

Basic Survey (Radiation Dose Estimates)

Reported on 14 September 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% (565,484 of 2,055,350) as of 30 June 2016. Among the respondents, 72,181 answered through the simplified questionnaire. (See Table 1.)

Table 2 shows the response rates by age group.

Survey population		2,055,350	
Responses	Original questionnaire	493,303	24.0%
	Simplified questionnaire*	72,181	3.5%
	Total	565,484	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%	18.0%	24.6%	22.3%	22.9%	27.9%	27.5%

1.2 Radiation Dose Estimates

Doses have been estimated for 551,233 of 565,484 respondents (97.5%) as of 30 June 2016, and results have been returned to 549,863 respondents. (See Table 3.)

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.

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	504,042	151,811	30.1%	148,864	98.1%	148,767	98.0%
Kenchu	557,243	136,176	24.4%	133,044	97.7%	132,748	97.5%
Kennan	152,228	35,040	23.0%	34,211	97.6%	34,126	97.4%
Aizu	267,205	57,779	21.6%	55,540	96.1%	54,963	95.1%
Minami-aizu	30,789	6,388	20.7%	6,069	95.0%	6,048	94.7%
Soso	195,606	90,020	46.0%	87,349	97.0%	87,251	96.9%
Iwaki	348,237	88,270	25.3%	86,156	97.6%	85,960	97.4%
Total	2,055,350	565,484	27.5%	551,233	97.5%	549,863	97.2%

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.

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
3,977	2,219	55.8%	2,000	90.1%	1,989	89.6%

* 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 472,572 residents have been estimated to date. The results for 463,394 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	293,955	288,240	62.2%	93.8%	24,881	20.0%	58,071	51.5%	25,935	88.3%	45,656	99.3%	4,939	99.3%	55,751	77.3%	73,007	99.1%	
1-2	148,958	146,618	31.6%	99.8%	83,506	67.0%	46,040	40.8%	3,421	11.6%	303	0.7%	35	0.7%	12,681	17.6%	632	0.9%	
2-3	25,943	25,570	5.5%		15,636	12.6%	8,174	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%		19	0.0%	3	0.0%	0	-	0	-	0	-	366	0.5%	1	0.0%	
6-7	268	230	0.0%	0.1%	10	0.0%	1	0.0%	0	-	1	0.0%	0	-	218	0.3%	0	-	
7-8	155	116	0.0%		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	-	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	-	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	-	15	0.0%	0	-	
Total	472,572	463,394	100.0%	100.0%	100.0%	124,567	100%	112,717	100%	29,373	100%	45,986	100%	4,974	100%	72,102	100%	73,675	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.
 ** Including Namie and Iitate.

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

