

# The Fukushima disaster and the mental health needs of children with developmental disorders and their families

Presentation at National Institute for Strategic Studies  
December 9, 2013 Kiev, Ukraine

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The Great East Japan Earthquake  
2011.3.11  
JMA Scale and tsunami

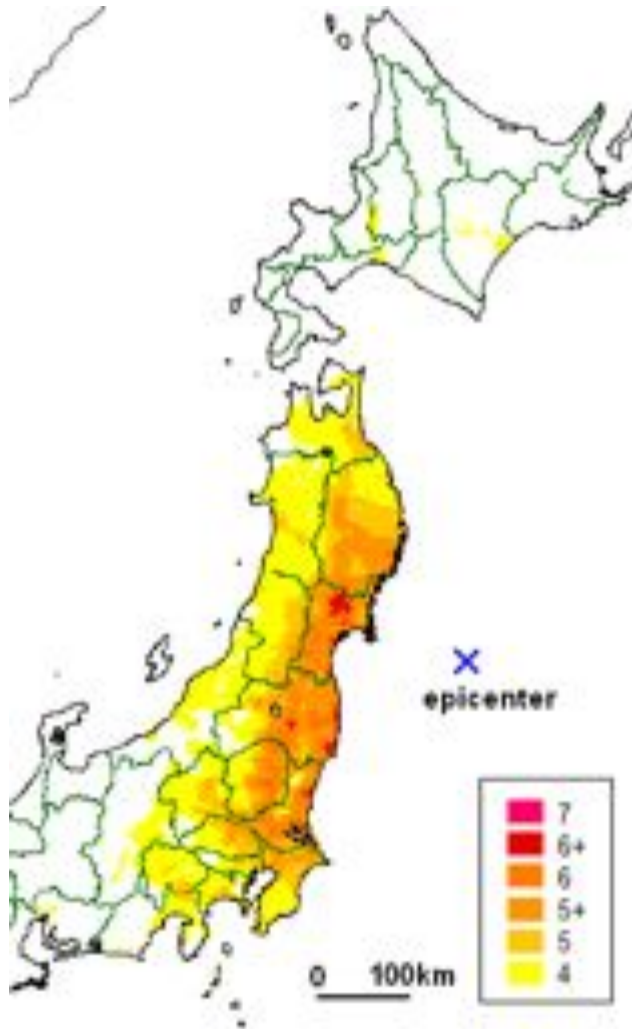


Fig.1 JMA Scale (Shindo)

Source: Japan Meteorological Agency (rewritten by T. Takano)

