

Medical and Public Health Resilience

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SFDRR

Health in Sendai Framework

Similarity of disease and disaster



Vulnerability & Capacity



Hazards



Disaster

- Life, Health
- Properties
- Family
- Community



Disaster Risk Reduction



- Know your risk
- Reduce your risk
- Prepared to act

To reduce the disaster risk,

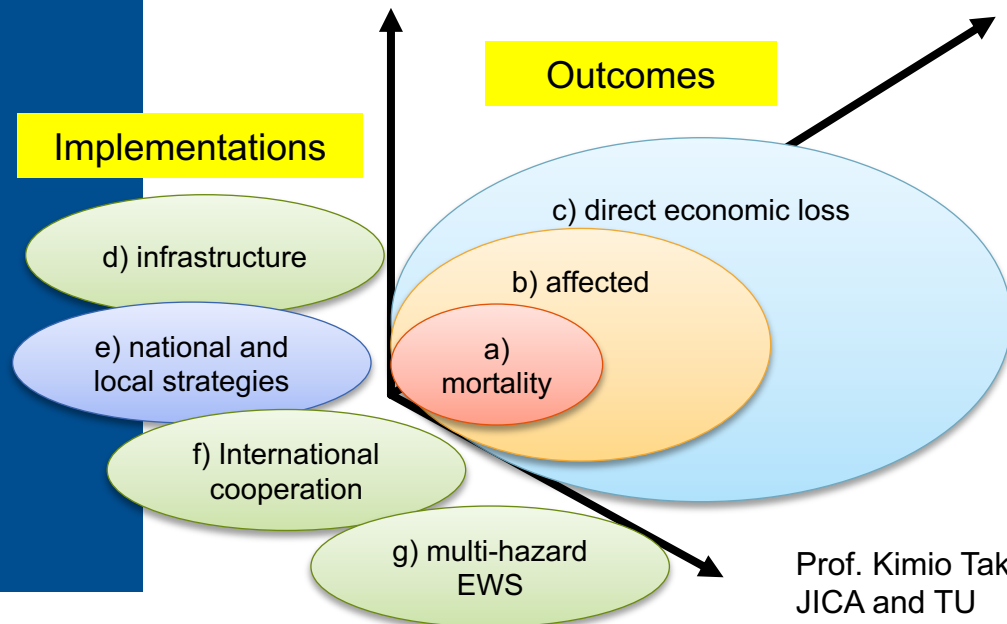
$$\text{Risk} = \frac{\text{Hazard} \times \text{Vulnerability}}{\text{Capacities}}$$

Sendai Framework

Four Priorities

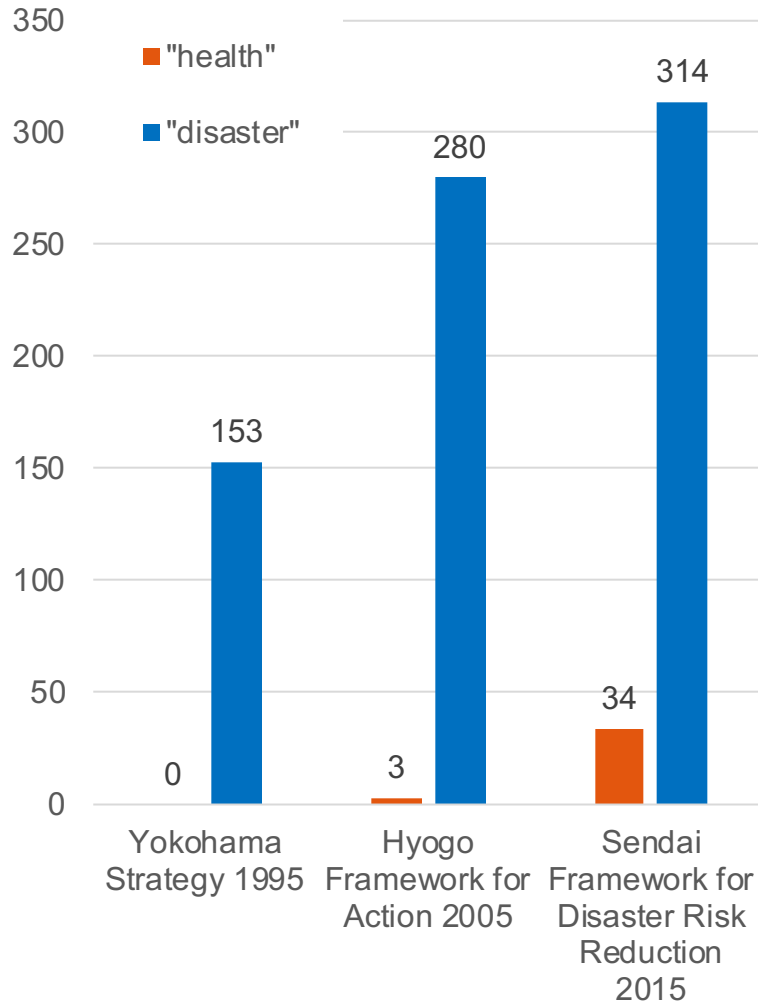
- Priority 1: Understanding Disaster Risk
- Priority 2: Disaster Risk Governance
- Priority 3: Investment in Disaster Risk Reduction
- Priority 4: Enhance preparedness for effective response and “Build Back Better” in recovery, rehabilitation and reconstruction

Seven Global Targets



Prof. Kimio Takeya
JICA and TU

Health in DRR framework



Sendai Framework described for the first time that disaster affects health of the people.

SFDRR aims to reduce “disasters losses with a significant economic, social, **health**, cultural and environmental impact”

Why?

