (%) e/c	Ages 13-17 f Proportion (%) f/c	≥ 18 g Proportion (%) g/c

As of 31 March 2017

Total h Proportion (%) h/c	Number of confirmed results			
	A1 i Proportion (%) i/h	A2 j Proportion (%) j/h	Not A1 or A2 k Proportion (%) k/h	
	Aspiration biopsy cytology l Proportion (%) l/h			

Screening coverage by municipality in FY 2014

		23	20	0	3	12	5	20	3	7	10	1
Kawamata	1,763	1.3	87.0	0.0	15.0	60.0	25.0	100.0	15.0	35.0	50.0	10.0
Namie	2,511	28	22	0	2	9	11	22	0	2	20	3
		1.1	78.6	0.0	9.1	40.9	50.0	100.0	0.0	9.1	90.9	15.0
Iitate	765	14	11	0	2	6	3	11	2	3	6	1
		1.8	78.6	0.0	18.2	54.5	27.3	100.0	18.2	27.3	54.5	16.7
Minami-soma	8,910	81	71	2	10	27	32	69	4	16	49	14
		0.9	87.7	2.8	14.1	38.0	45.1	97.2	5.8	23.2	71.0	28.6
Date	9,111	86	78	1	17	38	22	76	0	27	49	9
		0.9	90.7	1.3	21.8	48.7	28.2	97.4	0.0	35.5	64.5	18.4
Tamura	5,008	51	43	1	3	29	10	41	1	10	30	6
		1.0	84.3	2.3	7.0	67.4	23.3	95.3	2.4	24.4	73.2	20.0
Hirono	680	9	9	0	1	4	4	9	0	4	5	0
		1.3	100.0	0.0	11.1	44.4	44.4	100.0	0.0	44.4	55.6	0.0
Naraha	1,002	5	5	0	0	1	4	5	0	0	5	0
		0.5	100.0	0.0	0.0	20.0	80.0	100.0	0.0	0.0	100.0	0.0
Tomioka	2,001	25	21	0	3	4	14	20	1	5	14	1
		1.2	84.0	0.0	14.3	19.0	66.7	95.2	5.0	25.0	70.0	7.1
Kawauchi	213	2	2	0	0	1	1	2	0	0	2	0
		0.9	100.0	0.0	0.0	50.0	50.0	100.0	0.0	0.0	100.0	0.0
Okuma	1,758	16	15	0	1	6	8	15	0	2	13	3
		0.9	93.8	0.0	6.7	40.0	53.3	100.0	0.0	13.3	86.7	23.1
Futaba	685	2	1	0	0	0	1	1	1	0	0	0
		0.3	50.0	0.0	0.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0
Katsurao	150	2	2	0	2	0	0	2	0	2	0	0
		1.3	100.0	0.0	100.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0
Fukushima	42,704	349	297	5	39	140	113	288	12	53	223	50
		0.8	85.1	1.7	13.1	47.1	38.0	97.0	4.2	18.4	77.4	22.4
Nihonmatsu	7,885	59	51	1	6	23	21	51	1	9	41	4
		0.7	86.4	2.0	11.8	45.1	41.2	100.0	2.0	17.6	80.4	9.8
Motomiya	4,810	31	26	0	1	15	10	24	0	4	20	5
		0.6	83.9	0.0	3.8	57.7	38.5	92.3	0.0	16.7	83.3	25.0
Otama	1,264	6	6	0	0	4	2	6	0	3	3	0
		0.5	100.0	0.0	0.0	66.7	33.3	100.0	0.0	50.0	50.0	0.0
Koriyama	48,044	365	297	7	31	133	126	287	10	57	220	42
		0.8	81.4	2.4	10.4	44.8	42.4	96.6	3.5	19.9	76.7	19.1
Kori	1,635	14	10	0	1	5	4	10	0	3	7	2
		0.9	71.4	0.0	10.0	50.0	40.0	100.0	0.0	30.0	70.0	28.6
Kunimi	1,241	9	8	1	1	0	6	8	0	1	7	0
		0.7	88.9	12.5	12.5	0.0	75.0	100.0	0.0	12.5	87.5	0.0
Tenei	793	11	6	0	0	3	3	6	1	1	4	1
		1.4	54.5	0.0	0.0	50.0	50.0	100.0	16.7	16.7	66.7	25.0
Shirakawa	9,666	63	49	1	4	24	20	47	1	18	28	4
		0.7	77.8	2.0	8.2	49.0	40.8	95.9	2.1	38.3	59.6	14.3
Nishigo	3,179	28	22	0	2	13	7	21	0	8	13	4
		0.9	78.6	0.0	9.1	59.1	31.8	95.5	0.0	38.1	61.9	30.8
Izumizaki	998	4	3	0	0	1	2	3	0	0	3	0
		0.4	75.0	0.0	0.0	33.3	66.7	100.0	0.0	0.0	100.0	0.0
Miharu	2,387	24	15	0	0	10	5	15	1	6	8	0
		1.0	62.5	0.0	0.0	66.7	33.3	100.0	6.7	40.0	53.3	0.0
Subtotal	159,163	1,307	1,090	19	129	508	434	1,059	38	241	780	150
		0.8	83.4	1.7	11.8	46.6	39.8	97.2	3.6	22.8	73.7	19.2

h) Excluding participants who have not received the test results.

i, j) Those who have taken Full-scale thyroid screening program since April 2016.

k) Those who were recommended to take medical examination after 6 to 12-months, or who were advised to take their next regularly scheduled examination, though beyond the threshold level of A2.

Fractions have been rounded and may not total to 100%. Ages are at the time when the participants underwent the testing.

Confirmatory test results by municipality

As of 31 March 2017

District	Number of those screened	Participants who required confirmatory test	Number of those who underwent confirmatory test				
			Total	Ages 2-7	Ages 8-12	Ages 13-17	≥ 18
			c	d	e	f	g
	a	b	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)
			b/a	d/c	e/c	f/c	g/c

Total	Number of confirmed results			
	A1	A2	Not A1 or A2	
	i	j	k	Aspiration biopsy cytology
	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)
h	i/h	j/h	k/h	l/h

Screening coverage by municipality in FY 2015

Iwaki	45,265	377	308	2	26	120	160
		0.8	81.7	0.6	8.4	39.0	51.9
Sukagawa	11,450	105	89	2	10	39	38
		0.9	84.8	2.2	11.2	43.8	42.7
Soma	4,750	32	27	3	2	14	8
		0.7	84.4	11.1	7.4	51.9	29.6
Kagamiishi	1,978	16	15	0	0	8	7
		0.8	93.8	0.0	0.0	53.3	46.7
Shinchi	1,038	13	11	0	2	5	4
		1.3	84.6	0.0	18.2	45.5	36.4
Nakajima	754	5	4	0	0	3	1
		0.7	80.0	0.0	0.0	75.0	25.0
Yabuki	2,412	16	15	0	3	5	7
		0.7	93.8	0.0	20.0	33.3	46.7
Ishikawa	2,027	14	12	0	1	8	3
		0.7	85.7	0.0	8.3	66.7	25.0
Yamatsuri	740	6	4	0	1	1	2
		0.8	66.7	0.0	25.0	25.0	50.0
Asakawa	1,030	9	8	1	0	4	3
		0.9	88.9	12.5	0.0	50.0	37.5
Hirata	855	7	7	0	2	5	0
		0.8	100.0	0.0	28.6	71.4	0.0
Tanagura	2,160	17	12	0	2	6	4
		0.8	70.6	0.0	16.7	50.0	33.3
Hanawa	1,166	11	11	0	0	5	6
		0.9	100.0	0.0	0.0	45.5	54.5
Samegawa	495	6	5	0	0	3	2
		1.2	83.3	0.0	0.0	60.0	40.0
Ono	1,262	12	10	0	2	5	3
		1.0	83.3	0.0	20.0	50.0	30.0
Tamakawa	964	9	5	0	0	4	1
		0.9	55.6	0.0	0.0	80.0	20.0
Furudono	794	5	5	0	1	1	3
		0.6	100.0	0.0	20.0	20.0	60.0
Hinoemata	66	0	0	0	0	0	0
		0.0	0.0	0.0	0.0	0.0	0.0
Minami-aizu	1,762	16	12	0	3	6	3
		0.9	75.0	0.0	25.0	50.0	25.0
Kaneyama	121	0	0	0	0	0	0
		0.0	0.0	0.0	0.0	0.0	0.0
Showa	93	0	0	0	0	0	0
		0.0	0.0	0.0	0.0	0.0	0.0
Mishima	121	1	1	0	0	1	0
		0.8	100.0	0.0	0.0	100.0	0.0
Shimogo	614	4	2	0	0	0	2
		0.7	50.0	0.0	0.0	0.0	100.0
Kitakata	5,729	44	37	0	2	17	18
		0.8	84.1	0.0	5.4	45.9	48.6
Nishiaizu	654	5	4	0	0	3	1
		0.8	80.0	0.0	0.0	75.0	25.0
Tadami	458	7	4	0	0	2	2
		1.5	57.1	0.0	0.0	50.0	50.0
Inawashiro	1,730	12	10	0	0	5	5
		0.7	83.3	0.0	0.0	50.0	50.0
Bandai	401	4	4	0	0	0	4
		1.0	100.0	0.0	0.0	0.0	100.0
Kitashiobara	377	2	2	0	1	0	1
		0.5	100.0	0.0	50.0	0.0	50.0
Aizumisato	2,538	21	18	1	2	3	12
		0.8	85.7	5.6	11.1	16.7	66.7
Aizubange	2,063	18	15	0	0	5	10
		0.9	83.3	0.0	0.0	33.3	66.7
Yanaizu	386	0	0	0	0	0	0
		0.0	0.0	0.0	0.0	0.0	0.0
Aizuwakamatsu	14,579	121	83	0	5	41	37
		0.8	68.6	0.0	6.0	49.4	44.6
Yugawa	516	4	2	0	0	2	0
		0.8	50.0	0.0	0.0	100.0	0.0
Subtotal	111,348	919	742	9	65	321	347
		0.8	80.7	1.2	8.8	43.3	46.8