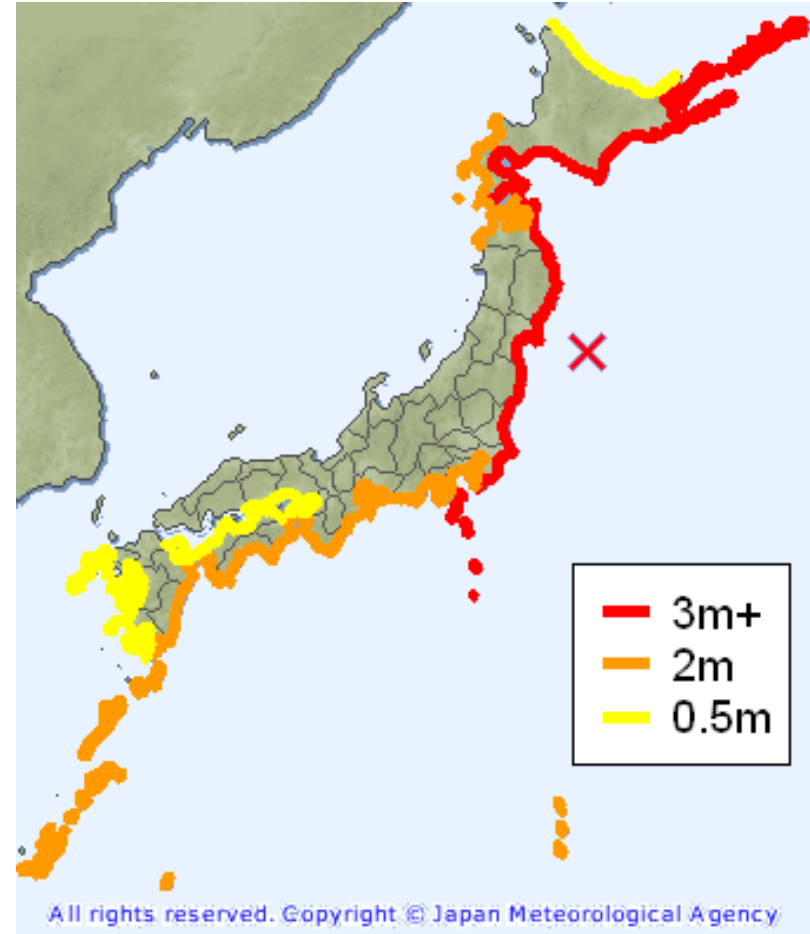


Fig 2 Alerted tsunami height



## The Great East Japan Earthquake Loss of life in three prefectures

Prefecture	Loss of life	
	Dead	Missing
Total Japan	15,873	2,744
Iwate	4,671	1,192
Miyagi	9,530	1,337
Fukushima	1,606	211

Fig.3

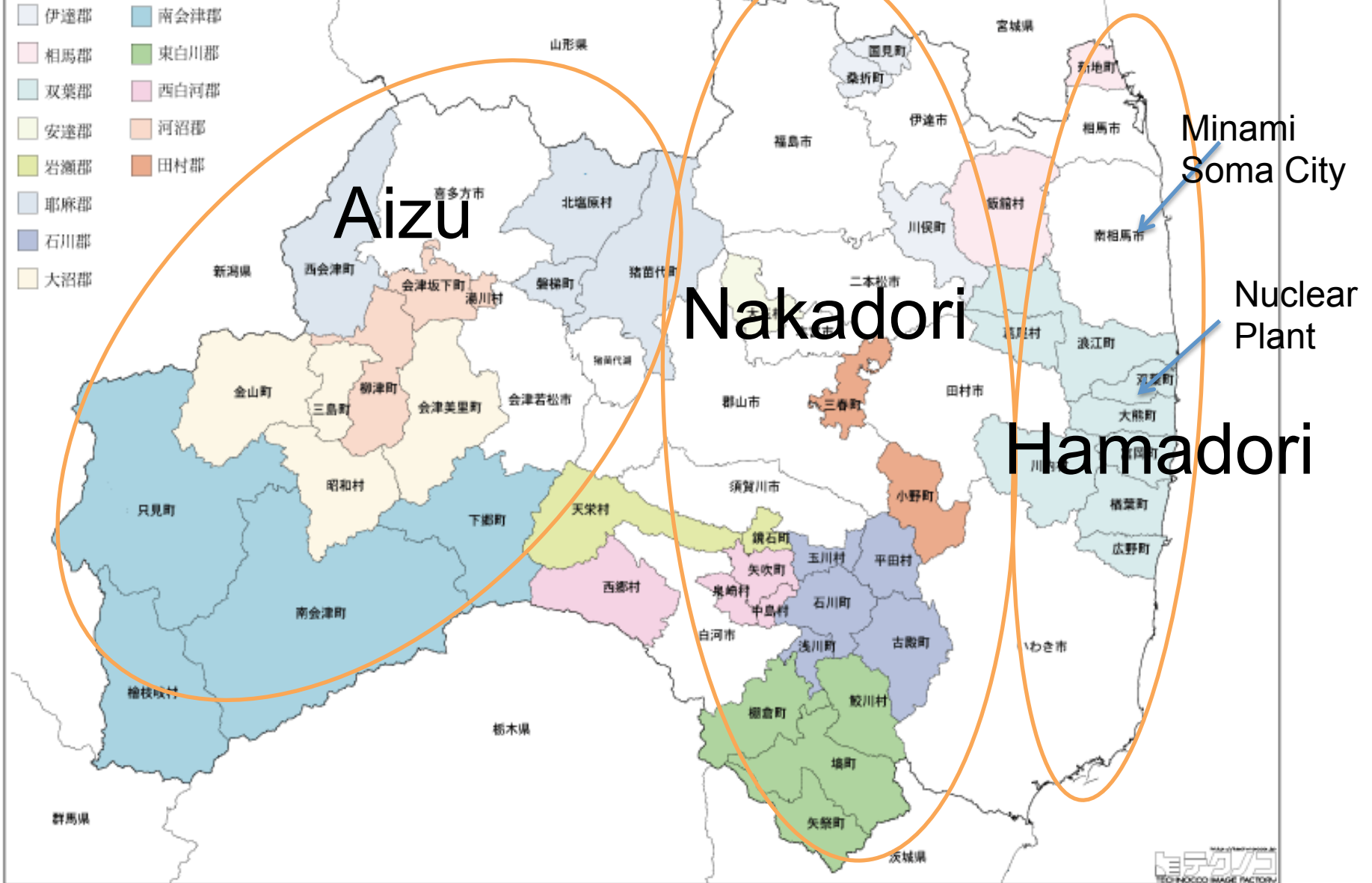
Data : National Police Agency, November 14, 2012