Egawa (2018) J Disaster Res 13(6): 1049-1061



Know your risk

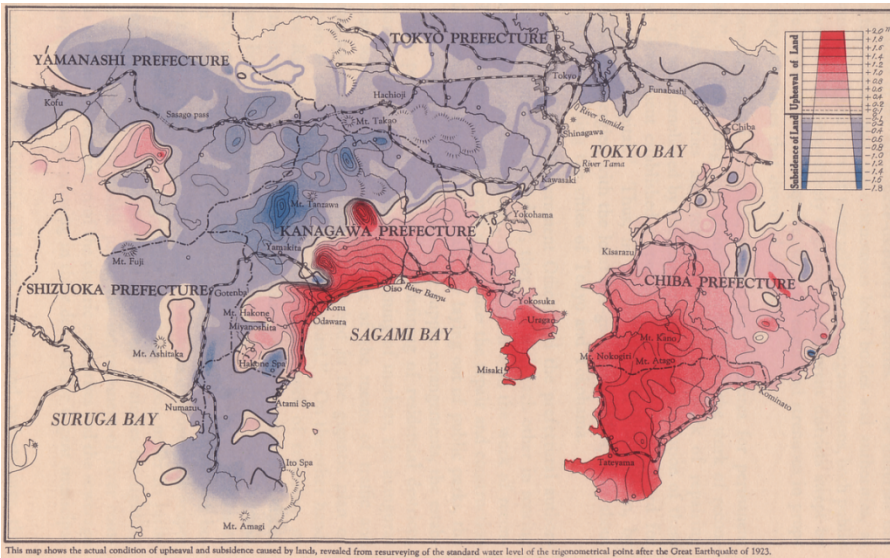
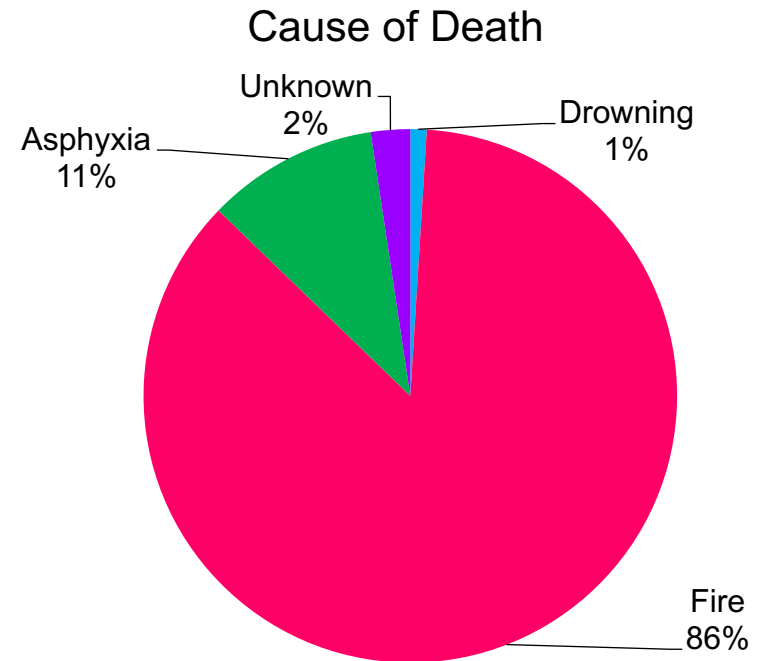
Change of Health Risks in disaster

1923 Great Kanto Earthquake

September 1, 1923

11:58:32

M7.9



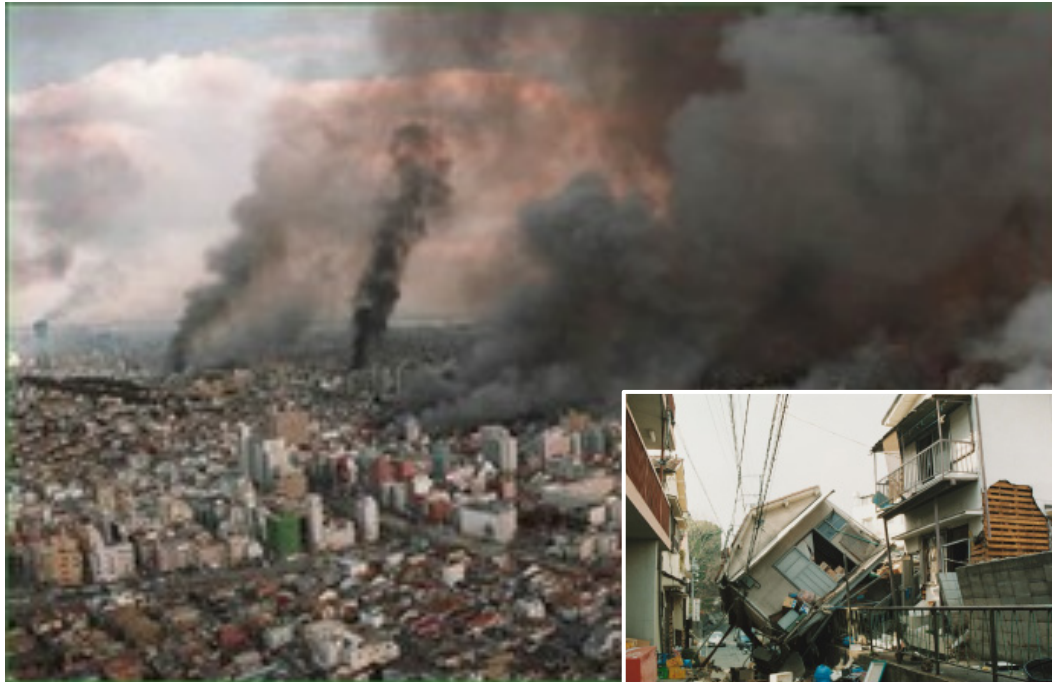
The buildings should be fire-resistant
Every Sept. 1 is the Disaster Drill Day

1995 Great Hanshin Awaji Earthquake

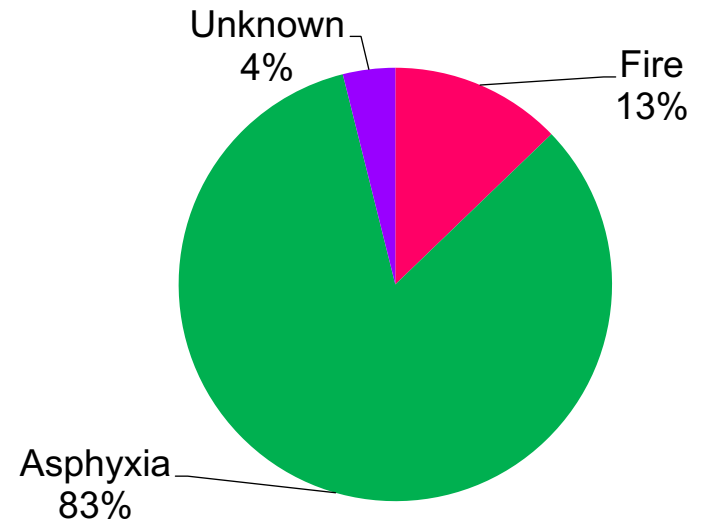
January 17, 1995

05:46

M7.3



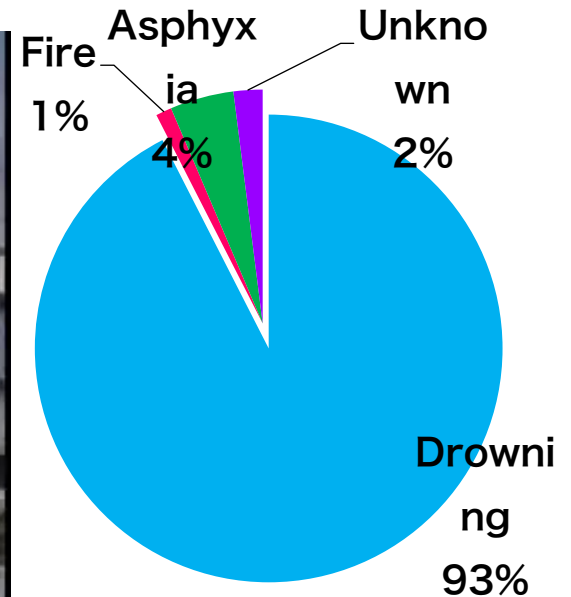
Cause of Death



The buildings should be quake-proof
Japanese Association for Disaster
Medicine was established