Total	270,511	2,226	1,832	28	194	829	781
		0.8	82.3	1.5	10.6	45.3	42.6

287	12	46	229	23
93.2	4.2	16.0	79.8	10.0
81	2	19	60	5
91.0	2.5	23.5	74.1	8.3
27	0	6	21	3
100.0	0.0	22.2	77.8	14.3
14	0	2	12	1
93.3	0.0	14.3	85.7	8.3
11	1	2	8	2
100.0	9.1	18.2	72.7	25.0
4	0	0	4	1
100.0	0.0	0.0	100.0	25.0
15	0	4	11	0
100.0	0.0	26.7	73.3	0.0
12	1	3	8	1
100.0	8.3	25.0	66.7	12.5
3	0	2	1	1
75.0	0.0	66.7	33.3	100.0
8	1	0	7	1
100.0	12.5	0.0	87.5	14.3
5	0	2	3	0
71.4	0.0	40.0	60.0	0.0
11	0	1	10	3
91.7	0.0	9.1	90.9	30.0
10	1	1	8	1
90.9	10.0	10.0	80.0	12.5
5	0	0	5	0
100.0	0.0	0.0	100.0	0.0
10	1	0	9	0
100.0	10.0	0.0	90.0	0.0
5	0	1	4	0
100.0	0.0	20.0	80.0	0.0
5	0	2	3	0
100.0	0.0	40.0	60.0	0.0
0	0	0	0	0
0.0	0.0	0.0	0.0	0.0
11	0	2	9	0
91.7	0.0	18.2	81.8	0.0
0	0	0	0	0
0.0	0.0	0.0	0.0	0.0
0	0	0	0	0
0.0	0.0	0.0	0.0	0.0
1	0	0	1	0
100.0	0.0	0.0	100.0	0.0
2	0	0	2	1
100.0	0.0	0.0	100.0	50.0
35	0	5	30	3
94.6	0.0	14.3	85.7	10.0
4	0	1	3	1
100.0	0.0	25.0	75.0	33.3
4	0	1	3	1
100.0	0.0	25.0	75.0	33.3
9	0	1	8	0
90.0	0.0	11.1	88.9	0.0
4	0	0	4	0
100.0	0.0	0.0	100.0	0.0
2	0	0	2	0
100.0	0.0	0.0	100.0	0.0
16	1	4	11	0
88.9	6.3	25.0	68.8	0.0
12	0	1	11	0
80.0	0.0	8.3	91.7	0.0
0	0	0	0	0
0.0	0.0	0.0	0.0	0.0
74	3	10	61	2
89.2	4.1	13.5	82.4	3.3
2	0	0	2	0
100.0	0.0	0.0	100.0	0.0
689	23	116	550	50
92.9	3.3	16.8	79.8	9.1

1,748	61	357	1,330	200
95.4	3.5	20.4	76.1	15.0

## Appendix 6

### Surgical cases for malignancy or suspicion of malignancy

#### 1. Target municipalities in FY 2014

Suspicious or malignant: 52 (38 surgical cases: 37 papillary thyroid carcinomas, 1 other thyroid carcinoma)

#### 2. Target municipalities in FY 2015

Suspicious or malignant: 19 (11 surgical cases: 11 papillary thyroid carcinomas)

#### 3. Total for cases FY 2014 - 2015

Suspicious or malignant: 71 (49 surgical cases: 48 papillary thyroid carcinomas, 1 other thyroid carcinoma)

# Report of Third-Round Thyroid Ultrasound Examinations (Third Full-Scale Thyroid Screening Program)

Reported on 5 June 2017

## 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 Screening Program (third-round examinations). The first round was Preliminary Baseline Screening for initial assessment of thyroid glands, and the second round was the first Full-scale Thyroid Screening Program to assess any changes.

### 1.2 Group

In addition to those residing in Fukushima Prefecture – including visitors – who were born between 2 April 1992 and 1 April 2011, included in Preliminary Baseline Screening, the Full-scale Thyroid Screening (second- and third-round examinations) also includes those who were born between 2 April 2011 and 1 April 2012.

### 1.3 Implementation Period

The Second Full-scale Screening Program started 1 May 2016 and will cover examinees up to age 20 on a municipality-by-municipality schedule to FY 2017. Thereafter, we will revise the schedule to screen examinees every five years – at ages 25 and 30 for example – to make it easier for examinees to remember when they are due for examination. However, we will endeavor to make sure they do not let more than five years pass between the examinations through age 25.

### 1.4 Responsible Organizations

Fukushima Prefecture commissioned Fukushima Medical University (FMU) to conduct the survey in cooperation with institutions inside and outside Fukushima.

As of 31 March 2017, we provide the primary examination at 59 medical institutions under contract, and try to have more institutions inside Fukushima Prefecture.

One hundred five institutions outside Fukushima Prefecture have agreed to cooperate as of 31 March 2017.

The confirmatory examination has been conducted in Koriyama and Iwaki in Fukushima Prefecture from July 2013, Aizuwakamatsu from August 2014, Date from October 2016, and several institutions outside Fukushima Prefecture from November 2013. There are 36 institutions that provide the examination as of 31 March 2017.

## 1.5 Method

### 1.5-1 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 and A2 test results are recommended for watchful waiting until they undergo the next screening starting from April 2018.

A1: No nodules / cysts

A2: Nodules  $\leq 5.0$  mm or cysts  $\leq 20.0$  mm

#### -Diagnostic Criteria (B)

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

B: Nodules  $\geq 5.1$  mm or cysts  $\geq 20.1$  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 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