# Fukushima Prefecture

Area : 13,782 Sq Kilometers

Population : 2,032,117 (2010.6.1 figures)

## 福島県全図









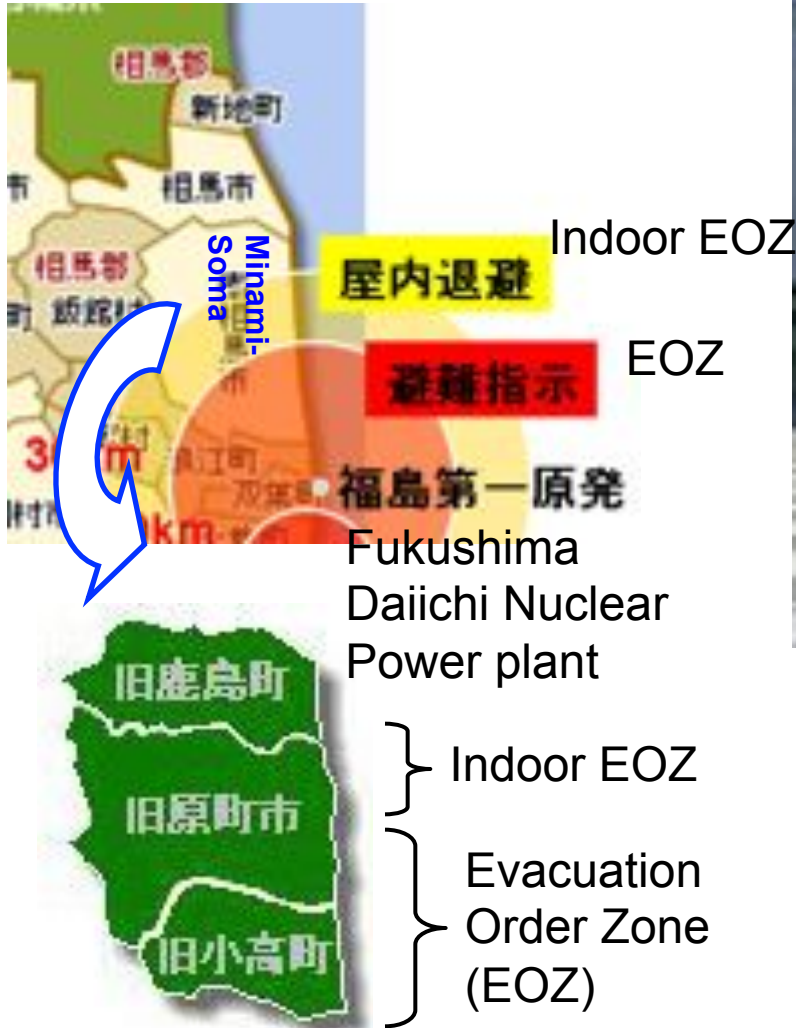


2012/09/20大熊町





# April 2011 : Minami-Soma



The residents of Minami-Soma, whose deserted streets are shown here, were ordered not to go outside. Because of this ban, very few shops were open in the area and no trucks entered to distribute aid.