2011 Great East Japan Earthquake

Mar. 11, 2011, 14:46 M9.0



2011 White pages,
Japan Gov.

Change of health risks in Great East Japan Earthquake

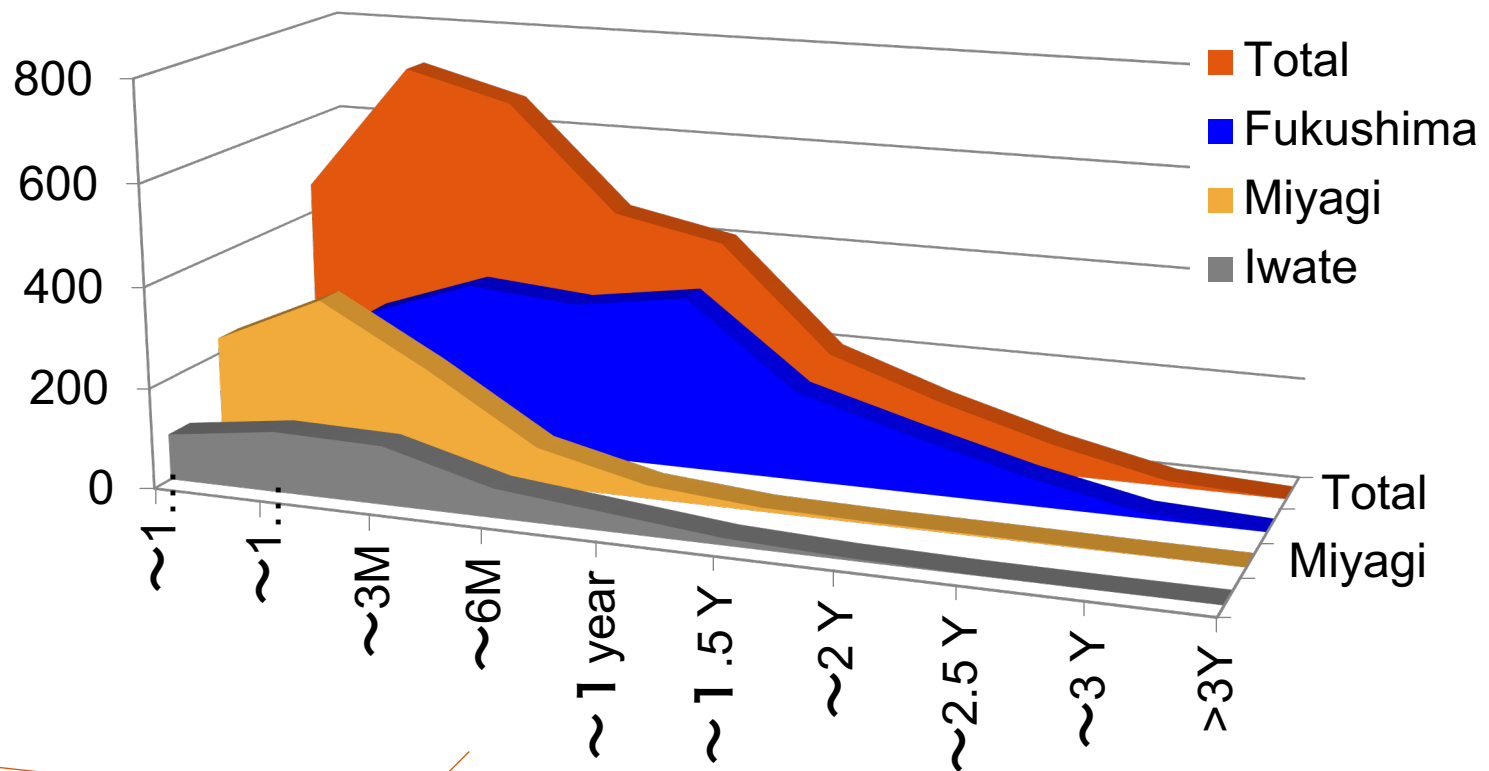
	Injured	Dead and lost	Displaced
Hanshin-Awaji Earthquake 1995	43,800	6,433	307,200
Great East Japan Earthquake 2011	5,942 	19,582 	488,000

- Less injuries, but different medical needs lasted longer
- Disruption of traffic and communication made health sector paralyzed
- Complicated radiological disaster
- Mental health of affected people was devastated
- Health facilities were also destroyed by disaster
- Education of disaster medicine was not generalized in health professionals

Disaster related deaths

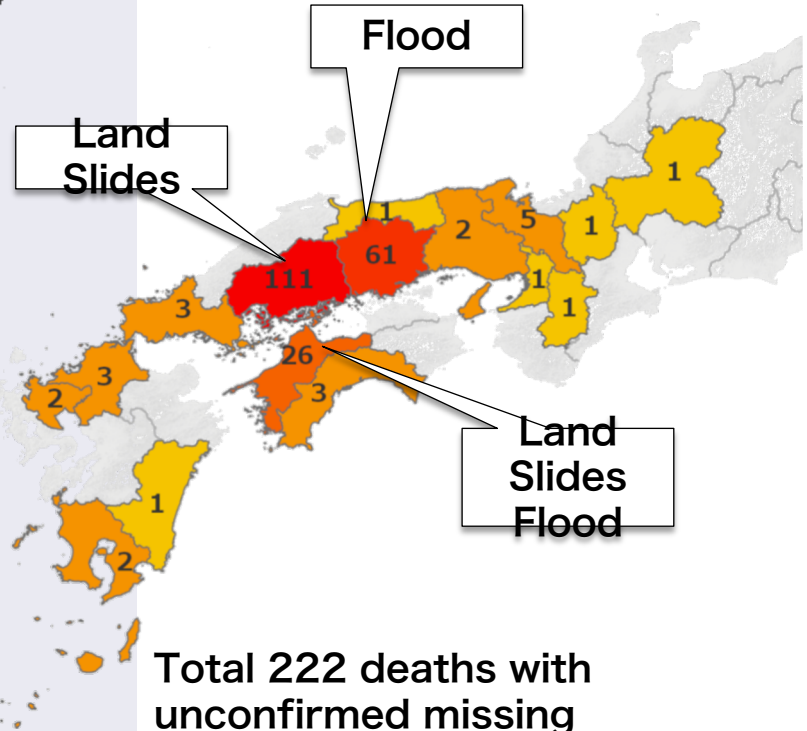
Ministry of Reconstruction, Mar. 31, 2014