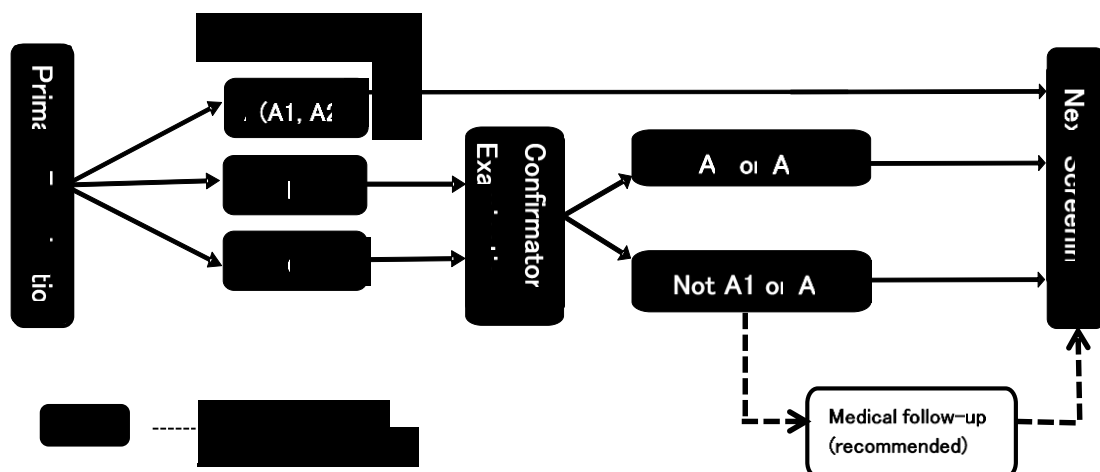


Fig.1 Flow chart

## 1.6 Target Municipalities

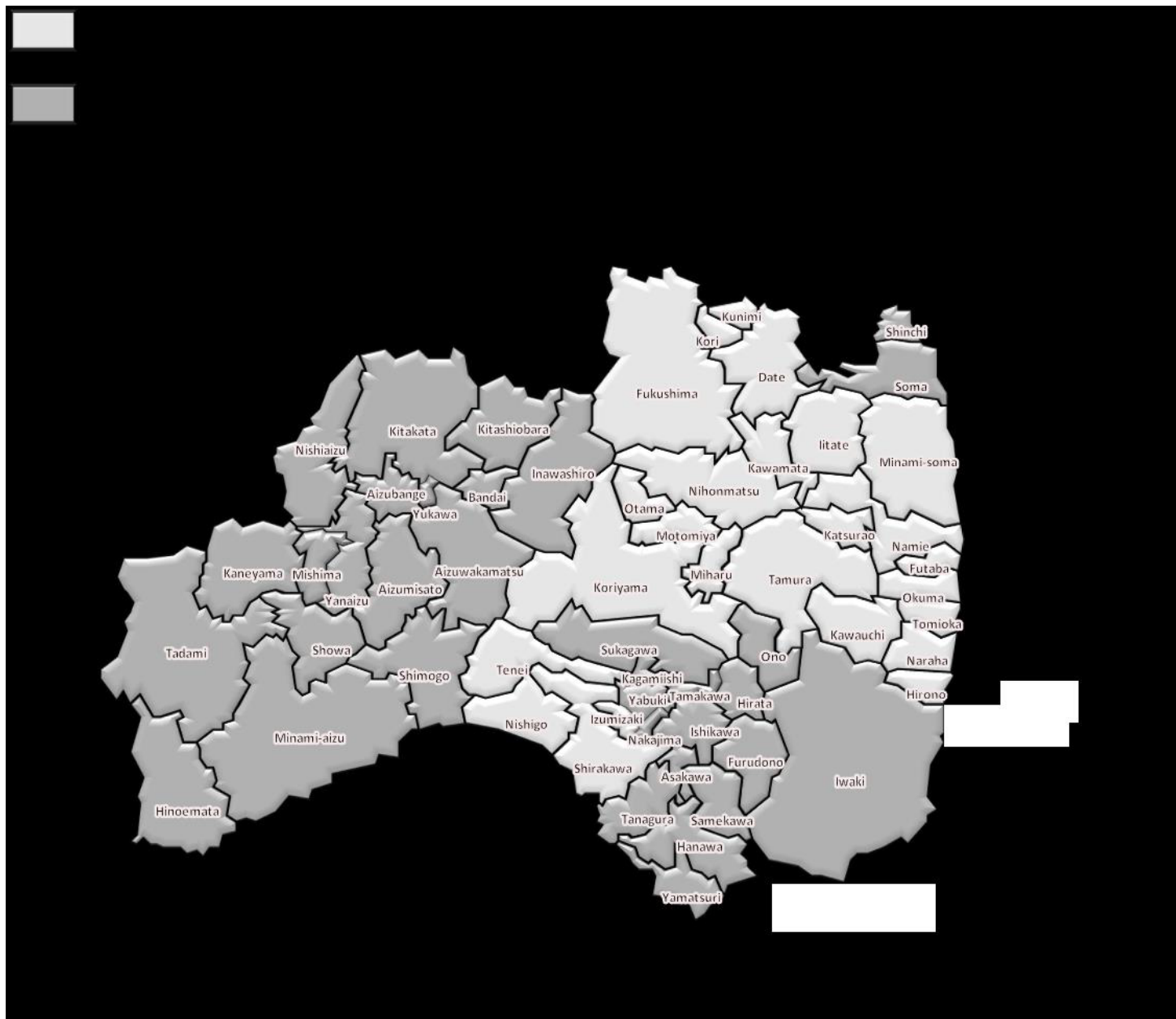


Fig.2 Target Municipalities

## 2. Results as of 31 March 2017

### 2.1 Results of Primary Examination

#### 2.1-1 Progress Report

The Primary Examination started 1 May 2016, and the participation rate is 35.8% (120,596 of 336,616) from 59 municipalities (25 municipalities in FY 2016, and 34 in FY 2017). (See Appendix 1 and 2.)

The results have been returned to 87.9% (105,966) of the participants. (See Appendix 3.)

Those with A1 or A2 test results were 105,275 (99.3%), B were 691 (0.7%), and C was 0.

Table 1. Screening test coverage as of 31 March 2017

	Survey Population  a	Participants		Proportion (%)  c (c/b)	Test results			
		Proportion (%)  b (b/a)	Screened outside Fukushima		Class (%)			
					A		Requiring confirmatory test	
					A1 d (d/c)	A2 e (e/c)	B f (f/c)	C g (g/c)
FY 2016	191,865	116,541 (60.7)	7,311	102,248 ( 87.7)	35,585 (34.8)	66,003 (64.6)	660 (0.6)	0 (0.0)
FY 2017	144,751	4,055 (2.8)	172	3,718 ( 91.7)	1,343 (36.1)	2,344 (63.0)	31 (0.8)	0 (0.0)
Total	336,616	120,596 (35.8)	7,483	105,966 ( 87.9)	36,928 (34.8)	68,347 (64.5)	691 (0.7)	0 (0.0)

Table 2. Number and proportion of children with nodules/cysts as of 31 March 2017

	Number of confirmed screening results a	Number and proportion of children with nodules/cysts			
		Nodules		Cysts	
		≥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	102,248	660 (0.6)	352 (0.3)	0 (0.0)	66,325 (64.9)
FY 2017	3,718	31 (0.8)	29 (0.8)	0 (0.0)	2,356 (63.4)
Total	105,966	691 (0.7)	381 (0.4)	0 (0.0)	68,681 (64.8)

Fractions have been rounded and may not total to 100%.

Excluding examinees born in FY 1992 and FY 1993, now scheduled to undergo testing every five years. Hereafter, these examinees will be accounted for separately.

## 2.1-2 Participation rates by age group

Participation rate of age group 18-23 (age as of 1 April 2016) in target municipalities for FY 2016 was 14.3%.

Participation rate of age group 18-24 (age as of 1 April 2017) in target municipalities for FY 2017 was 2.0%.

Table 3. Participation rates in target municipalities by age group

As of 31 March 2017

		Total	Age group (years)			
FY 2016 target municipalities	Age group (years)		4-7	8-12	13-17	18-23
	Survey population (a)	191,865	36,613	51,001	56,838	47,413
	Participants (b)	116,541	23,736	43,045	42,989	6,771
	Proportion (%) (b/a)	60.7	64.8	84.4	75.6	14.3
FY 2017 target municipalities	Age group (years)		5-7	8-12	13-17	18-24
	Survey population (a)	144,751	19,271	37,165	41,995	46,320
	Participants (b)	4,055	422	861	1,826	946
	Proportion (%) (b/a)	2.8	2.2	2.3	4.3	2.0
Total	Survey population (a)	336,616	55,884	88,166	98,833	93,733
	Participants (b)	120,596	24,158	43,906	44,815	7,717
	Proportion (%) (b/a)	35.8	43.2	49.8	45.3	8.2

## 2.1-3 Comparison with the First Full-scale Thyroid Screening (Second-Round Examination)

Among 99,317 participants who were diagnosed as A1 or A2 in the First Full-scale Thyroid Screening, 98,994 (99.7%) had A1 or A2 results, and 323 (0.3%) were diagnosed as B from the Second Full-scale Thyroid Screening Program.

Among 592 participants who were diagnosed as B in the First Full-scale Thyroid Screening, 264 (44.6%) had A1 or A2 results, and 328 (55.4%) were diagnosed as B from the Second Full-scale Thyroid Screening Program.

Table 4. Comparison with the First Full-scale Thyroid Screening

As of 31 March 2017

			Number of test results of the First Full-scale Thyroid Screening* (%) a	Results of the Second Full-scale Thyroid Screening			
				A		B d d/a (%)	C e e/a (%)
				A1 b b/a (%)	A2 c c/a (%)		
Results of the First Full-scale Thyroid Screening	A	A1	40,405 (100.0)	28,746 ( 71.1)	11,591 ( 28.7)	68 ( 0.2)	0 ( 0.0)
		A2	58,912 (100.0)	5,523 ( 9.4)	53,134 ( 90.2)	255 ( 0.4)	0 ( 0.0)
	B		592 (100.0)	45 ( 7.6)	219 ( 37.0)	328 ( 55.4)	0 ( 0.0)
	C		0 (0.0)	0 ( 0.0)	0 ( 0.0)	0 ( 0.0)	0 ( 0.0)
	Non-participants		6,057 (100.0)	2,614 ( 43.2)	3,403 ( 56.2)	40 ( 0.7)	0 ( 0.0)
Total			105,966 (100.0)	36,928 ( 34.8)	68,347 ( 64.5)	691 ( 0.7)	0 ( 0.0)

\* Results of the participants with confirmed test results of the Second Full-scale Thyroid Screening.

This is not the breakdown of the total (270,497) of confirmed screening results from the First Full-scale Thyroid Screening.



## 2.2 Results of Confirmatory Examination

### 2.2-1 Progress Report

Thus far, 332 of 691 people (48.0%) recommended to have further testing (started in October 2016) have acted on that recommendation. Of those, 225 (67.8%) have received results, as follows (see also Appendix 5 for results according to area):

Of 225 participants, 24 (A1 and A2 results from Table 5) were confirmed to meet A1 or A2 diagnostic criteria (including those with other thyroid conditions), and so were advised to take their next regularly scheduled examination (10.7%).

Those with neither A1 nor A2 results (from Table 5) were 201 (89.3%), and they were recommended to have medical follow-up after 6 to 12-months, or were advised to take their next regularly scheduled examination, though beyond the threshold level of A2.

Table 5. Confirmatory testing coverage and results as of 31 March 2017

	Number of those requiring confirmatory test  a	Participants Proportion (%)  b (b/a)	Confirmatory test coverage (%)  c (c/b)	Confirmed test results			
				Next screening advised		Follow-up advised	
				A1 d (d/c)	A2 e (e/c)	f (f/c)	Cytology g (g/f)
FY 2016	660	323 (48.9)	222 (68.7)	1 (0.5)	23 (10.4)	198 (89.2)	10 (5.1)
FY 2017	31	9 (29.0)	3 (33.3)	0 (0.0)	0 (0.0)	3 (100.0)	1 (33.3)
Total	691	332 (48.0)	225 (67.8)	1 (0.4)	23 (10.2)	201 (89.3)	11 (5.5)

### 2.2-2 Results of Fine Needle Aspiration Biopsy and Cytology (FNAC)

Among those who underwent FNAC, 4 had nodules classified as suspicious or malignant.

