

Housing Recovery Patterns of the 1995 Kobe Earthquake Victims:

results from 1999 Hyogo random
sampled survey

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Background of this Study 1

- Jan. 17th, 1995, Kobe Earthquake occurred
- Severe Damage to
Physical Environment & Social Systems
- Also Damage to People's Everyday Life
- Hard to Recover Everyday Life
Because NEVER examined the process.

Background of this Study 2

- For **Disaster Reduction**:
 - ① **Mitigation**: To Construct disaster-resistant structures
 - NOT good enough for Kobe Earthquake
 - +② **Preparedness**: To Increase the Community Resilience
 - Knowing about LIFE RECOVERY gain the Resilience

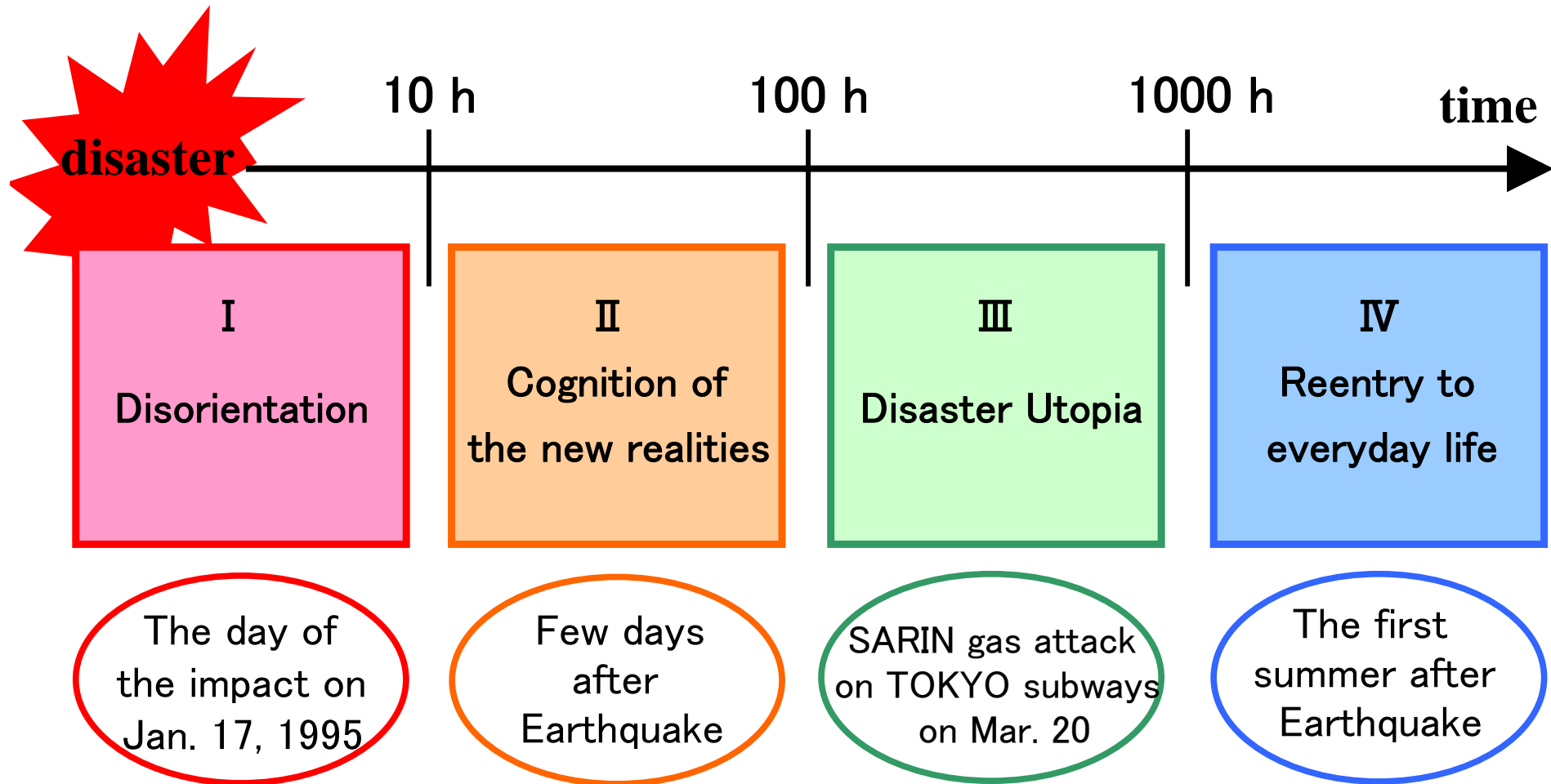
Framework of this Survey 1

- **1996-1997 Qualitative Research:**
Gathered Victims' Personal Description
about Behavior after the event