ほとだ理容所

2011/4/1 13:14  
南相馬市民文化会館(ゆめはっと)



2011/4/2 16:33  
撮影



2011/4/2 18:52  
大洲海岸

# Case A

- 3 year-old boy
  - At the time of the disaster 18 months old. Evacuated from coastal region A to an inland evacuation center (later they found the radiation level at region A was higher than their home)
  - The family found it difficult to stay at the evacuation center - easily upset by the stressful environment. Sleeping in their car after a few days
  - Returned home to the coastal region because too far from relatives and because of loneliness as father already away working at the coastal region

At the time of counseling:

- The child had autism with hyperactivity, hypersensitivity and obsessive behavior.
- The mother commented that they couldn't possibly live in temporary housing since she had to limit her son's playing outdoor and they also encountered hostility from people in the area.















# Accommodation for those made homeless

Living conditions (number of people)

- Temporary housing 28,959
- Apartment rented from local authority 52,941
- Evacuation
  - Within Fukushima Prefecture 90,630
  - Outside Fukushima Prefecture 49,554
  - Total 140,242

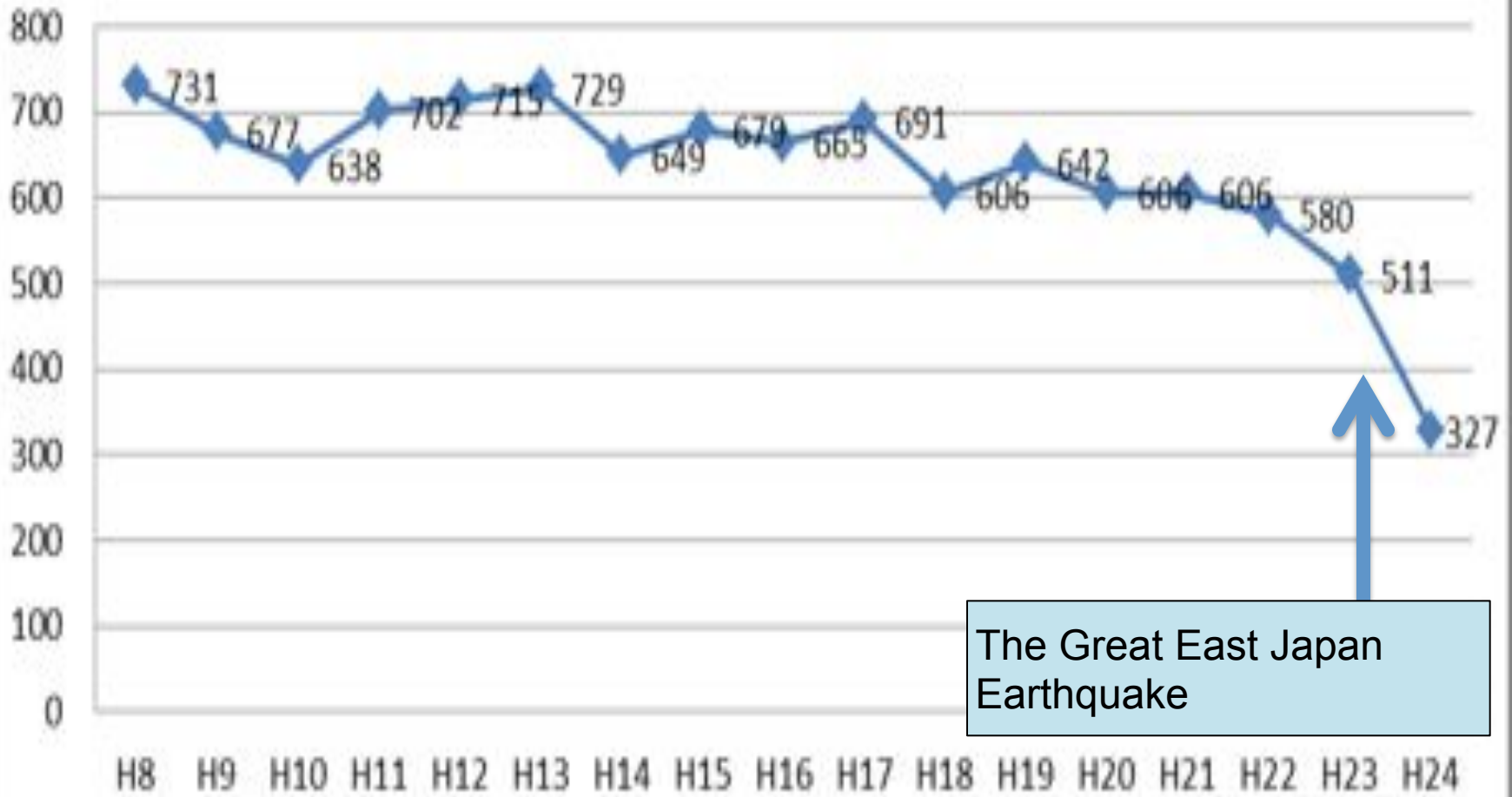
Source: Fukushima Prefecture, Disaster policy and countermeasures November, 2013