Two of them were male, and 2 were female. Age at the time of the confirmatory testing ranged from 13 to 18 years (mean age: 15.5  $\pm$  2.1 years). The minimum and maximum tumor diameters were 8.7 and 17.5 mm. Mean tumor diameter was 13.4  $\pm$  3.6 mm.

Table 6. Results of FNAC

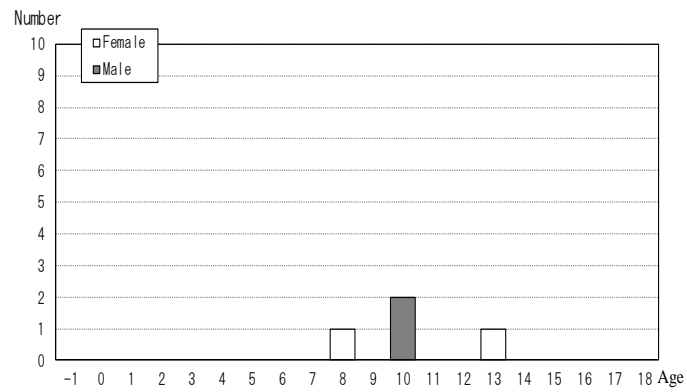
Target municipalities in FY 2016

Suspicious or malignant	4 *
Male to female ratio	2: 2
Mean age (SD, min-max)	15.5 (2.1, 13-18) 10.3 (2.1, 8-13) at the time of the disaster
Mean tumor size	13.4 mm (3.6 mm, 8.7-17.5 mm)

Target municipalities in FY 2017

Suspicious or malignant	0 *
-------------------------	-----

### 2.2-3 Suspicious or malignant cases per FNAC by age and sex



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

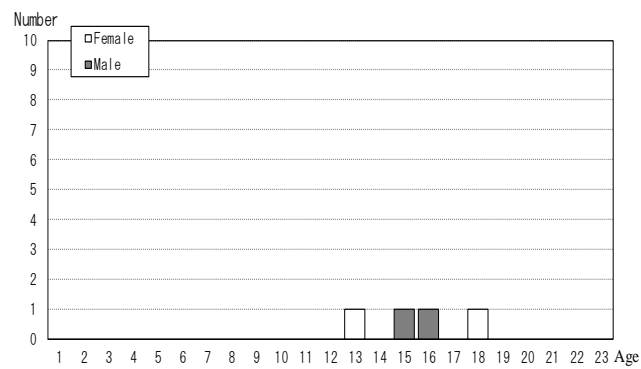


Fig. 4 Age as the date of confirmatory examination

## 2.2-4 Suspicious or malignant cases per FNAC by estimated radiation dose

Two (50.0%) of the 4 people participated in the Basic Survey (radiation dose estimates), and 2 received the results. The highest effective dose documented was 1.5 mSv.

Table 7. A breakdown of dose estimates for participants of the Basic Survey

As of 31 March 2017

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	0	0	0	0	0	0	0	0
1-1.9	0	0	1	1	0	0	0	0	1	1
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	1	1	0	0	0	0	1	1

Estimates are based on effective external radiation doses.

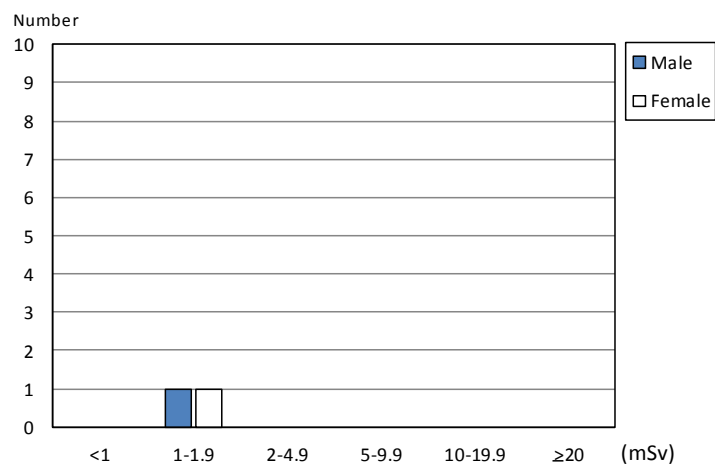


Fig. 5 Effective dose of the respondents

## 2.2-5 Blood and urinary iodine test results as of 31 March 2017

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)	≤32.7	<28.0	<16.0
4 suspicious or malignant	1.2 ± 0.2 (0.0%)	3.5 ± 0.8 (25.0%)	1.8 ± 0.5 (25.0%)	19.9 ± 14.0 (0.0%)	— (25.0%)	— (25.0%)
Other 217	1.2 ± 0.1 (4.1%)	3.5 ± 0.4 (3.7%)	1.3 ± 0.8 (7.4%)	18.0 ± 22.7 (8.3%)	— (8.3%)	— (10.6%)

Table 9. Urinary iodine (μg/day)

	Minimum	25th percentile	Median	75th percentile	Maximum
4 suspicious or malignant	69	91.5	193.5	375	424
Other 218	51	113.3	177.5	317.8	8910

- 1) FT4: Free Thyroxine; higher among patients with thyrotoxicosis (such as Graves' disease) and lower with hypothyroidism (such as Hashimoto's thyroiditis).
- 2) FT3: Free Triiodothyronine; 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.  
Laboratory reference range revised to ≤33.7 ng/mL as of 30 March 2015.
- 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.

## 2.2-6 Confirmatory test results by area as of 31 March 2017

The proportion of findings suspicious for malignancy or actually malignant was 0.01% in 13 municipalities in the nationally designated evacuation zones, 0% in Nakadori, Hamadori, and Aizu.

Table 10. Confirmatory test results by area

	Number of those screened	Participants who required confirmatory test	Proportion who required confirmatory test (%)	Number who underwent confirmatory test	Suspicious or malignant cases	Proportion of suspicious or malignant cases (%)
13 municipalities <sup>1</sup>	22,764	168	0.7	107	2	0.01
Nakadori <sup>2</sup>	96,170	511	0.5	218	2	0.00
Hamadori <sup>3</sup>	976	6	0.6	4	0	0.00
Aizu <sup>4</sup>	686	6	0.9	3	0	0.00
Total	120,596	691	0.6	332	4	0.00

Priority is given to those in urgent clinical need.

- 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

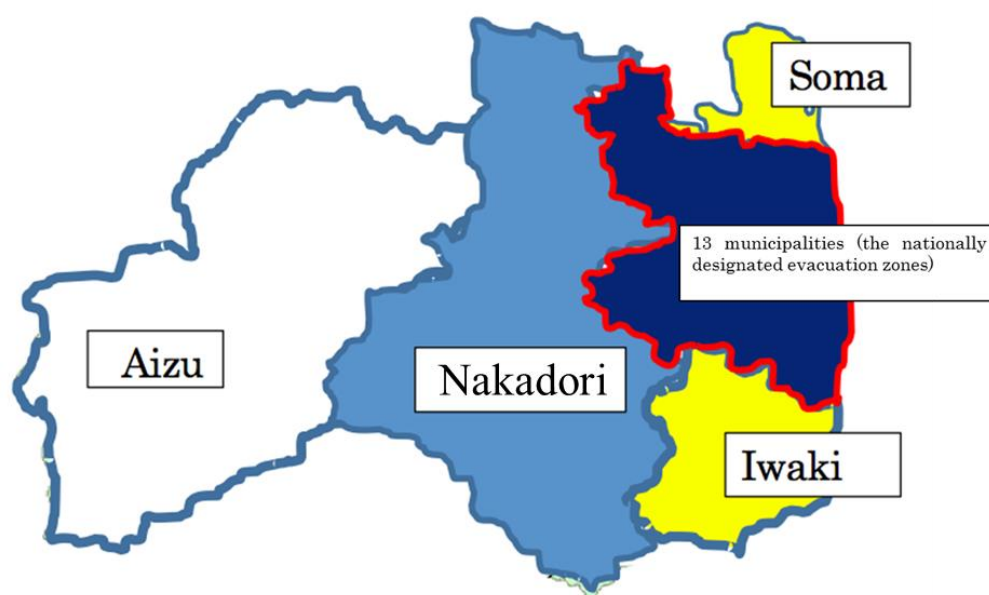


Fig.6 Regional division

## **2.3 Mental Health Care**

### **2.3-1 Support for participants of primary examination**

Since July 2015, we offer person-to-person explanations to participants at public venues where primary examinations take place. After an examination, a medical doctor explains the results, using an online video link to private consultation booths at the venue. As of 31 March 2017, 21,144 (81.0%) of 26,095 participants visited the consultation booth. When the booth cannot be set up at school, phone support or briefing sessions at schools are offered as an alternative.

### **2.3-2 Support for participants of confirmatory examination**

We set up a support team for participants of the confirmatory examination to address their anxiety and concerns, including online support.

Since the full-scale thyroid screening started, 891 participants (311 males and 580 females) have received support as of 31 March 2017. The number of consultations given to them was 1,834 in total. Of these, 1,068 (58.2%) received support services around their first examination and 717 (39.1%) around any subsequent exam – including 122 (6.7%) around FNAC – and 49 (2.7%) when giving informed consent.