- **Hypothesis:** People Experience several
Qualitatively Different PHASES along with
the Chronological Development after the
Event

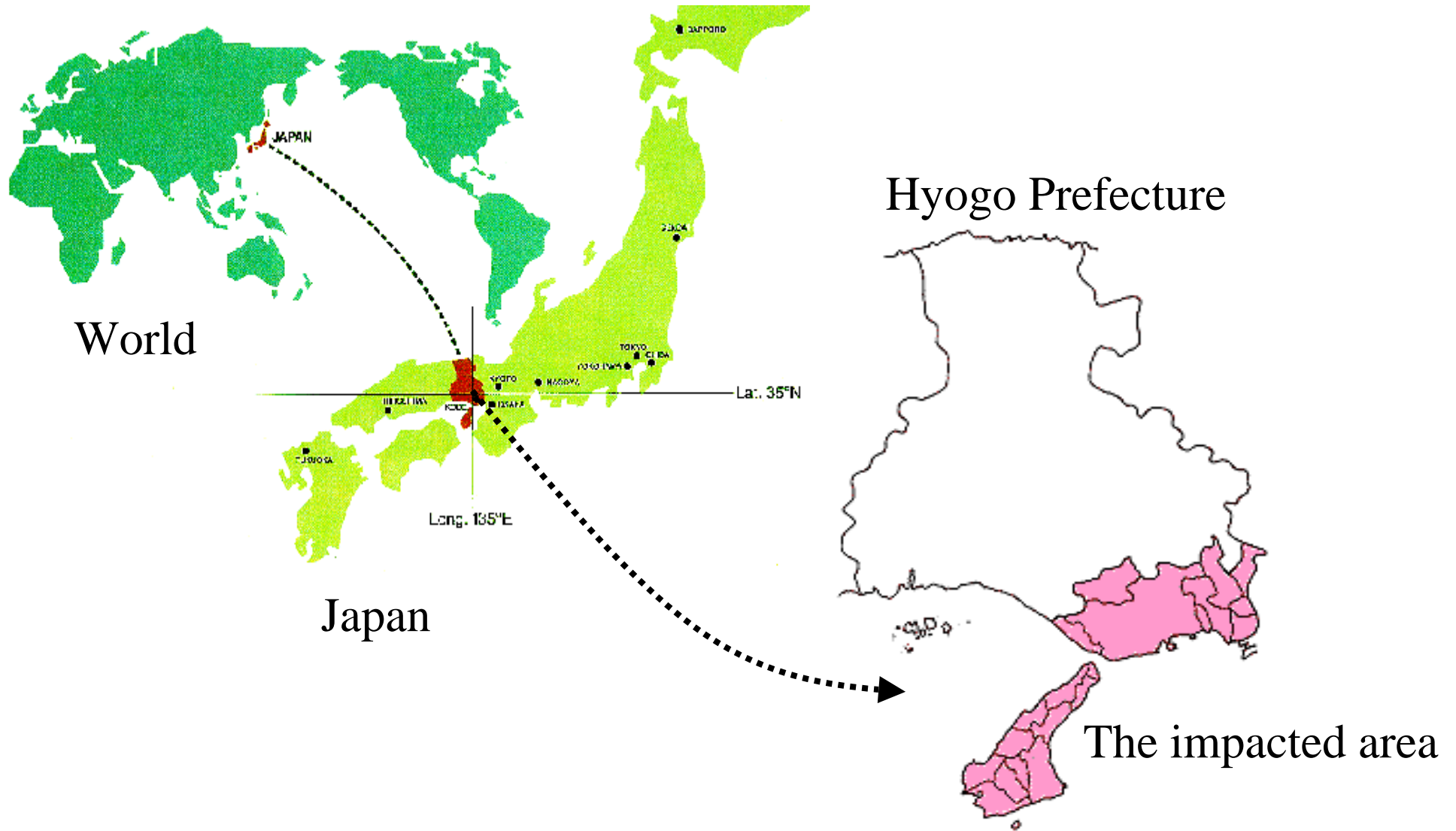
Table 1 Four Time Phases after the earthquake