# Change of School populations since 2011

	2010	2011	2012
Pre school	30,026	26,852 	25,283 
Elementary school	117,668	108,428 	103,324 
Middle school	61,866	59,377 	58,026 
High school	61,219	58,962 	57,344 
Special school	2,154	2,145 	2,214 

Was there an increase in the number of children with developmental • cognitive disabilities?

Number of birth in A city



The Great East Japan Earthquake

# Number of children who entered Nursery school and pre-school (2013)

Before the GEE 26 schools

After the GEE 13 schools

	<b>Before</b>	<b>After</b>	<b>Ratio</b>
Nursery	1, 142	497	43. 5%
Pre-school	1, 198	468	39. 1%
Total	2, 340	965	41. 2%

Artificial green  
in the  
Kindergarten



Indoor play  
area

# National Health Checkup System

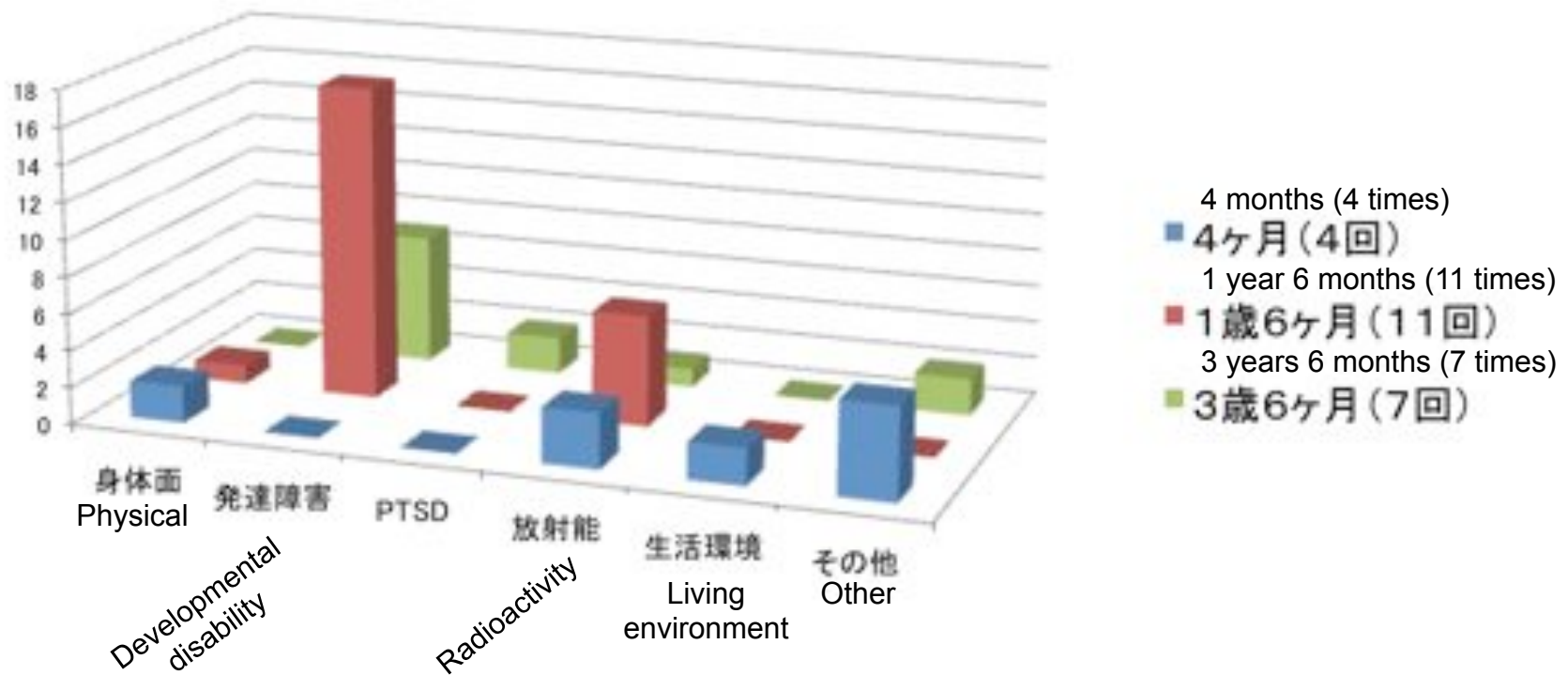
- Municipalities conduct health check-ups and give age-appropriate guidance.
- 18 months, 3 years old, and more
- Over 90 % of children have a checkup
- Maternal and Child Health Handbook is given to all mothers.
- Free