In cooperation with teams of medical staff at hospitals, we offer similar services to those who are recommended for follow-up provided by health insurance.

## Appendix 1

Thyroid Ultrasound Examination (TUE) coverage by municipality

As of 31 March 2017

	Survey Population a	Participants b		Proportion (%) b/a	Number and proportion of participants by age group				Participants living outside Fukushima c	Proportion (%) c/b
		Screened outside Fukushima 3)								
			4-9		10-14	15-19	≥20			
Screening coverage by municipality in FY 2016										
Kawamata	2,142	1,388	30	64.8	402	544	403	39	37	2.7
					29.0	39.2	29.0	2.8		
Namie	3,314	1,421	466	42.9	430	460	433	98	524	36.9
					30.3	32.4	30.5	6.9		
Iitate	987	578	21	58.6	162	255	147	14	30	5.2
					28.0	44.1	25.4	2.4		
Minami-soma	11,540	6,115	1,129	53.0	1,933	2,421	1,525	236	1,197	19.6
					31.6	39.6	24.9	3.9		
Date	10,208	6,984	221	68.4	2,004	2,657	2,070	253	210	3.0
					28.7	38.0	29.6	3.6		
Tamura	6,344	3,868	90	61.0	1,228	1,568	995	77	89	2.3
					31.7	40.5	25.7	2.0		
Hirono	975	298	56	30.6	109	117	56	16	49	16.4
					36.6	39.3	18.8	5.4		
Naraha	1,281	272	87	21.2	92	112	57	11	92	33.8
					33.8	41.2	21.0	4.0		
Tomioka	2,750	747	259	27.2	190	250	248	59	281	37.6
					25.4	33.5	33.2	7.9		
Kawauchi	297	140	13	47.1	37	65	37	1	14	10.0
					26.4	46.4	26.4	0.7		
Okuma	2,259	607	240	26.9	213	216	146	32	266	43.8
					35.1	35.6	24.1	5.3		
Futaba	1,133	244	96	21.5	81	92	63	8	108	44.3
					33.2	37.7	25.8	3.3		
Katsurao	211	102	3	48.3	30	41	23	8	4	3.9
					29.4	40.2	22.5	7.8		
Fukushima	49,340	33,138	1,872	67.2	10,007	11,963	9,954	1,214	2,016	6.1
					30.2	36.1	30.0	3.7		
Nihonmatsu	9,308	6,236	194	67.0	1,926	2,427	1,714	169	192	3.1
					30.9	38.9	27.5	2.7		
Motomiya	5,615	3,815	114	67.9	1,288	1,431	1,001	95	107	2.8
					33.8	37.5	26.2	2.5		
Otama	1,468	1,036	32	70.6	354	404	248	30	35	3.4
					34.2	39.0	23.9	2.9		
Koriyama	59,467	34,983	2,045	58.8	10,421	13,818	9,593	1,151	2,398	6.9
					29.8	39.5	27.4	3.3		
Kori	1,853	1,333	35	71.9	420	499	364	50	30	2.3
					31.5	37.4	27.3	3.8		
Kunimi	1,405	998	24	71.0	271	381	301	45	21	2.1
					27.2	38.2	30.2	4.5		
Tenei	966	517	13	53.5	164	241	95	17	11	2.1
					31.7	46.6	18.4	3.3		
Shirakawa	11,351	6,978	168	61.5	2,124	2,751	1,898	205	206	3.0
					30.4	39.4	27.2	2.9		
Nishigo	3,722	2,348	67	63.1	734	915	614	85	81	3.4
					31.3	39.0	26.1	3.6		
Izumizaki	1,163	714	9	61.4	227	299	168	20	13	1.8
					31.8	41.9	23.5	2.8		
Miharu	2,766	1,681	27	60.8	434	617	551	79	31	1.8
					25.8	36.7	32.8	4.7		
Subtotal	191,865	116,541	7,311	60.7	35,281	44,544	32,704	4,012	8,042	6.9
					30.3	38.2	28.1	3.4		

1) Number of participants. 2) Number of participants in the age group/Number of participants.

3) Number of participants who underwent the test outside Fukushima, as of 28 February 2017.

Fractions have been rounded and may not total to 100%. Ages are at the time when the participants underwent the testing (the Second Full-scale Thyroid Screening).

## Thyroid Ultrasound Examination (TUE) coverage by municipality

As of 31 March 2017

	Survey Population	Participants		Proportion (%)	Number and proportion of participants by age group				Participants living outside Fukushima	Proportion (%)
		Screened outside Fukushima 3)	b/a		4-9	10-14	15-19	≥20		
a	b								c	c/b

Screening coverage by municipality in FY 2017										
Iwaki	56,791	701	88	1.2	243	188	208	62	77	11.0
Sukagawa	14,108	975	11	6.9	34.7	26.8	29.7	8.8	15	1.5
					145	142	676	12		
Soma	6,255	242	5	3.9	14.9	14.6	69.3	1.2	3	1.2
					62	31	143	6		
Kagamiishi	2,416	160	1	6.6	25.6	12.8	59.1	2.5	3	1.9
					14	14	130	2		
Shinchi	1,319	33	3	2.5	8.8	8.8	81.3	1.3	3	9.1
					5	4	23	1		
Nakajima	972	105	1	10.8	15.2	12.1	69.7	3.0	2	1.9
					12	10	82	1		
Yabuki	3,042	269	6	8.8	11.4	9.5	78.1	1.0	6	2.2
					41	26	200	2		
Ishikawa	2,532	148	1	5.8	15.2	9.7	74.3	0.7	5	3.4
					26	17	104	1		
Yamatsuri	931	37	0	4.0	17.6	11.5	70.3	0.7	0	0.0
					6	4	27	0		
Asakawa	1,210	89	1	7.4	16.2	10.8	73.0	0.0	3	3.4
					7	6	74	2		
Hirata	1,101	72	0	6.5	7.9	6.7	83.1	2.2	0	0.0
					16	15	41	0		
Tanagura	2,748	162	3	5.9	22.2	20.8	56.9	0.0	3	1.9
					22	22	115	3		
Hanawa	1,492	81	0	5.4	13.6	13.6	71.0	1.9	3	3.7
					6	9	65	1		
Samegawa	616	33	1	5.4	7.4	11.1	80.2	1.2	3	9.1
					7	2	24	0		
Ono	1,716	168	5	9.8	21.2	6.1	72.7	0.0	3	1.8
					20	18	130	0		
Tamakawa	1,210	64	0	5.3	11.9	10.7	77.4	0.0	0	0.0
					11	10	43	0		
Furudono	945	30	1	3.2	17.2	15.6	67.2	0.0	1	3.3
					7	3	19	1		
Hinoemata	94	2	0	2.1	23.3	10.0	63.3	3.3	0	0.0
					0	0	2	0		
Minami-aizu	2,512	50	0	2.0	0.0	0.0	100.0	0.0	2	4.0
					12	6	30	2		
Kaneyama	177	5	0	2.8	24.0	12.0	60.0	4.0	0	0.0
					1	4	0	0		
Showa	127	1	0	0.8	20.0	80.0	0.0	0.0	0	0.0
					0	1	0	0		
Mishima	174	0	0	0.0	0.0	100.0	0.0	0.0	0	0.0
					0	0	0	0		
Shimogo	870	11	0	1.3	0	0	0	0	0	0.0
					6	1	4	0		
Kitakata	8,077	88	9	1.1	54.5	9.1	36.4	0.0	9	10.2
					26	29	24	9		
Nishiaizu	885	7	1	0.8	29.5	33.0	27.3	10.2	1	14.3
					2	0	4	1		
Tadami	641	14	0	2.2	28.6	0.0	57.1	14.3	0	0.0
					6	3	5	0		
Inawashiro	2,383	98	0	4.1	42.9	21.4	35.7	0.0	6	6.1
					29	11	58	0		
Bandai	555	1	0	0.2	29.6	11.2	59.2	0.0	0	0.0
					0	0	1	0		
Kitashiobara	502	6	0	1.2	0.0	0.0	100.0	0.0	0	0.0
					0	0	6	0		
Aizumisato	3,311	25	1	0.8	0	0	9	0	1	4.0
					9	7	36.0	28.0		
Aizubange	2,790	39	4	1.4	12	10	11	6	4	10.3
					30.8	25.6	28.2	15.4		
Yanaizu	537	1	0	0.2	0	0	1	0	0	0.0
					0.0	0.0	100.0	0.0		
Aizuwakamatsu	21,106	331	30	1.6	130	81	97	23	30	9.1
					39.3	24.5	29.3	6.9		
Yugawa	606	7	0	1.2	0	0	7	0	0	0.0
					0.0	0.0	100.0	0.0		
Subtotal	144,751	4,055	172	2.8	883	674	2,363	135	183	4.5
					21.8	16.6	58.3	3.3		

Total	336,616	120,596	7,483	35.8	36,164	45,218	35,067	4,147	8,225	6.8
					30.0	37.5	29.1	3.4		