Questionnaire:

- Designed the Questionnaire based on the Hypothesis of 4 time phases of Victims' Behavior Patterns
- Focused on the Change of Residence because Houses are the BASIC part of Everyday-life

Hyogo Prefecture



Sampled Population 1

IN-HYOGO group (N=2500)

2-step Stratified Random Sampling Method

1. Select 2 Areas

Japanese Seismic Intensity Scale 7

Cut-off of City Gas Supply

2. 250 Points Selected

3. 10 Households Selected per Point

Sampled Population 2

OUT-OF-HYOGO group (N=800)

- Left Hyogo after the Event
- Selected from the Hyogo Government Newsletter Subscribers' list.

Sample Bias

- **IN-HYOGO**: Randomly Sampled
Quantitative Estimates
- **OUT-OF-HYOGO**: Possibly Biased
Keep Wish to Move
BACK to Hyogo

Research Overview

Designed & Conducted by	Disaster Prevention Research Institute, Kyoto University (Research Grant from The Great Hanshin-Awaji Earthquake Memorial Association)
Method	Mail Survey
Research Period	March 3, 1999 - March 23, 1999
No. of Questionnaires Returned	993 (In-Pref. 683, Out-of-Pref. 313)
Return Rate	30.1% (In-Pref. 27.3%, Out-of-Pref. 39.1%)
No. of Valid Responses	915 (In-Pref. 623, Out-of-Pref. 292)
Valid Response Rate	27.7% (In-Pref. 24.9%, Out-of-Pref. 36.5%)

Table 2 Demographic Characteristics significant coefficients (1)

	Total	In-Hyogo	Out-of-Hyogo
Sample size	915	623 (100)	292 (100)
① Sex & Age			
Male, under 30	19	10 (1.6)	9 (3.1)
Male, 30-39	72	52 (8.3)	20 (6.8)
Male, 40-49	122	101 (16.2)	21 (7.2) **
Male, 50-59	176	148 (23.8)	28 (9.6) **
Male, 60-69	187	133 (21.3)	54 (18.5)
Male, 70 and older	111	66 (10.6)	45 (15.4)
Female, under 30	5	1 (0.2)	4 (1.4) *
Female, 30-39	20	11 (1.8)	9 (3.1)
Female, 40-49	30	19 (3.0)	11 (3.8)
Female, 50-59	49	28 (4.5)	21 (7.2)
Female, 60-69	55	25 (4.0)	30 (10.3) **
Female, 70 and older	67	28 (4.5)	39 (13.4) **
② The number of family members			
Single	154	68 (10.9)	86 (29.5) **
2	262	167 (26.8)	95 (32.5)
3-5	451	352 (56.5)	99 (33.9) **
6 and more	39	34 (5.5)	5 (1.7) *

Number (Percentages: N/623*100, In-Hyogo and N/292*100, Out-of-Hyogo)

**p<.01, *p<.05 (test of goodness of fit, Chi-square test)

Table 3 Demographic Characteristics significant coefficients (2)

	Total	In-Hyogo	Out-of-Hyogo
Sample size	915	623 (100)	292 (100)
③ Kinds of pre-disaster housing			
Own land and housing	352	282 (45.3)	70 (24.0) **
Condominium	95	70 (11.2)	25 (8.6)
Crown corporation housing	32	28 (4.5)	4 (1.4) *
Public housing	41	38 (5.0)	3 (1.0) **
Company housing	37	21 (6.1)	16 (5.5)
Rental land and own housing	50	26 (4.2)	24 (8.2) *
Rental land and housing	108	43 (6.9)	65 (22.3) **
Private rental housing	198	113 (18.1)	85 (29.1) **
④ Housing damage			
Fully damaged	291	92 (14.8)	199 (68.2) **
Fully burned	19	6 (1.0)	13 (4.5) **
Half damaged	192	130 (20.9)	62 (21.2)
Half burned	2	1 (0.2)	1 (0.3)
Partially damaged	320	306 (49.1)	14 (4.8) **
No damage	89	86 (13.8)	3 (1.0) **
⑤ Condition of family members			
Dead	21	10 (1.6)	11 (3.8) *
Serious injured and ill	32	15 (2.4)	17 (5.8) *
Little injured and ill	187	102 (16.4)	85 (29.1) **
Not injured and ill	665	492 (79.0)	173 (79.0) **

