

Basic Survey (Radiation Dose Estimates)

Reported on 31 August 2015

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 27.2% (558,550 of 2,055,320) as of 30 June 2015. Response rate for the simplified questionnaire was 3.2% (66,474 of 2,055,320). (See Table 1.)

In FY 2013, we started giving instructions at thyroid ultrasound examination venues for filling out the survey form. Since then, response rates have increased among younger age groups. (See Table 2.)

Instructions have also been provided at venues for check-ups and health exams organized by municipalities since June, 2015. As a result, we continue to receive responses from participants.

Survey population		2,055,320	
Responses	Original questionnaire	492,076	23.9%
	Simplified questionnaire*	66,474	3.2%
	Total	558,550	27.2%

*Preliminary figures
Fractions have been rounded.

Age Group	0-9	10-19	20-29	30-39	40-49	50-59	60-	Total
As of 31 October 2012 (A)	28.4%	19.4%	16.6%	21.9%	19.9%	21.6%	27.0%	23.0%
As of 30 June 2015 (B)	45.8%	35.2%	17.8%	24.3%	22.1%	22.7%	27.6%	27.2%
Point Change (B) - (A)	17.4	15.8	1.2	2.4	2.2	1.1	0.6	4.2

* Tables 1 and 2 show the results of the original and simplified questionnaires combined.

1.2 Radiation Dose Estimates

Doses have been estimated for 542,571 of 558,550 respondents (97.1%) as of 30 June 2015, and results have been returned to 540,406 respondents. (See Table 3.)

Area (preceding and full-scale surveys)	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	504,042	150,866	29.9%	147,690	97.9%	147,527	97.8%
Kenchu	557,234	134,549	24.1%	130,594	97.1%	129,346	96.1%
Kennan	152,225	33,969	22.3%	33,008	97.2%	32,683	96.2%
Aizu	267,203	56,267	21.1%	53,785	95.6%	53,628	95.3%
Minami-aizu	30,789	6,224	20.2%	5,894	94.7%	5,851	94.0%
Soso	195,604	89,353	45.7%	86,478	96.8%	86,327	96.6%
Iwaki	348,223	87,322	25.1%	85,122	97.5%	85,044	97.4%
Total	2,055,320	558,550	27.2%	542,571	97.1%	540,406	96.8%

Including Yamakiya of Kawamata, Namie and Iitate.

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.)

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
3,916	2,168	55.4%	1,937	89.3%	1,903	87.8%

* 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 2), excluding cases of data covering less than four months.

Radiation doses for a total of 463,969 residents have been estimated to date. The results for 454,940 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 78% 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	287,852	282,227	62.0%	93.8%	24,789	20.1%	56,569	51.3%	24,846	88.2%	43,955	99.3%	4,771	99.3%	55,298	77.6%	71,999	99.1%	
1-2	146,938	144,636	31.8%	99.8%	82,689	67.0%	45,269	41.0%	3,320	11.8%	298	0.7%	34	0.7%	12,402	17.4%	624	0.9%	
2-3	25,533	25,169	5.5%		15,397	12.5%	8,050	7.3%	17	0.1%	25	0.1%	0	-	1,650	2.3%	30	0.0%	
3-4	1,548	1,470	0.3%	5.9%	464	0.4%	417	0.4%	0	-	1	0.0%	0	-	584	0.8%	4	0.0%	
4-5	540	495	0.1%	0.2%	40	0.0%	5	0.0%	0	-	0	-	0	-	449	0.6%	1	0.0%	
5-6	430	378	0.1%	0.2%	18	0.0%	3	0.0%	0	-	0	-	0	-	356	0.5%	1	0.0%	
6-7	268	229	0.1%		10	0.0%	1	0.0%	0	-	1	0.0%	0	-	217	0.3%	0	-	
7-8	152	114	0.0%	0.1%	1	0.0%	0	-	0	-	0	-	0	-	113	0.2%	0	-	
8-9	113	73	0.0%	0.0%	1	0.0%	0	-	0	-	0	-	0	-	72	0.1%	0	-	
9-10	69	39	0.0%	0.0%	0	-	0	-	0	-	0	-	0	-	39	0.1%	0	-	
10-11	68	35	0.0%		0	-	0	-	0	-	0	-	0	-	35	0.0%	0	-	
11-12	52	30	0.0%	0.0%	1	0.0%	0	-	0	-	0	-	0	-	29	0.0%	0	-	
12-13	36	13	0.0%		0	-	0	-	0	-	0	-	0	-	13	0.0%	0	-	
13-14	34	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	309	14	0.0%	0.0%	0	-	0	-	0	-	0	-	0	-	14	0.0%	0	-	
Total	463,969	454,940	100.0%	100.0%	100.0%	123,410	100%	110,314	100%	28,183	100%	44,280	100%	4,805	100%	71,289	100%	72,659	100%
Max	66 mSv	25 mSv	/	/	/	11 mSv	/	6.3 mSv	/	2.6 mSv	/	6.0 mSv	/	1.9 mSv	/	25 mSv	/	5.9 mSv	/
Mean value	0.9 mSv	0.8 mSv	/	/	/	1.4 mSv	/	1.0 mSv	/	0.6 mSv	/	0.2 mSv	/	0.1 mSv	/	0.8 mSv	/	0.3 mSv	/

* Including Yamakiya of Kawamata. Percentages have been rounded and may not total to 100%.
 ** Including Namie and Iitate. Excluding those with estimation period less than four months.

3. Evaluation of the results

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

Since previous epidemiological studies¹ indicate no significant health effects at doses ≤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.

References

- 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.

4. Survey on the representativeness of dose distribution shown in the Basic Survey

(Interim Report)

In order to investigate whether people who have responded to the Basic Survey represent the whole population in regard to external dose estimates and dose distribution, we started a survey.

4.1 Survey Population and Methods

In reference to nationwide and prefecture-wide polls, we used a two-stage sampling method to select about 5,000 samples throughout Japan from a survey population of the Basic Survey. After reviewing their responses and addresses to exclude those who already had responded, had died, or had moved outside Fukushima Prefecture, we sent out notice to 2,980 people asking for their participation.

Eliminating those with invalid addresses or those who declined to participate, there are 2,645 people to be interviewed in this door-to-door survey.

4.2 Progress of the Survey

We started surveying non-respondents on 18 June 2015 by outsourcing interviewers who are familiar with the instructions for filling out the questionnaire. This enables us to ask the residents why they did not answer the questionnaire previously, and to encourage their cooperation. The interviewers help with filling out the survey form and mailing it if necessary.

After about one and a half months of conducting the survey, we visited 2,110 people (nearly 80%) of the survey population. While 808 were not home, 557 completed the questionnaires. The overall response rate is about 26%. We will try to make appointments to return and increase the response rate.

4.3 Results

We will estimate the doses for all respondents, and compare the dose distribution of the respondents from the door-to-door survey and those who responded previously by mail.

Reasons for not having answered the questionnaire are being tallied. The most common reasons gathered so far are the following:

- The participant put off responding because it seemed time consuming.
- The participant could not remember enough to fill out the questionnaire.