## Appendix 2

### Thyroid Ultrasound Examination (TUE) coverage by prefecture

As of 28 February 2017

Prefecture	Number of test venues	Participants*	Prefecture	Number of test venues	Participants*	Prefecture	Number of test venues	Participants*
Hokkaido	6	<b>201</b>	Fukui	1	<b>14</b>	Hiroshima	1	<b>8</b>
Aomori	1	<b>92</b>	Yamanashi	2	<b>61</b>	Yamaguchi	1	<b>17</b>
Iwate	3	<b>195</b>	Nagano	2	<b>66</b>	Tokushima	1	<b>3</b>
Miyagi	2	<b>1,773</b>	Gifu	1	<b>24</b>	Kagawa	1	<b>10</b>
Akita	1	<b>111</b>	Shizuoka	2	<b>56</b>	Ehime	1	<b>6</b>
Yamagata	3	<b>440</b>	Aichi	3	<b>130</b>	Kochi	1	<b>12</b>
Ibaraki	4	<b>424</b>	Mie	1	<b>14</b>	Fukuoka	3	<b>51</b>
Tochigi	7	<b>484</b>	Shiga	1	<b>13</b>	Saga	1	<b>5</b>
Gunma	2	<b>131</b>	Kyoto	3	<b>67</b>	Nagasaki	2	<b>15</b>
Saitama	2	<b>309</b>	Osaka	7	<b>140</b>	Kumamoto	1	<b>20</b>
Chiba	4	<b>299</b>	Hyogo	1	<b>65</b>	Oita	1	<b>5</b>
Tokyo	12	<b>1,091</b>	Nara	2	<b>13</b>	Miyazaki	1	<b>24</b>
Kanagawa	5	<b>600</b>	Wakayama	1	<b>5</b>	Kagoshima	1	<b>13</b>
Niigata	2	<b>370</b>	Tottori	1	<b>6</b>	Okinawa	1	<b>29</b>
Toyama	1	<b>9</b>	Shimane	1	<b>10</b>			
Ishikawa	1	<b>29</b>	Okayama	3	<b>23</b>			
						<b>Total</b>	<b>105</b>	<b>7,483</b>

\* Participants who underwent testing at venues outside Fukushima carried out either by Fukushima Medical University staff (once in Kanagawa) or by local specialists.

## Appendix 3

Results of primary examination by municipality

As of 31 March 2017

	Participants a	Confirmed results b Proportion (%) b/a (%)	Number by test results				Nodules		Cysts	
			Proportion (%)				Proportion (%)		Proportion (%)	
			A		B	C	Proportion (%)		Proportion (%)	
			A1	A2			≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm

Screening coverage by municipality in FY 2016

Kawamata	1,388	1,380	478	894	8	0	8	6	0	898
		99.4	34.6	64.8	0.6	0.0	0.6	0.4	0.0	65.1
Nanie	1,421	1,329	448	869	12	0	12	7	0	872
		93.5	33.7	65.4	0.9	0.0	0.9	0.5	0.0	65.6
Iitate	578	573	191	378	4	0	4	2	0	378
		99.1	33.3	66.0	0.7	0.0	0.7	0.3	0.0	66.0
Minami-soma	6,115	6,044	2,168	3,832	44	0	44	28	0	3,850
		98.8	35.9	63.4	0.7	0.0	0.7	0.5	0.0	63.7
Date	6,984	6,959	2,417	4,497	45	0	45	23	0	4,520
		99.6	34.7	64.6	0.6	0.0	0.6	0.3	0.0	65.0
Tamura	3,868	3,793	1,386	2,369	38	0	38	22	0	2,387
		98.1	36.5	62.5	1.0	0.0	1.0	0.6	0.0	62.9
Hirono	298	297	98	197	2	0	2	1	0	198
		99.7	33.0	66.3	0.7	0.0	0.7	0.3	0.0	66.7
Naraha	272	262	99	163	0	0	0	0	0	163
		96.3	37.8	62.2	0.0	0.0	0.0	0.0	0.0	62.2
Tomioka	747	651	231	414	6	0	6	0	0	416
		87.1	35.5	63.6	0.9	0.0	0.9	0.0	0.0	63.9
Kawauchi	140	124	34	89	1	0	1	0	0	90
		88.6	27.4	71.8	0.8	0.0	0.8	0.0	0.0	72.6
Okuma	607	549	181	361	7	0	7	3	0	361
		90.4	33.0	65.8	1.3	0.0	1.3	0.5	0.0	65.8
Futaba	244	220	94	125	1	0	1	0	0	125
		90.2	42.7	56.8	0.5	0.0	0.5	0.0	0.0	56.8
Katsurao	102	78	27	51	0	0	0	1	0	51
		76.5	34.6	65.4	0.0	0.0	0.0	1.3	0.0	65.4
Fukushima	33,138	32,892	11,552	21,161	179	0	179	97	0	21,251
		99.3	35.1	64.3	0.5	0.0	0.5	0.3	0.0	64.6
Nihonmatsu	6,236	6,186	2,203	3,939	44	0	44	22	0	3,963
		99.2	35.6	63.7	0.7	0.0	0.7	0.4	0.0	64.1
Motomiya	3,815	3,754	1,294	2,444	16	0	16	6	0	2,455
		98.4	34.5	65.1	0.4	0.0	0.4	0.2	0.0	65.4
Otama	1,036	1,028	362	660	6	0	6	3	0	664
		99.2	35.2	64.2	0.6	0.0	0.6	0.3	0.0	64.6
Koriyama	34,983	22,335	7,633	14,529	173	0	173	91	0	14,617
		63.8	34.2	65.1	0.8	0.0	0.8	0.4	0.0	65.4
Kori	1,333	1,329	482	837	10	0	10	3	0	844
		99.7	36.3	63.0	0.8	0.0	0.8	0.2	0.0	63.5
Kunimi	998	997	330	659	8	0	8	2	0	664
		99.9	33.1	66.1	0.8	0.0	0.8	0.2	0.0	66.6
Tenei	517	505	172	327	6	0	6	1	0	331
		97.7	34.1	64.8	1.2	0.0	1.2	0.2	0.0	65.5
Shirakawa	6,978	6,885	2,389	4,464	32	0	32	18	0	4,481
		98.7	34.7	64.8	0.5	0.0	0.5	0.3	0.0	65.1
Nishigo	2,348	2,316	752	1,556	8	0	8	6	0	1,558
		98.6	32.5	67.2	0.3	0.0	0.3	0.3	0.0	67.3
Izumizaki	714	699	242	457	0	0	0	5	0	456
		97.9	34.6	65.4	0.0	0.0	0.0	0.7	0.0	65.2
Miharu	1,681	1,063	322	731	10	0	10	5	0	732
		63.2	30.3	68.8	0.9	0.0	0.9	0.5	0.0	68.9
Subtotal	116,541	102,248	35,585	66,003	660	0	660	352	0	66,325
		87.7	34.8	64.6	0.6	0.0	0.6	0.3	0.0	64.9

Fractions have been rounded and may not total to 100%.