Number (Percentages: N/623*100, In-Hyogo and N/292*100, Out-of-Hyogo)

**p<.01, *p<.05 (test of goodness of fit, Chi-square test)

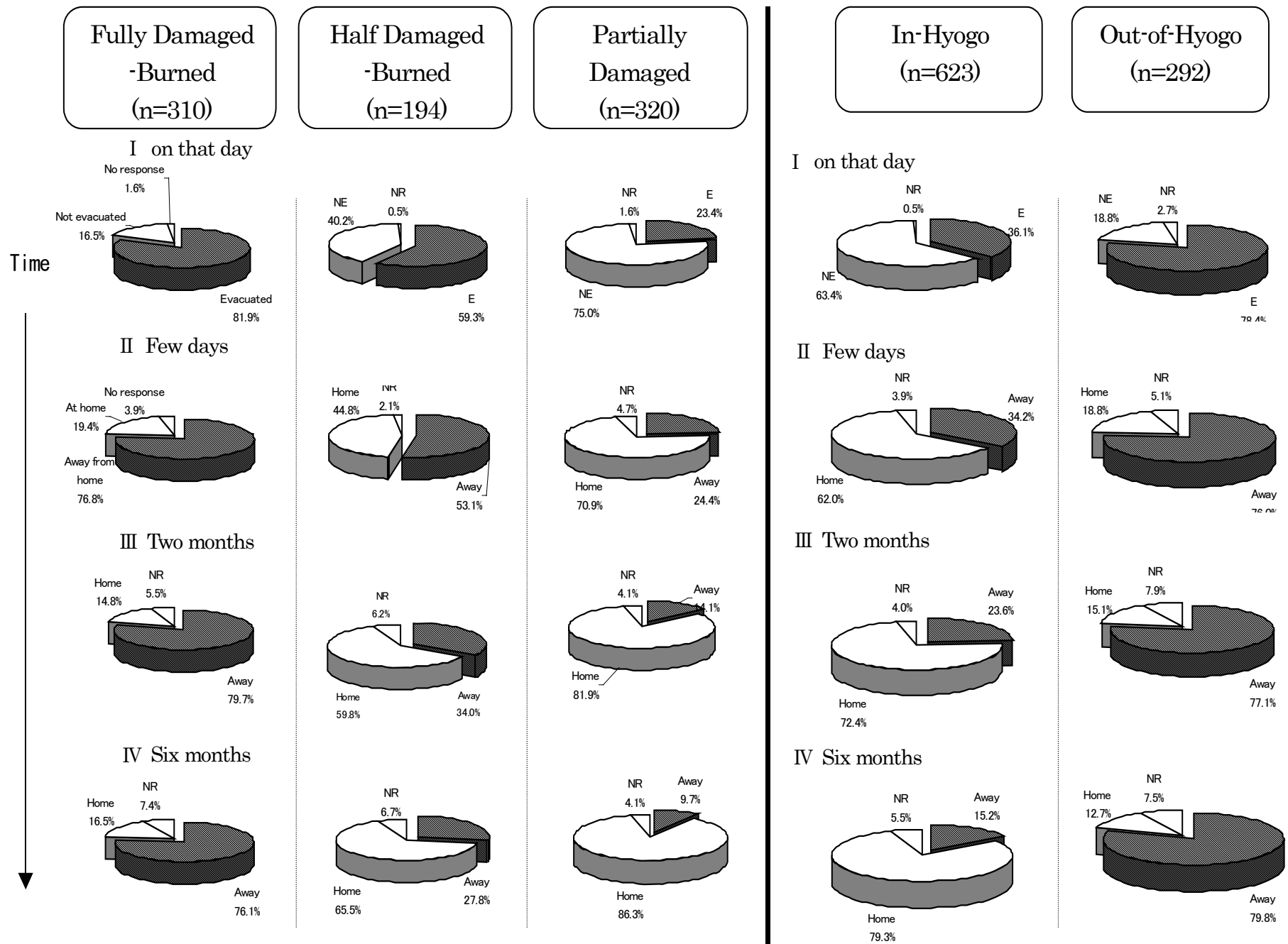


