

Basic Survey (Radiation Dose Estimates)

Reported on 27 December 2016

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 27.5% (565,904 of 2,055,305) as of 30 September 2016. Among the respondents, 72,513 answered through the simplified questionnaire. (See Table 1.)

Table 2 shows the response rates by age group.

Survey population		2,055,305	
Responses	Original questionnaire	493,391	24.0%
	Simplified questionnaire*	72,513	3.5%
	Total	565,904	27.5%

*Preliminary figures
Fractions have been rounded.

Age group (years)	0-9	10-19	20-29	30-39	40-49	50-59	60-	Total
Response rate	46.4%	35.7%	18.1%	24.7%	22.4%	22.9%	27.9%	27.5%

1.2 Radiation Dose Estimates

Doses have been estimated for 551,510 of 565,904 respondents (97.5%) as of 30 September 2016, and results have been returned to 551,110 respondents. (See Table 3.)

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	504,038	152,135	30.2%	148,951	97.9%	148,816	97.8%
Kenchu	557,218	136,228	24.4%	133,095	97.7%	133,036	97.7%
Kennan	152,228	35,042	23.0%	34,229	97.7%	34,204	97.6%
Aizu	267,202	57,788	21.6%	55,585	96.2%	55,532	96.1%
Minami-aizu	30,789	6,387	20.7%	6,078	95.2%	6,068	95.0%
Soso	195,591	90,043	46.0%	87,371	97.0%	87,300	97.0%
Iwaki	348,239	88,281	25.4%	86,201	97.6%	86,154	97.6%
Total	2,055,305	565,904	27.5%	551,510	97.5%	551,110	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 13,500 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.)

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
3,983	2,224	55.8%	2,007	90.2%	2,000	89.9%

* 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 472,841 residents have been estimated to date. The results for 463,659 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	294,119	288,401	62.2%	93.8%	24,893	20.0%	58,095	51.5%	25,953	88.3%	45,694	99.3%	4,947	99.3%	55,767	77.3%	73,052	99.1%	
1-2	149,042	146,701	31.6%	99.8%	83,560	67.0%	46,058	40.8%	3,421	11.6%	308	0.7%	36	0.7%	12,686	17.6%	632	0.9%	
2-3	25,964	25,591	5.5%		15,650	12.6%	8,181	7.3%	17	0.1%	25	0.1%	0	-	1,688	2.3%	30	0.0%	
3-4	1,575	1,495	0.3%	5.8%	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%	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%	0.2%	1	0.0%	0	-	0	-	0	-	0	-	115	0.2%	0	-	
8-9	118	78	0.0%	0.0%	1	0.0%	0	-	0	-	0	-	0	-	77	0.1%	0	-	
9-10	72	41	0.0%	0.0%	0	-	0	-	0	-	0	-	0	-	41	0.1%	0	-	
10-11	69	36	0.0%		0	-	0	-	0	-	0	-	0	-	36	0.0%	0	-	
11-12	52	30	0.0%	0.0%	1	0.0%	0	-	0	-	0	-	0	-	29	0.0%	0	-	
12-13	37	13	0.0%	0.0%	0	-	0	-	0	-	0	-	0	-	13	0.0%	0	-	
13-14	36	12	0.0%		0	-	0	-	0	-	0	-	0	-	12	0.0%	0	-	
14-15	27	6	0.0%	0.0%	0	-	0	-	0	-	0	-	0	-	6	0.0%	0	-	
≥15	315	15	0.0%	0.0%	0	-	0	-	0	-	0	-	0	-	15	0.0%	0	-	
Total	472,841	463,659	100.0%	100.0%	100.0%	124,647	100%	112,766	100%	29,391	100%	46,029	100%	4,983	100%	72,123	100%	73,720	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	

* Including Yamakiya. 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.

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.