	Participants a	Confirmed results b Proportion (%) b/a (%)	Number by test results				Nodules		Cysts	
			Proportion (%)				Proportion (%)		Proportion (%)	
			A		B	C				
			A1	A2			≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm
Screening coverage by municipality in FY 2017										
Iwaki	701	624	228	391	5	0	5	2	0	394
		89.0	36.5	62.7	0.8	0.0	0.8	0.3	0.0	63.1
Sukagawa	975	879	314	559	6	0	6	8	0	560
		90.2	35.7	63.6	0.7	0.0	0.7	0.9	0.0	63.7
Soma	242	235	102	132	1	0	1	2	0	133
		97.1	43.4	56.2	0.4	0.0	0.4	0.9	0.0	56.6
Kagamiishi	160	153	45	108	0	0	0	1	0	108
		95.6	29.4	70.6	0.0	0.0	0.0	0.7	0.0	70.6
Shinchi	33	30	14	16	0	0	0	0	0	16
		90.9	46.7	53.3	0.0	0.0	0.0	0.0	0.0	53.3
Nakajima	105	103	38	64	1	0	1	0	0	64
		98.1	36.9	62.1	1.0	0.0	1.0	0.0	0.0	62.1
Yabuki	269	256	101	154	1	0	1	1	0	154
		95.2	39.5	60.2	0.4	0.0	0.4	0.4	0.0	60.2
Ishikawa	148	140	62	77	1	0	1	0	0	77
		94.6	44.3	55.0	0.7	0.0	0.7	0.0	0.0	55.0
Yamatsuri	37	36	14	22	0	0	0	0	0	22
		97.3	38.9	61.1	0.0	0.0	0.0	0.0	0.0	61.1
Asakawa	89	85	30	51	4	0	4	1	0	55
		95.5	35.3	60.0	4.7	0.0	4.7	1.2	0.0	64.7
Hirata	72	57	14	43	0	0	0	0	0	43
		79.2	24.6	75.4	0.0	0.0	0.0	0.0	0.0	75.4
Tanagura	162	159	49	108	2	0	2	2	0	109
		98.1	30.8	67.9	1.3	0.0	1.3	1.3	0.0	68.6
Hanawa	81	80	20	58	2	0	2	1	0	58
		98.8	25.0	72.5	2.5	0.0	2.5	1.3	0.0	72.5
Samegawa	33	32	12	20	0	0	0	1	0	20
		97.0	37.5	62.5	0.0	0.0	0.0	3.1	0.0	62.5
Ono	168	158	49	107	2	0	2	2	0	109
		94.0	31.0	67.7	1.3	0.0	1.3	1.3	0.0	69.0
Tamakawa	64	60	20	40	0	0	0	0	0	40
		93.8	33.3	66.7	0.0	0.0	0.0	0.0	0.0	66.7
Furudono	30	30	12	18	0	0	0	0	0	18
		100.0	40.0	60.0	0.0	0.0	0.0	0.0	0.0	60.0
Hinoemata	2	2	0	2	0	0	0	0	0	2
		100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0
Minami-aizu	50	47	19	28	0	0	0	1	0	27
		94.0	40.4	59.6	0.0	0.0	0.0	2.1	0.0	57.4
Kaneyama	5	2	1	1	0	0	0	0	0	1
		40.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0
Showa	1	1	1	0	0	0	0	0	0	0
		100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mishima	0	0	0	0	0	0	0	0	0	0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shimogo	11	9	3	6	0	0	0	0	0	6
		81.8	33.3	66.7	0.0	0.0	0.0	0.0	0.0	66.7
Kitakata	88	74	31	43	0	0	0	1	0	42
		84.1	41.9	58.1	0.0	0.0	0.0	1.4	0.0	56.8
Nishiaizu	7	7	2	5	0	0	0	0	0	5
		100.0	28.6	71.4	0.0	0.0	0.0	0.0	0.0	71.4
Tadami	14	12	2	9	1	0	1	0	0	10
		85.7	16.7	75.0	8.3	0.0	8.3	0.0	0.0	83.3
Inawashiro	98	93	34	57	2	0	2	2	0	58
		94.9	36.6	61.3	2.2	0.0	2.2	2.2	0.0	62.4
Bandai	1	1	0	1	0	0	0	0	0	1
		100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0
Kitashiobara	6	6	2	4	0	0	0	1	0	3
		100.0	33.3	66.7	0.0	0.0	0.0	16.7	0.0	50.0
Aizumisato	25	22	5	17	0	0	0	0	0	17
		88.0	22.7	77.3	0.0	0.0	0.0	0.0	0.0	77.3
Aizubange	39	37	15	22	0	0	0	0	0	22
		94.9	40.5	59.5	0.0	0.0	0.0	0.0	0.0	59.5
Yanaizu	1	1	1	0	0	0	0	0	0	0
		100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aizuwakamatsu	331	280	100	177	3	0	3	3	0	178
		84.6	35.7	63.2	1.1	0.0	1.1	1.1	0.0	63.6
Yugawa	7	7	3	4	0	0	0	0	0	4
		100.0	42.9	57.1	0.0	0.0	0.0	0.0	0.0	57.1
Subtotal	4,055	3,718	1,343	2,344	31	0	31	29	0	2,356
		91.7	36.1	63.0	0.8	0.0	0.8	0.8	0.0	63.4
Total	120,596	105,966	36,928	68,347	691	0	691	381	0	68,681
		87.9	34.8	64.5	0.7	0.0	0.7	0.4	0.0	64.6

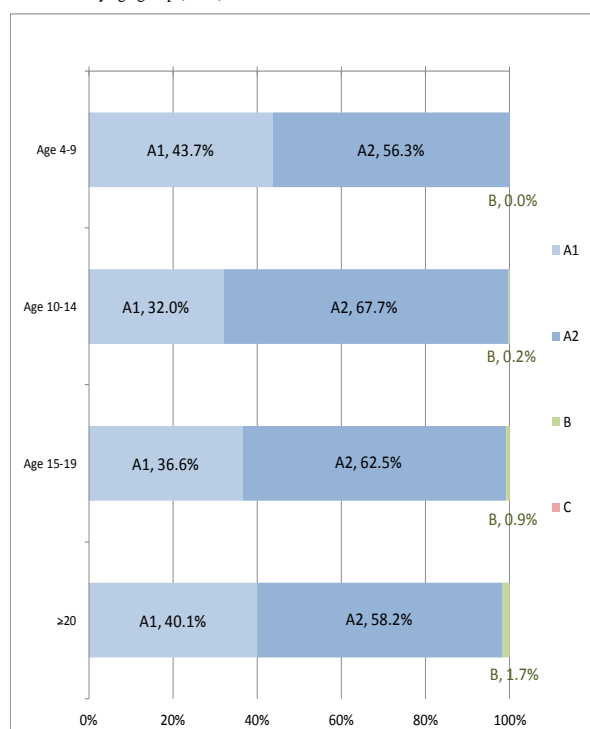
## Appendix 4

### 1. Thyroid Ultrasound Examination results by age and sex

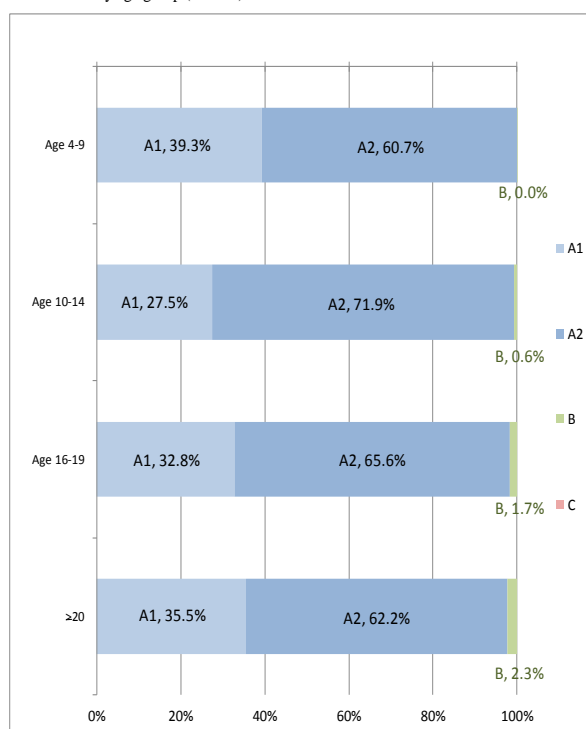
As of 31 March 2017

Ages	A						B			C			Total		
	A1			A2			Male	Female	Total	Male	Female	Total	Male	Female	Total
	Male	Female	Total	Male	Female	Total									
4-9	6,479	5,523	12,002	8,343	8,538	16,881	7	4	11	0	0	0	14,829	14,065	28,894
10-14	6,432	5,256	11,688	13,595	13,762	27,357	49	122	171	0	0	0	20,076	19,140	39,216
15-19	6,259	5,592	11,851	10,690	11,184	21,874	149	285	434	0	0	0	17,098	17,061	34,159
≥20	652	735	1,387	947	1,288	2,235	27	48	75	0	0	0	1,626	2,071	3,697
Total	19,822	17,106	36,928	33,575	34,772	68,347	232	459	691	0	0	0	53,629	52,337	105,966

Test results by age group (Male)



Test results by age group (Female)



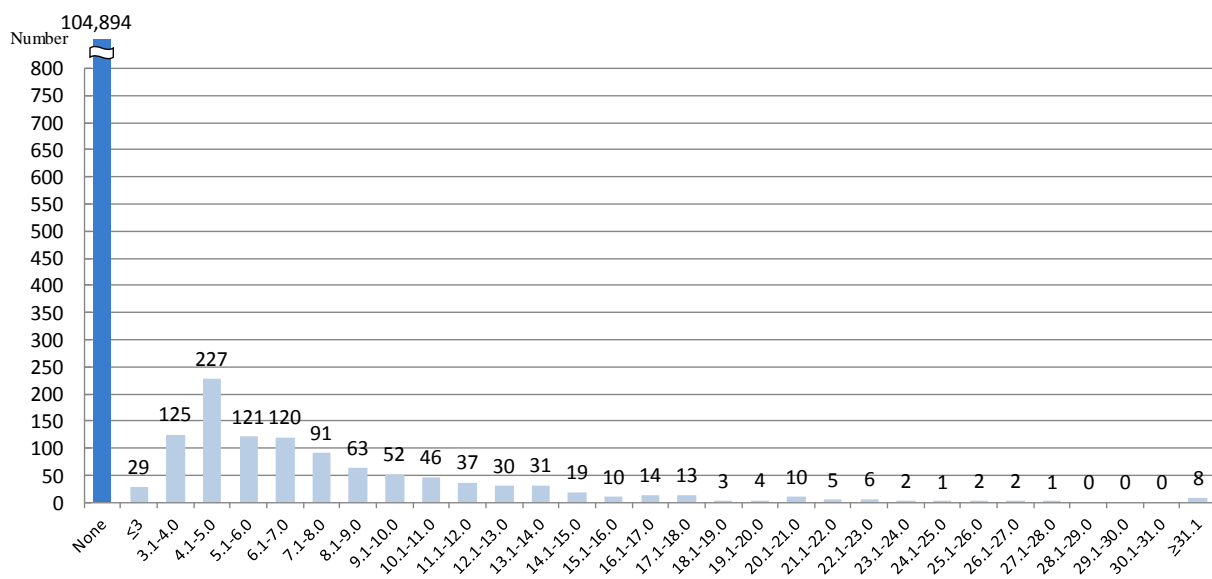
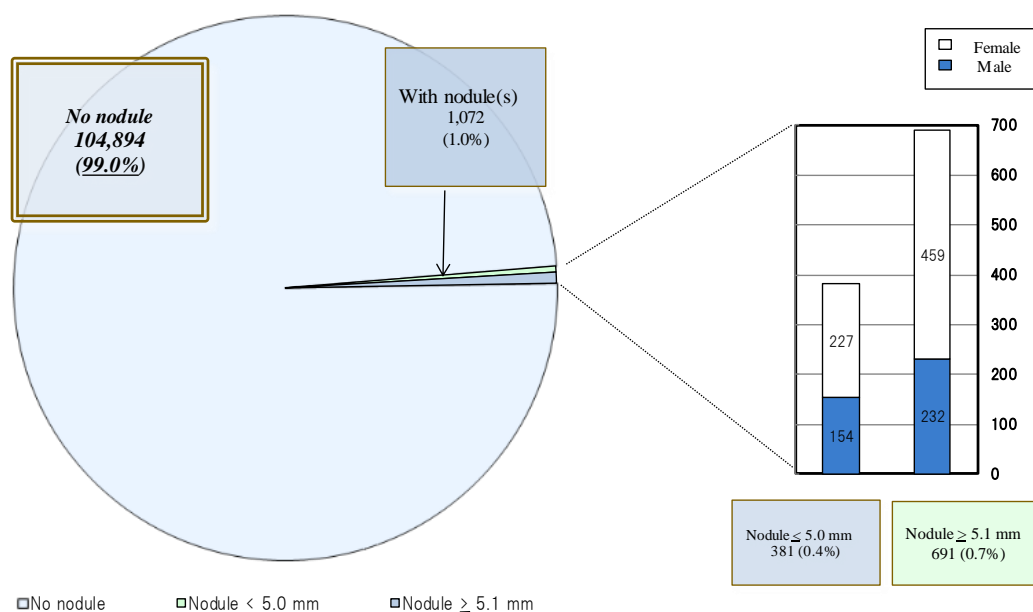
Percentages have been rounded and may not total to 100%.