Fig.2 Patterns of victims' residence location

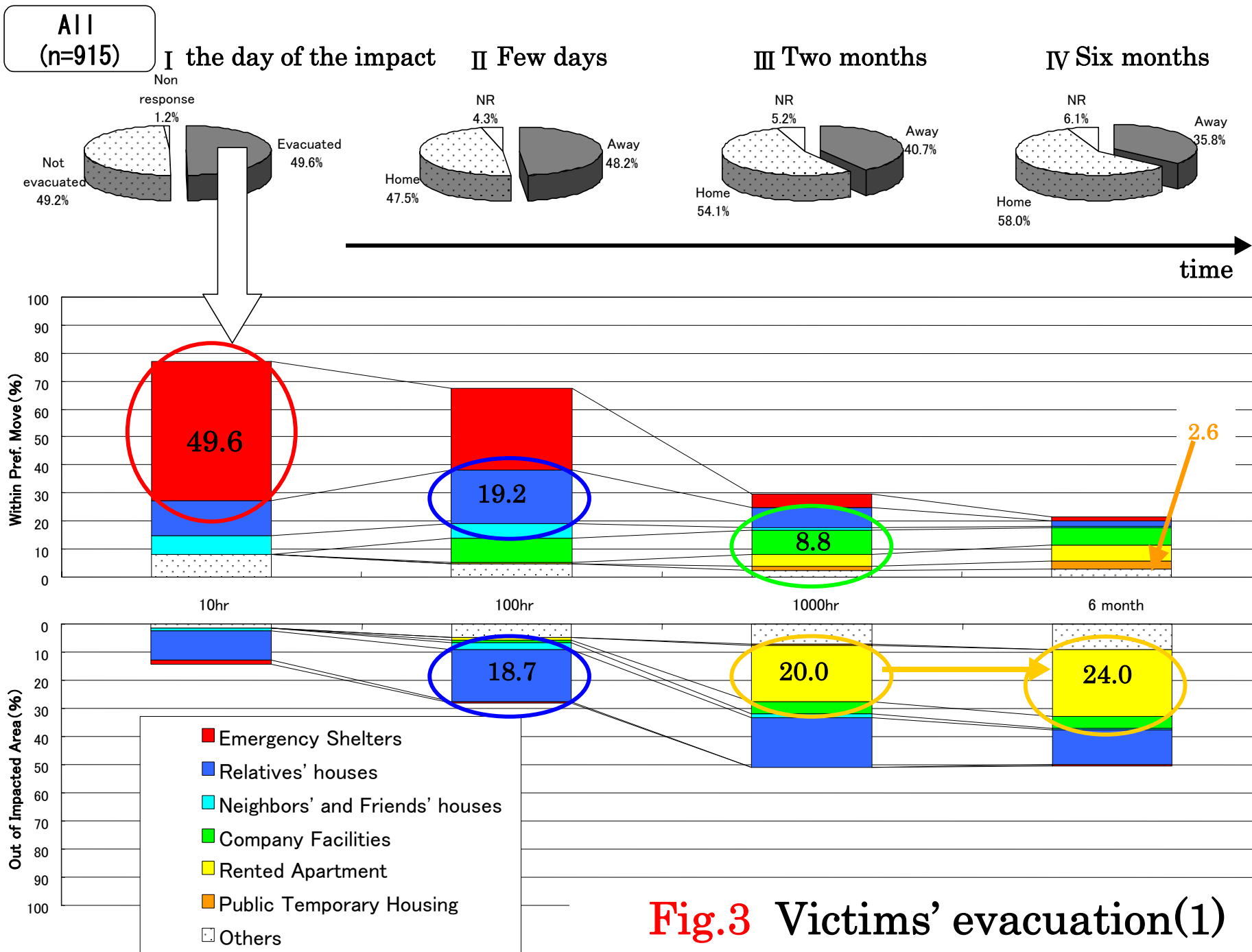


Fig.3 Victims' evacuation(1)

In-Hyogo
(n=623)