Total 3, 089



2018 Japan Floods

Jun. 28-Jul. 9, 2018



**Total 222 deaths with
unconfirmed missing
(Police Department as of Jul. 17,
2018)**

**Total number of evacuees;
23,000 (Fire Department as of
Jul. 8, 2018)**



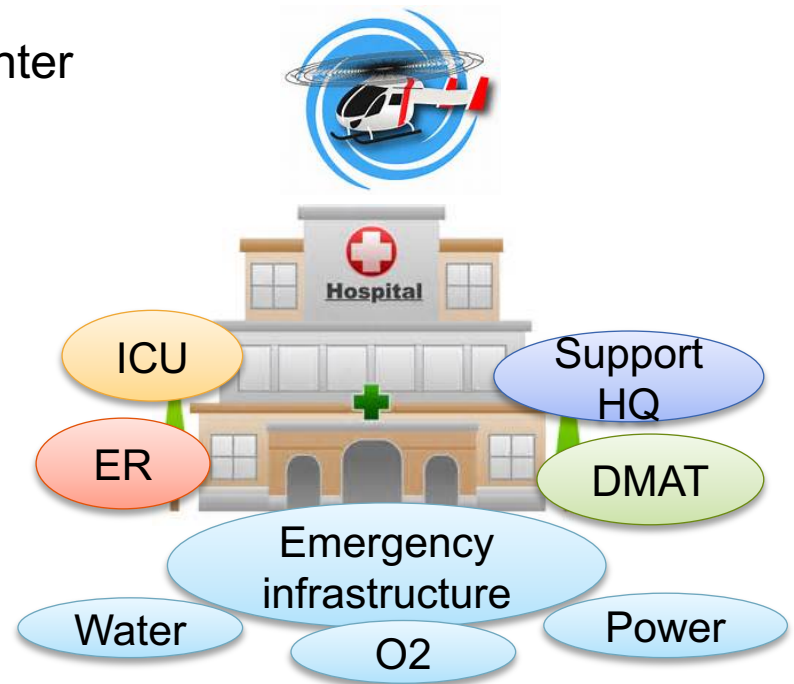


Reduce your risk

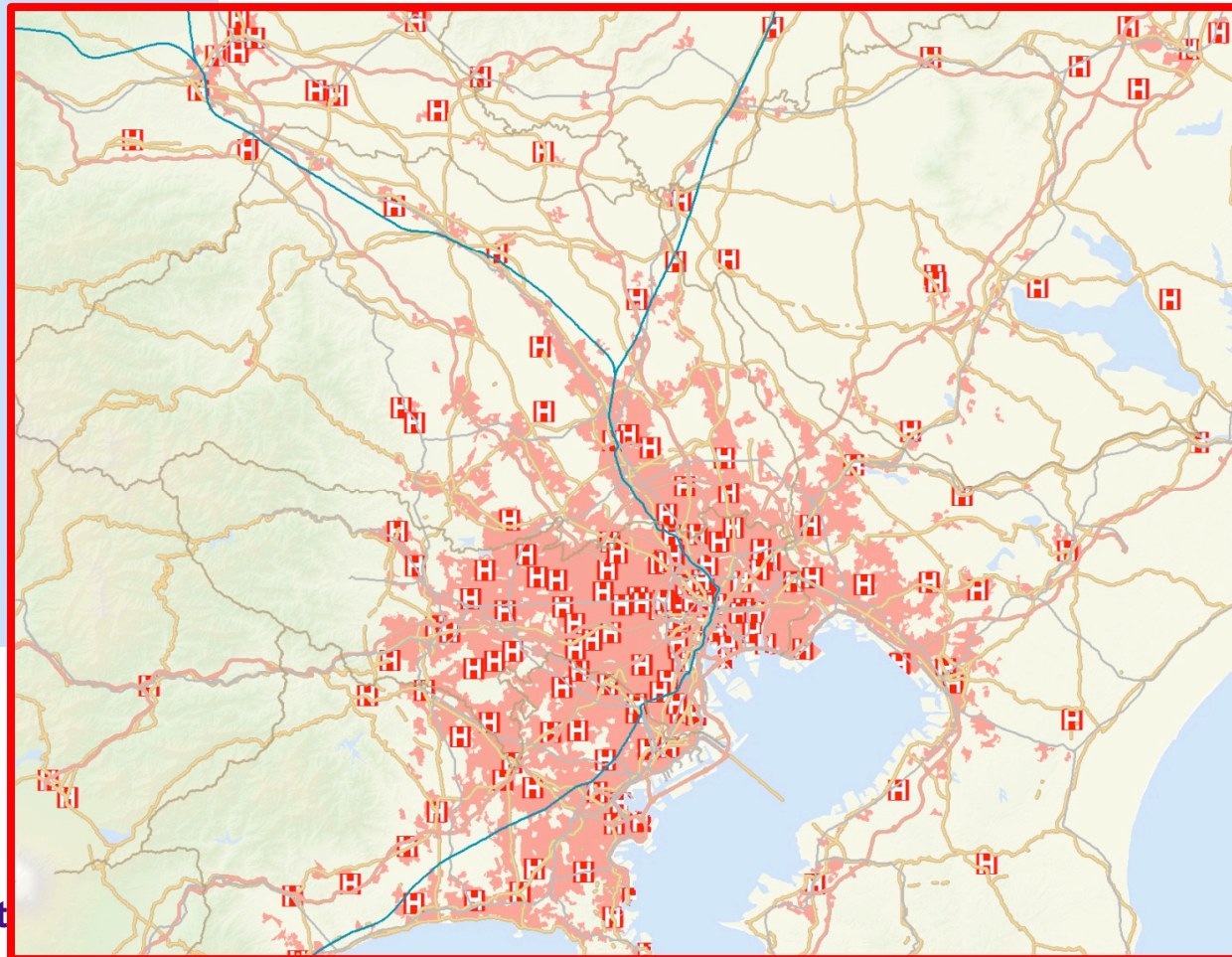
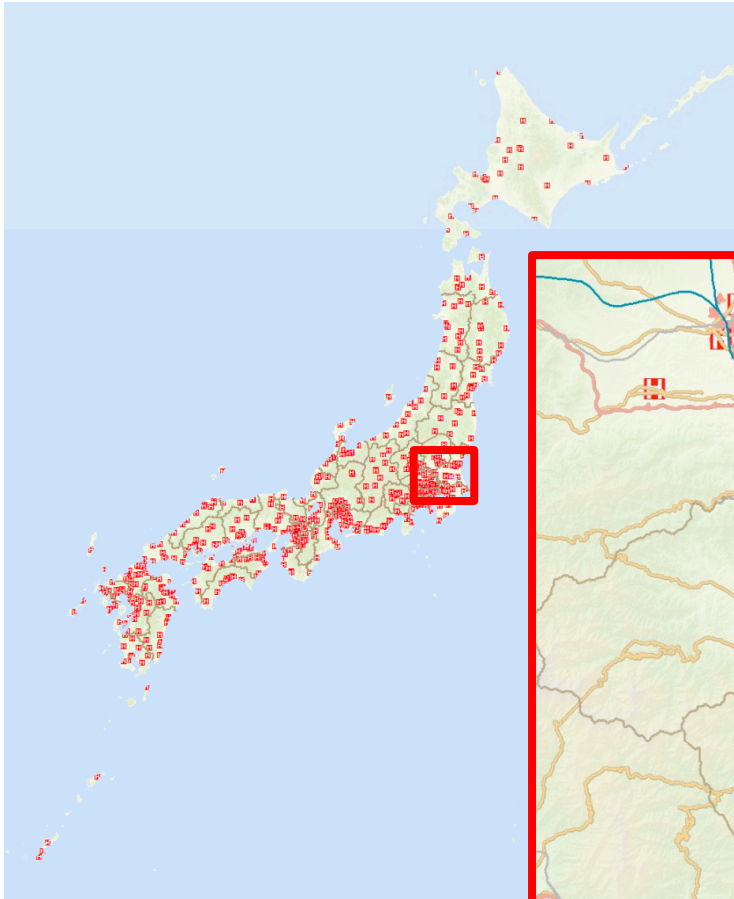
Capacity building of disaster medicine in Japan

Disaster Base Hospital

- 725 DBHs in Japan
 - 1 National Disaster Medical Center
 - 788 DMAT providing DBH
 - 271 Emergency Center
 - 54 Radiological DBH



Disaster Base Hospitals in Japan



J-DMAT: Japan Disaster Medical Assistance Team on Training



Staging Care Unit



DMAT not only provide medical care, but also assists the local HQ and Staging Care Unit (SCU) in medical coordination.