Ages are at the time when the participants underwent the testing (the Second Full-scale Thyroid Screening).

## 2. Nodule size

As of 31 March 2017

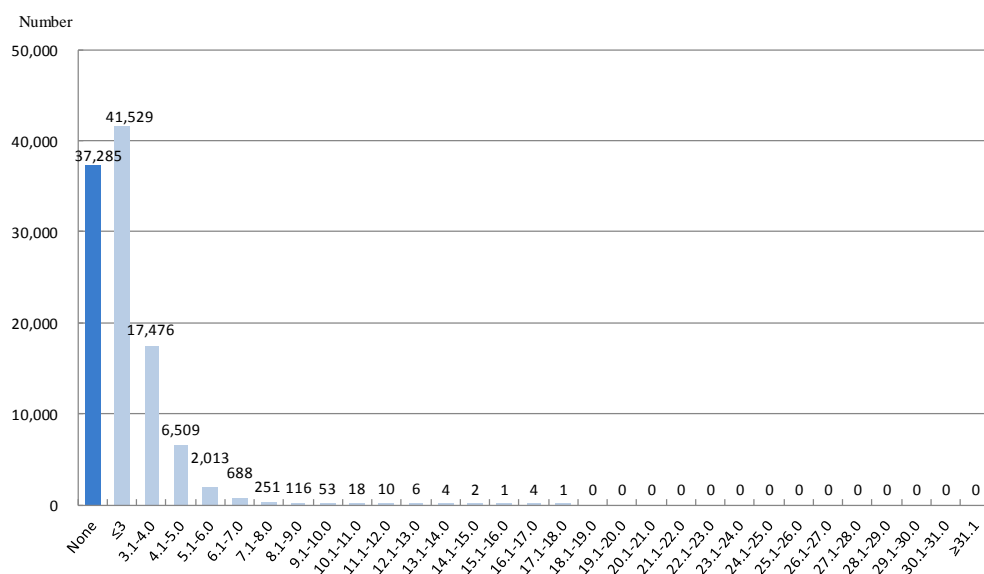
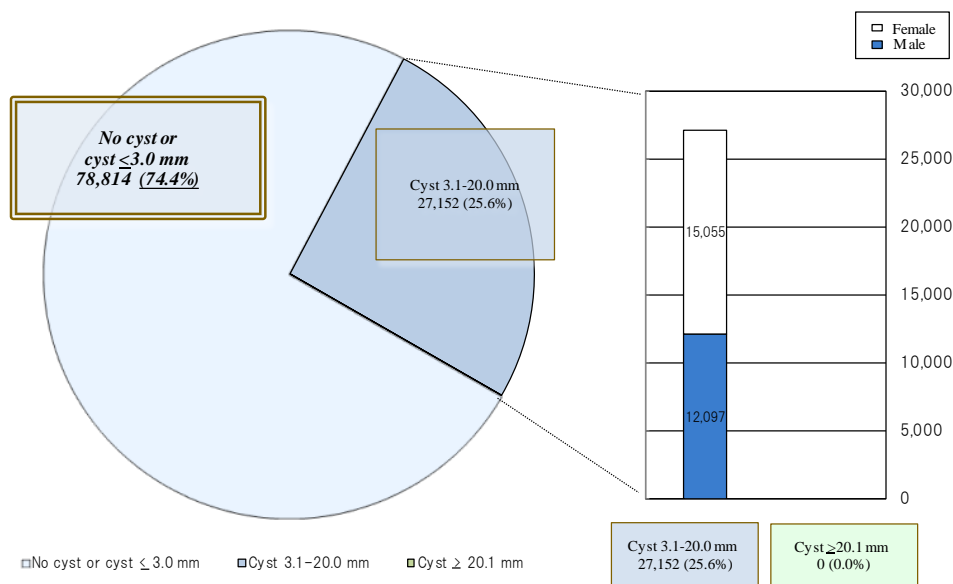
Nodule size	Total	Gender		Class	Proportion
		Male	Female		
None	104,894	53,243	51,651	A 1	99.0%
≤ 3.0 mm	29	13	16	A 2	0.4%
3.1-5.0 mm	352	141	211		
5.1-10.0 mm	447	148	299	B	0.7%
10.1-15.0 mm	163	52	111		
15.1-20.0 mm	44	16	28		
20.1-25.0 mm	24	10	14		
≥ 25.1 mm	13	6	7		
Total	105,966	53,629	52,337		



### 3. Cyst size

As of 31 March 2017

Cyst size	Total	Gender		Class	Proportion
		Male	Female		
None	37,285	19,966	17,319	A 1	74.4%
≤ 3.0 mm	41,529	21,566	19,963	A 2	
3.1-5.0 mm	23,985	10,967	13,018		
5.1-10.0 mm	3,121	1,116	2,005		
10.1-15.0 mm	40	12	28		
15.1-20.0 mm	6	2	4		
20.1-25.0 mm	0	0	0	B	0.000%
≥ 25.1 mm	0	0	0		
Total	105,966	53,629	52,337		



## Appendix 5

Confirmatory test results by area

As of 31 March 2017

District	Number of those screened a	Participants who required confirmatory test b  Proportion (%) b/a	Number of those who underwent confirmatory test					Number of confirmed results				
			Total c  Proportion (%) c/b	Ages 4-9 d  Proportion (%) d/c	Ages 10-14 e  Proportion (%) e/c	Ages 15-19 f  Proportion (%) f/c	≥ 20 g  Proportion (%) g/c	Total h  Proportion (%) h/c	A1 i  Proportion (%) i/h	A2 j  Proportion (%) j/h	Not A1 or A2	
											k  Proportion (%) k/h	Aspiration biopsy cytology l  Proportion (%) l/h
13 municipalities <sup>1</sup>	22,764	168 0.7	107 63.7	1 0.9	30 28.0	66 61.7	10 9.3	79 73.8	0 0.0	9 11.4	70 88.6	6 8.6
Nakodori <sup>2</sup>	96,170	511 0.5	218 42.7	5 2.3	36 16.5	143 65.6	34 15.6	144 66.1	1 0.7	14 9.7	129 89.6	4 3.1
Hamadori <sup>3</sup>	976	6 0.6	4 66.7	0 0.0	1 25.0	2 50.0	1 25.0	1 25.0	0 0.0	0 0.0	1 100.0	1 100.0
Aizu <sup>4</sup>	686	6 0.9	3 50.0	0 0.0	1 33.3	2 66.7	0 0.0	1 33.3	0 0.0	0 0.0	1 100.0	0 0.0
Total	120,596	691 0.6	332 48.0	6 1.8	68 20.5	213 64.2	45 13.6	225 67.8	1 0.4	23 10.2	201 89.3	11 5.5

h) Excluding participants who have not received the test results.

i, j) Those who will take Full-scale thyroid screening program since April 2018.

k) Those who were recommended to have a medical examination after 6 to 12 months, or who were advised to take their next regularly scheduled examination, though beyond the threshold level of A2.

Fractions have been rounded and may not total to 100%. Ages are at the time when the participants underwent the testing (the Second Full-scale Thyroid Screening).

- 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. Target municipalities in FY 2016

Suspicious or malignant: 4 (2 surgical cases: 2 papillary thyroid carcinomas)

#### 2. Target municipalities in FY 2017

Suspicious or malignant: 0

#### 3. Total for cases FY 2016 - 2017

Suspicious or malignant: 4 (2 surgical cases: 2 papillary thyroid carcinomas)