I the day of the impact

II Few days

III Two months

IV Six months

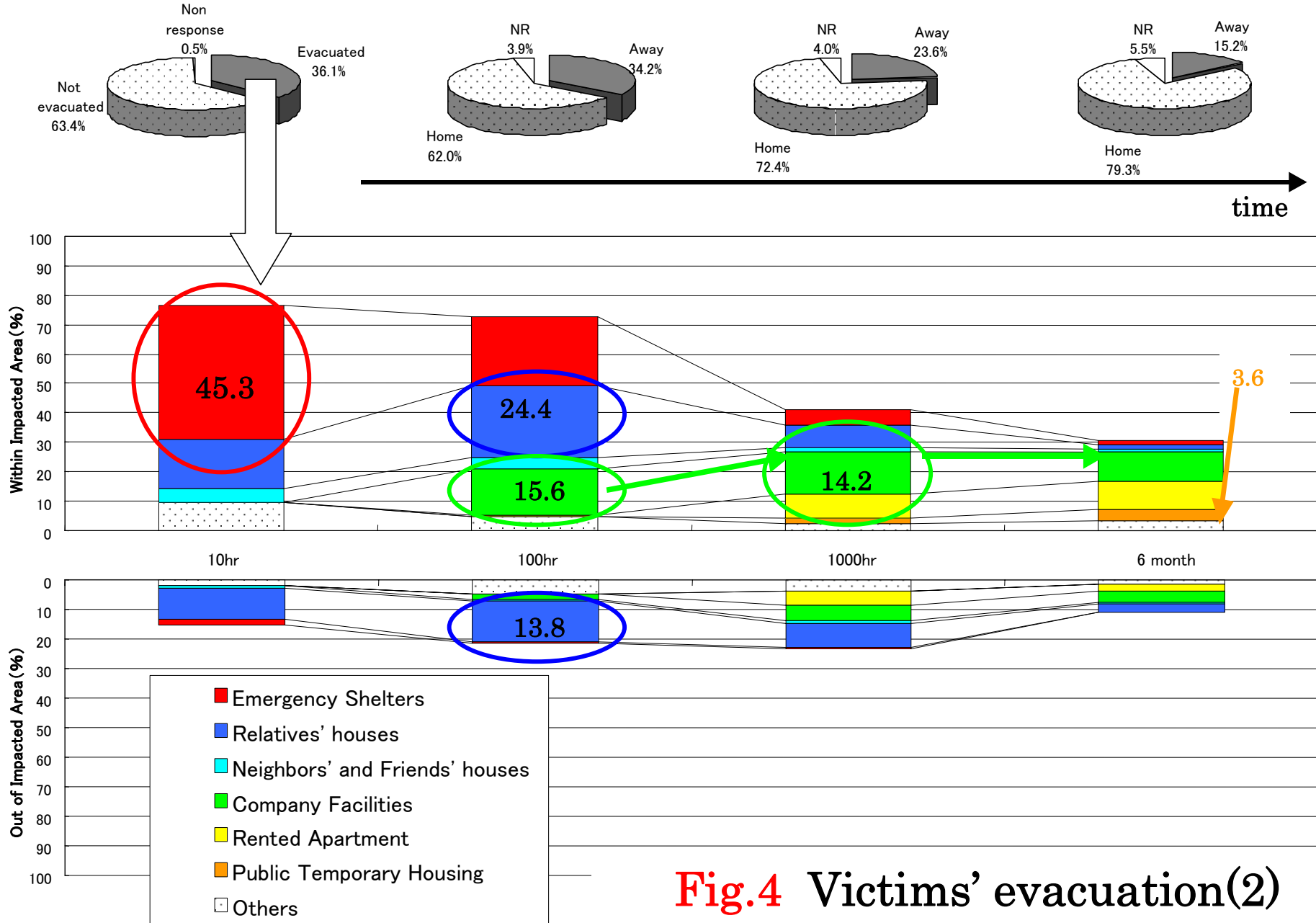


Fig.4 Victims' evacuation(2)

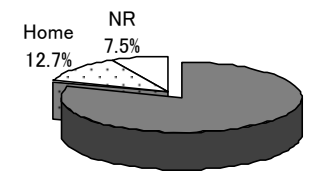
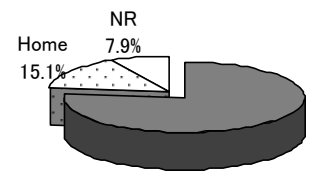
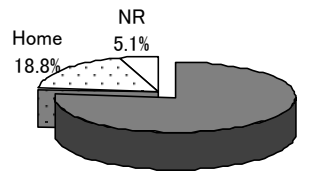
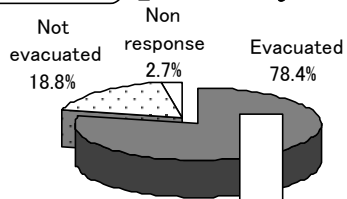
Out-of-Hyogo
(n=292)