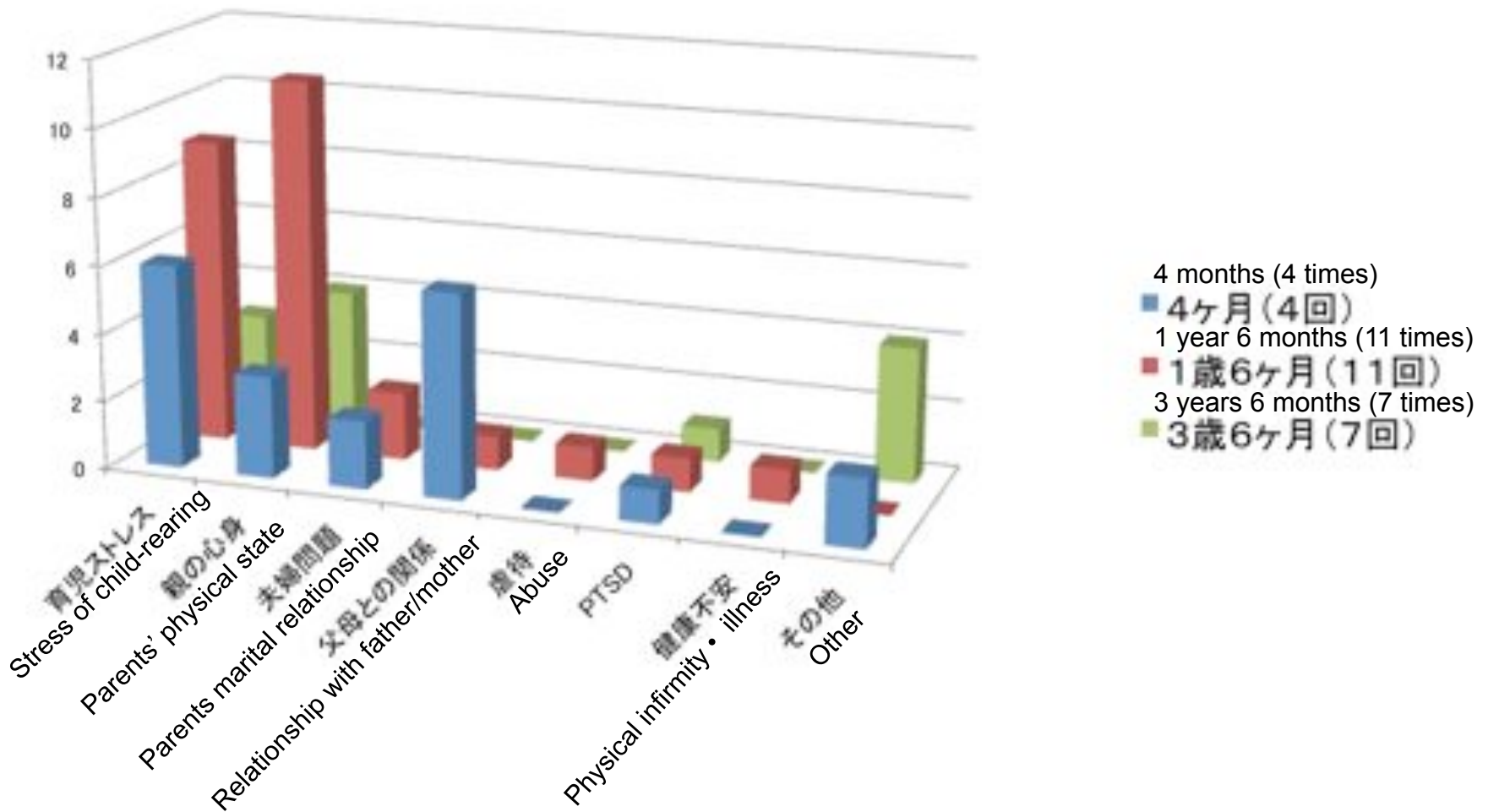




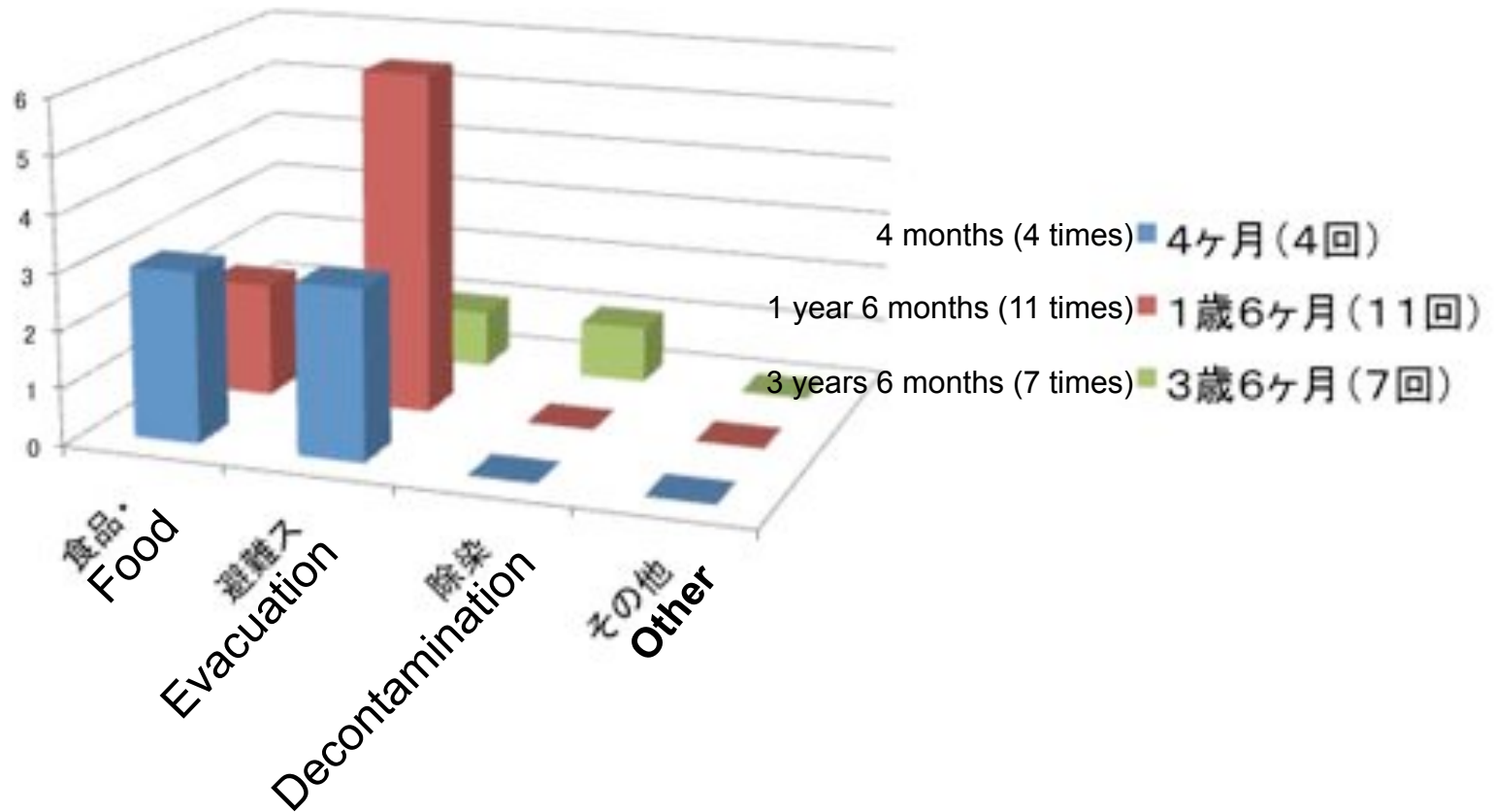
# Check-ups of infant health in the coastal region - items of concern in child development 2012