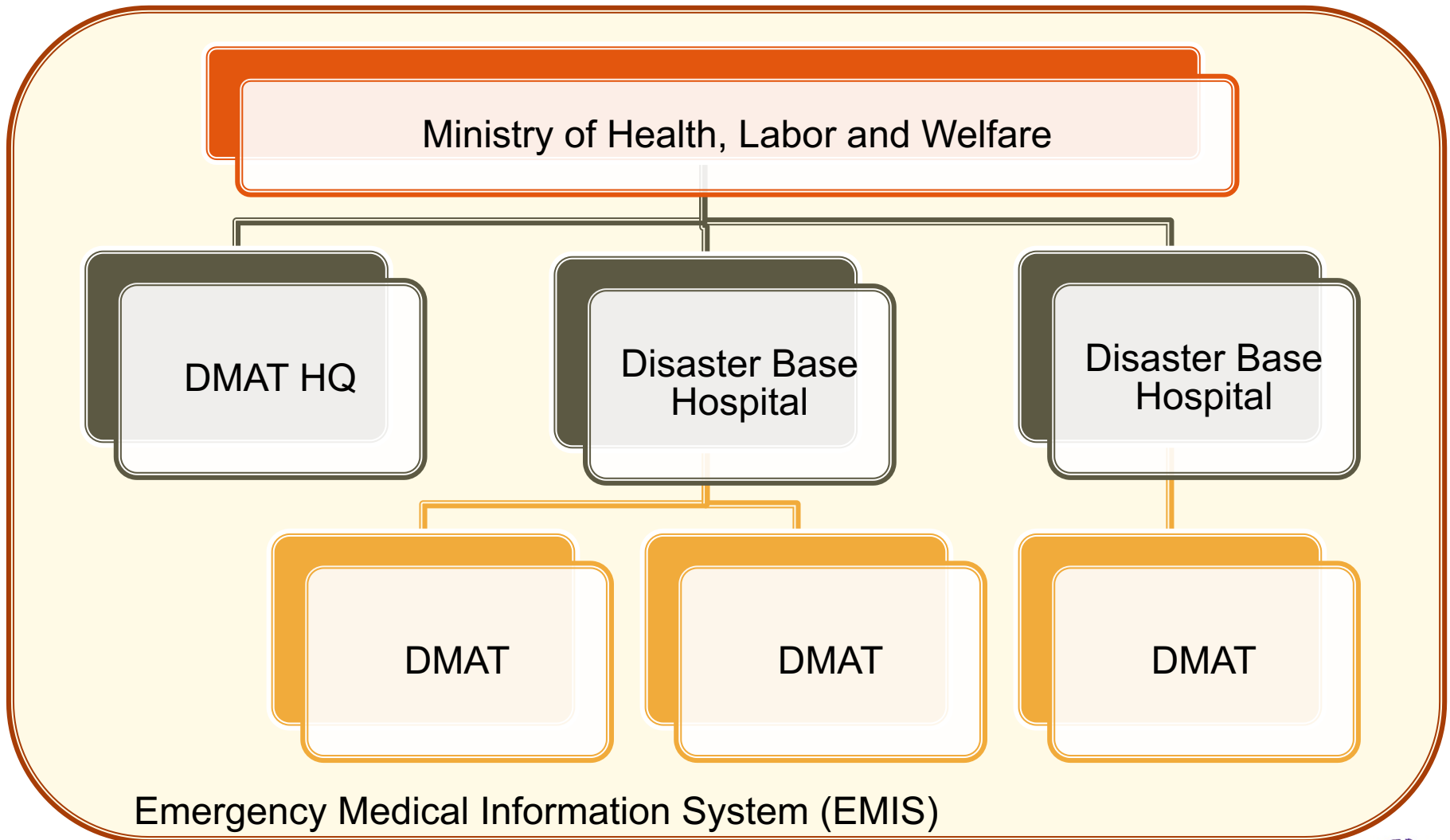


Confined Space Medicine

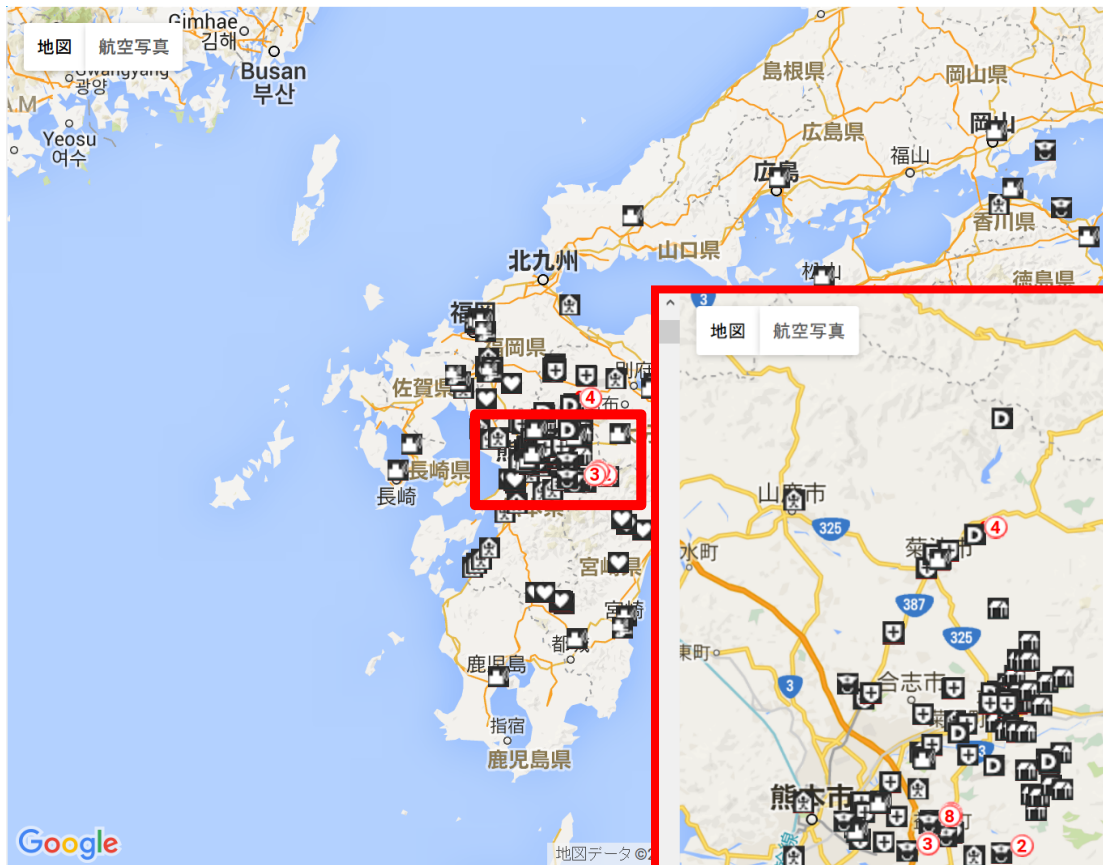


Wide Area Transportation

Medical Management System

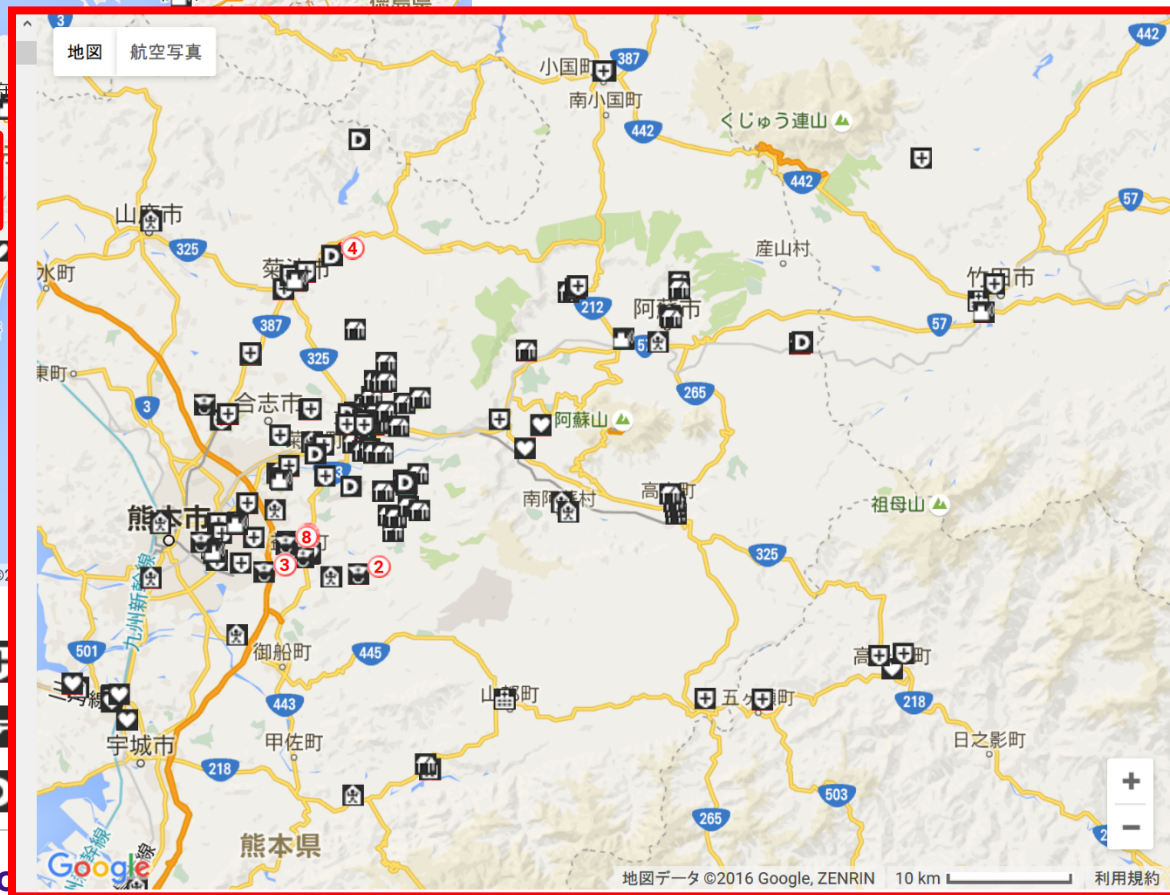


EMIS Emergency Medical Information System

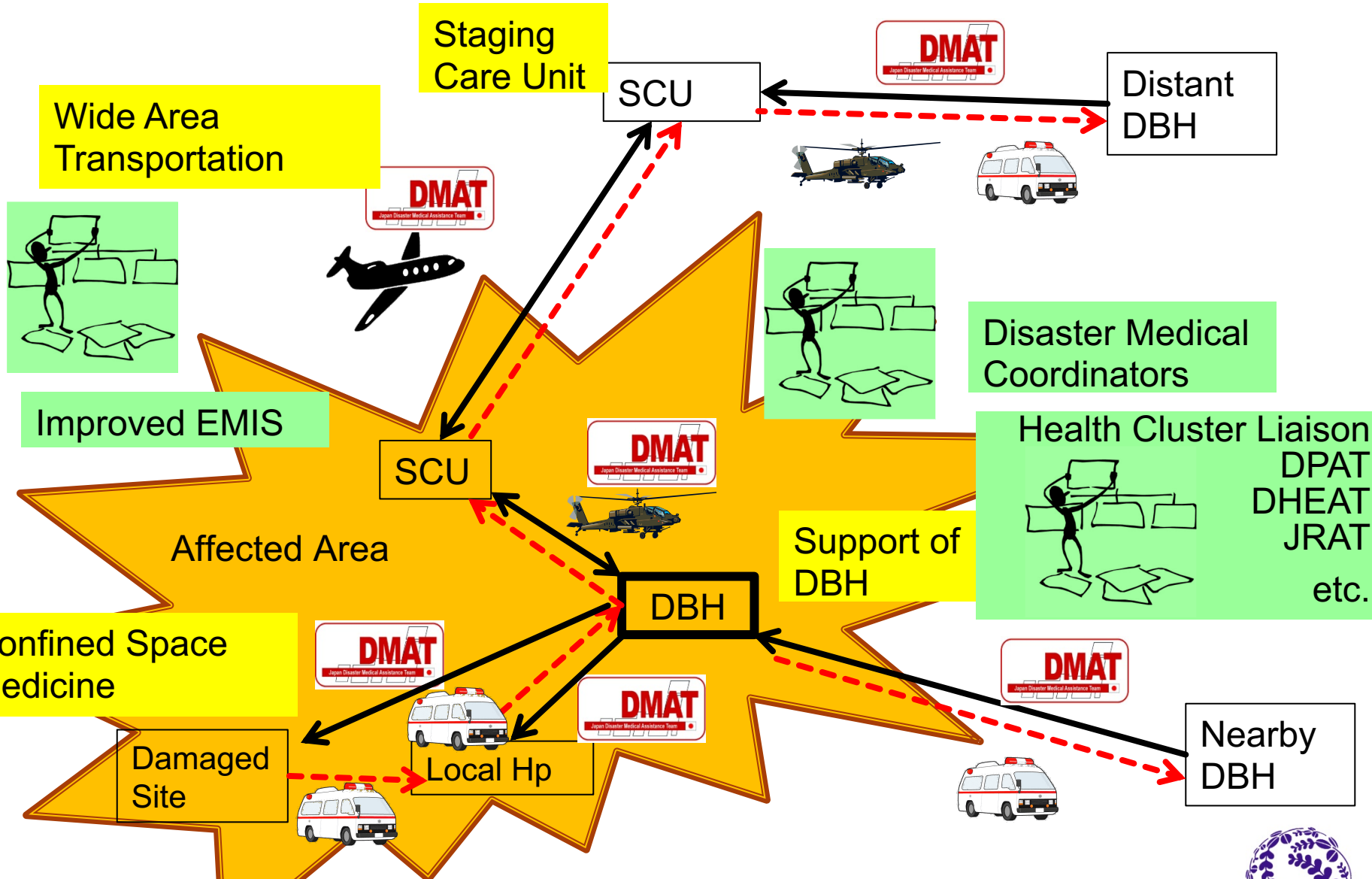


マークの説明

-  災害拠点病院
-  本部・参集拠点
・医療搬送拠点
-  救護所
-  本部・参集拠点
-  その他活動場所



Building Back Better of National Disaster Medical System in Japan

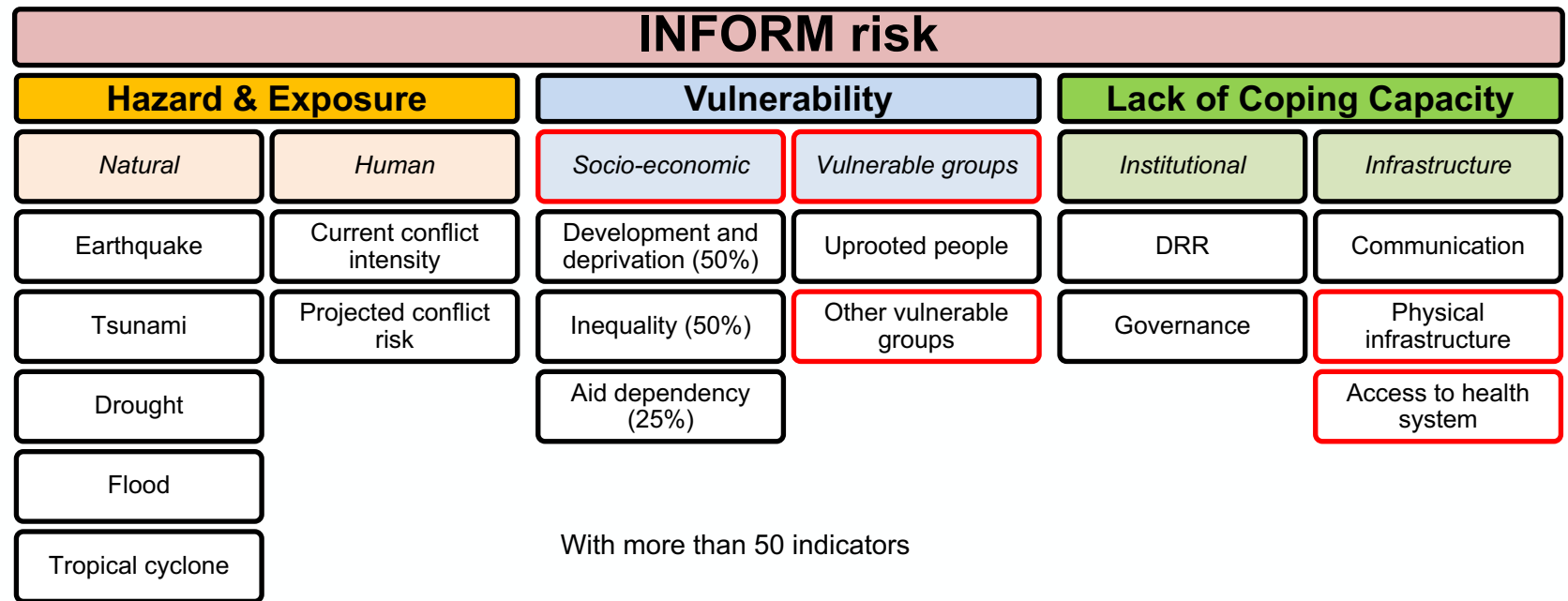




Know your risk

Health Resilience of the Society