# Check-ups of infant health in the coastal region - concerns of the parents 2012



# Other concerns in 2012



# Data of health checkup of A city -1year 6 months-

	April 2010-March 2011	April 2011- March 2012	April 2012- March 2013
N of children who had check ups	549	159	174
N of children who needed support	200	77	89
ratio	36. 4%	48. 4%	51. 1%

# Behavioral changes of infants and toddlers in A city

- Impression and hypothesis
  - Increase in prevalence of the children with hyperactivity and symptoms of autism spectrum disorder (eg: poor eye contact, delayed speech, insomnia).

# Method

- Retrospective chart review
- Comparison of the data of health check ups before and after The Great East Japan Earthquake

# Comparison before/ after GEJE

Items changed significantly

	Before GEJE (%) n=100	After GEJE(%) n=93	p	df
Hyperactivitiy	14.6	8.0	.001	1
Eat meals three times a day	100.0	89.1	.001	1
Concerned about feeding	37.0	47.0	.034	1
Give tea often	86.0	64.0	.03	1
Give sport drinks often	12.0	28.0	.004	1
Have somebody to consult	100.0	94.6	.024	1
No dental problems	57.0	37.6	.000	5
Need individual counseling	30.0	49.5	.004	1

# Comparison before/ after GEJE

Items of no significant change

	Before GEJE (%) n=100	After GEJE(%) n=93
Can imitate others	100	100
Have meaningful words	86.8	88.5
Understand other's talk	100	100
Can point something by a finger	98	96.8
Show interest in other children	99	100
Poor eye contact	0	1.1
Night crying	6	7.6
Finger thucking	15.7	17.4



# Results and Limitations

- Significant change
  - Dietary habit
- No significant change
  - Early signs of social behavior
  - Sleep problem
- Limitations
  - Parental reports
  - Small number of participants

# Discussion

- Related factors
  - Radiation stress
    - Limitation to outdoor play
    - Anxiety about food and drinks
  - Poor accommodations
    - Small temporary housing
- Conclusion
  - Need more support and education for parents?

# Factors increasing stress and vulnerability

- Developmental disorders
  - Vulnerability
- Radiation stress
  - Limitation to outdoor play
  - Anxiety about food
  - Anxiety about effects on health and body
  - Dilemma about radiation risk
    - “All right” vs “Dangerous”
    - Moving, attending school, plans for further education
  - Parents are burdening teachers with their anxiety
    - Concerns about opening windows, school lunch, PE, swimming pool