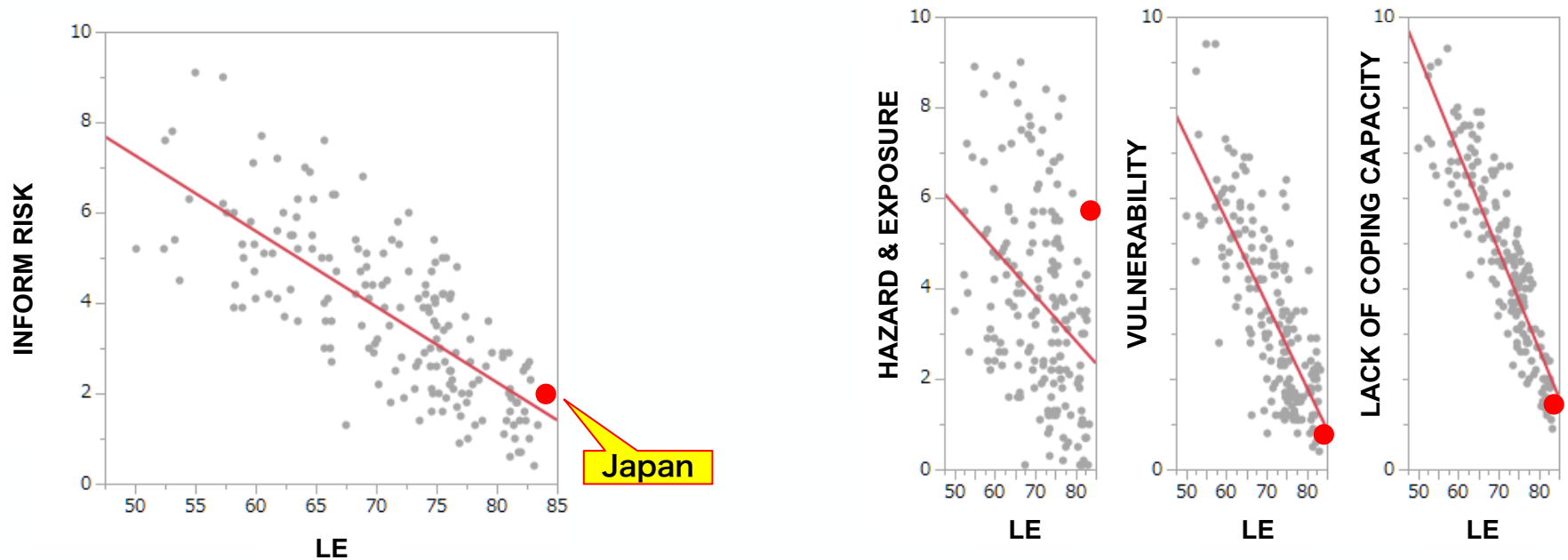
Structure of INFORM risk index



Egawa (2018) J Disaster Res 13(6): 1049-1061



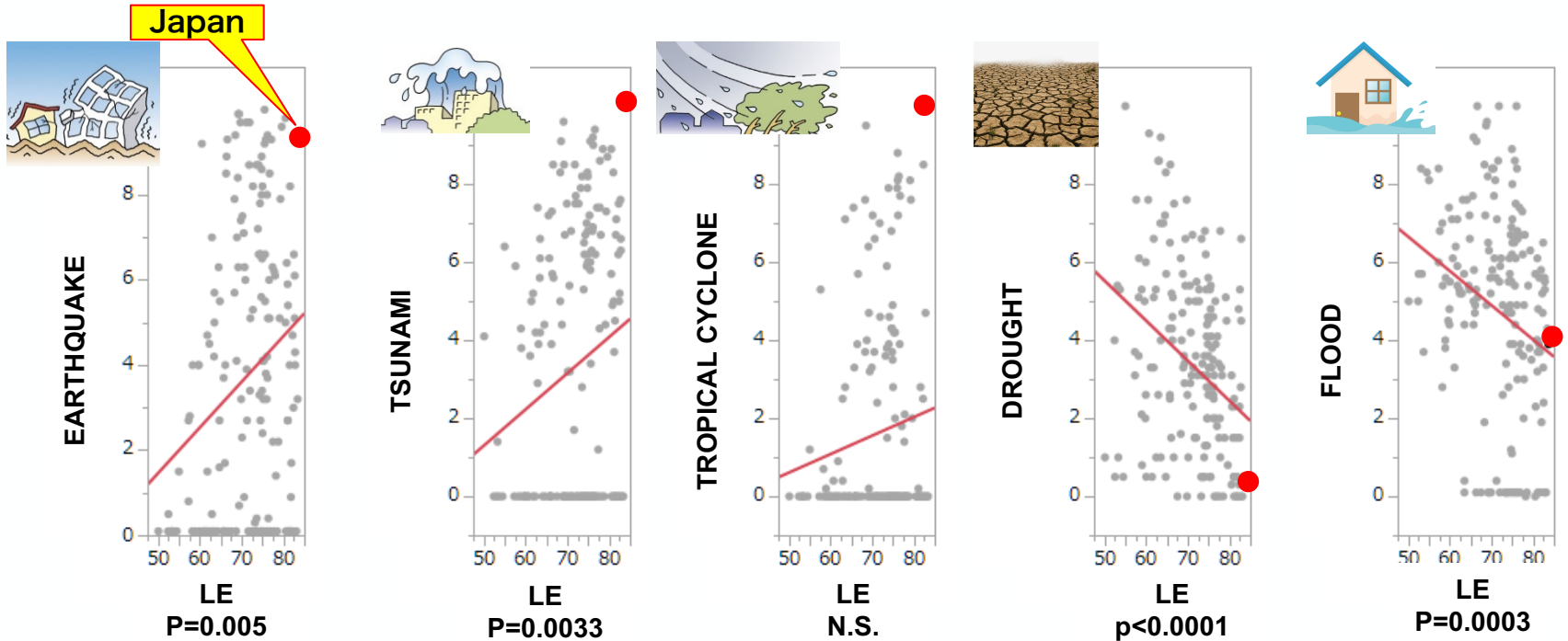
LE negatively correlates with INFORM risk



Egawa (2018) J Disaster Res 13(6): 1049-1061



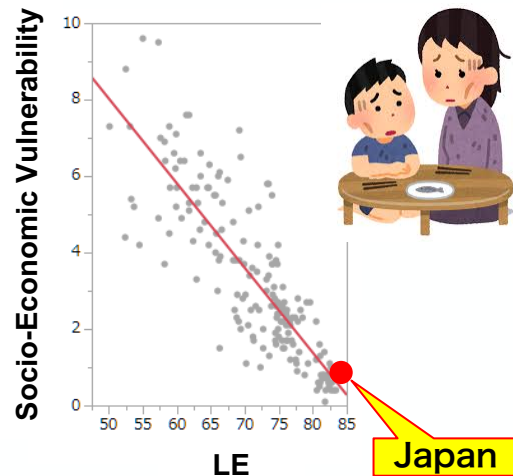
Natural hazard risk and LE



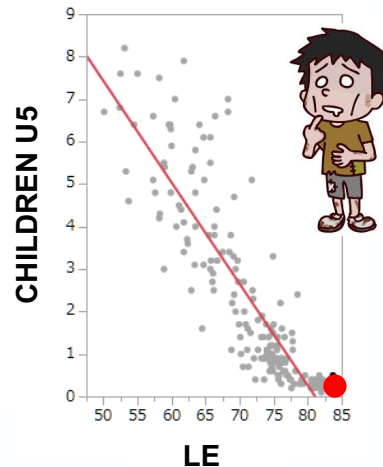
Egawa (2018) J Disaster Res 13(6): 1049-1061



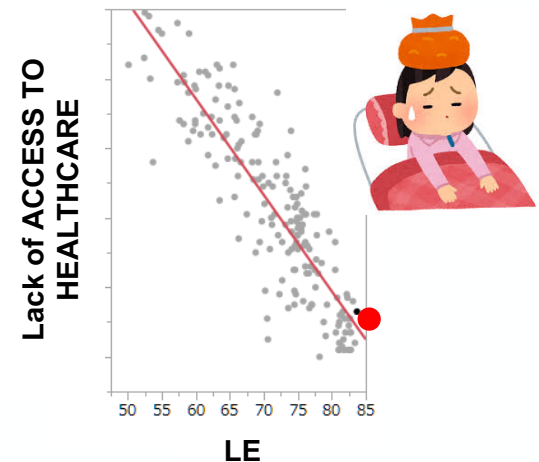
Health related categories of INFORM Risk and LE



- Human Development Index
- Poverty Index
- GINI Index
- Gender Inequality
- Aid Dependency



- Children U5 Mortality
- Children U5 Malnutrition

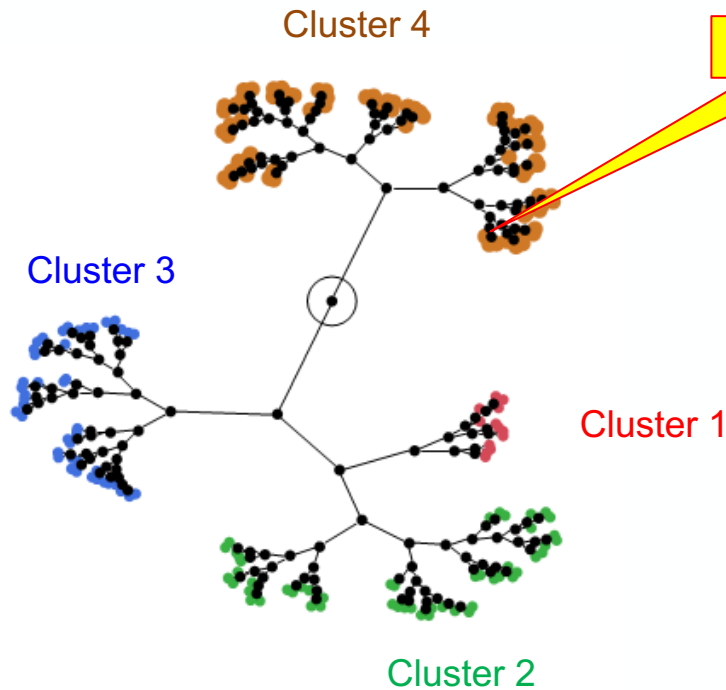


- Physicians density
- Health expenditure per capita
- Measles immunization coverage

Egawa (2018) J Disaster Res 13(6): 1049-1061



Cluster dendrogram by risk dimensions and LE



Cluster	1	2	3	4
N	13	51	45	74
Hazard & Exposure	7.7	3.5	5.5	2.0
Vulnerability	7.2	4.7	3.5	1.8
Lack of Coping Capacity	7.6	6.4	4.5	2.8
Life Expectancy	61.2	62.8	73.2	77.8

Egawa (2018) J Disaster Res 13(6): 1049-1061





From GEJE to all hazard

Conclusion

Change the concept of Risk Reduction

Needs

Top 3 priorities for communities (UN Survey)

1. A good education
2. Better healthcare
3. An honest and responsive government

Paradigm Shift



Climate Change
Rapid urbanization
Poverty
Lack of resource
Loss of biodiversity

Change of Risk



Better access

Resilient
Community

Safe Hospital

Effective
Response

Safe School

Mental and
Physical

Communication

Funding and
Development



Hazard-proof
Structure

Early Warning