I the day of the impact

II Few days

III Two months

IV Six months



time →

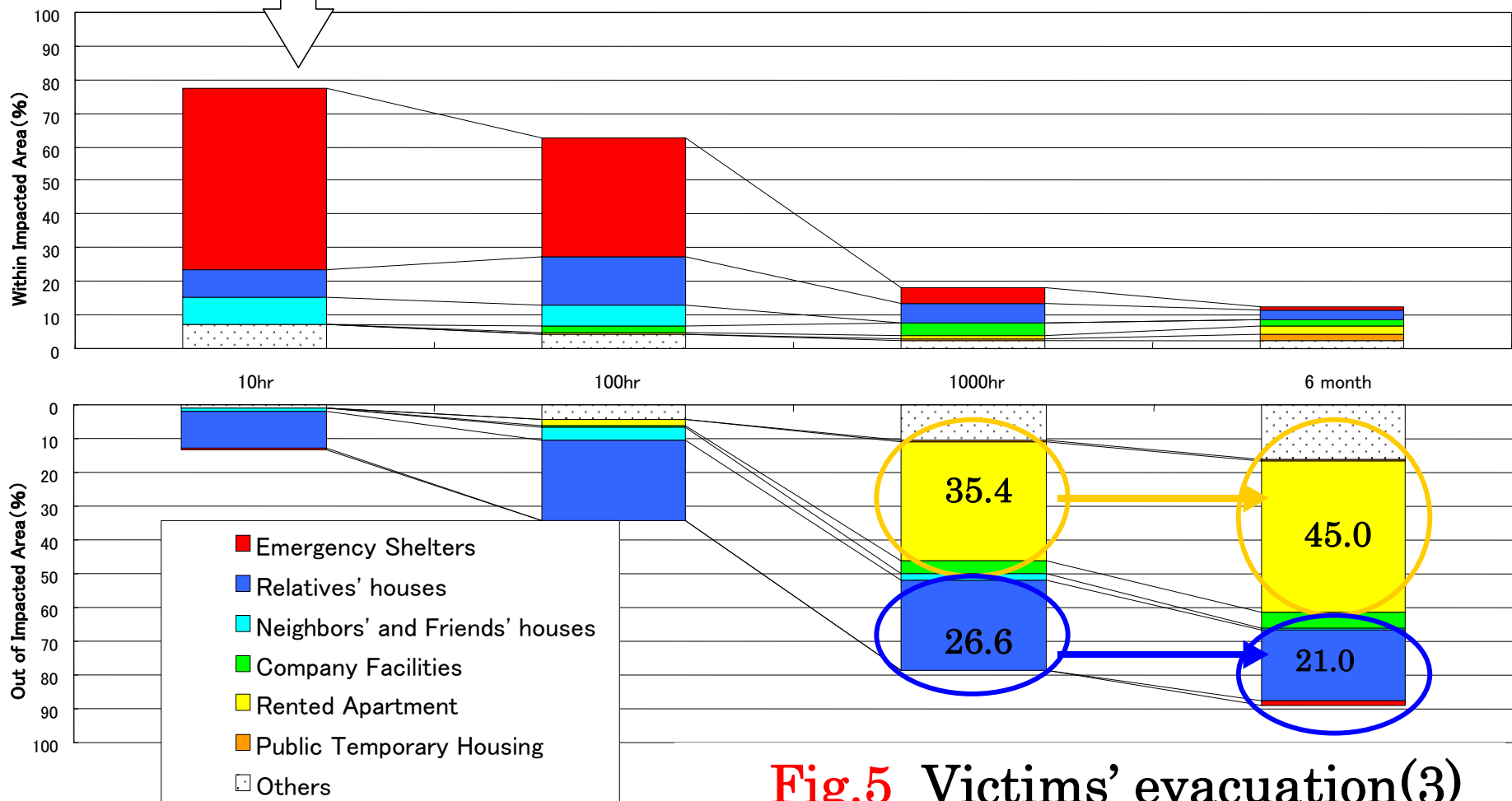
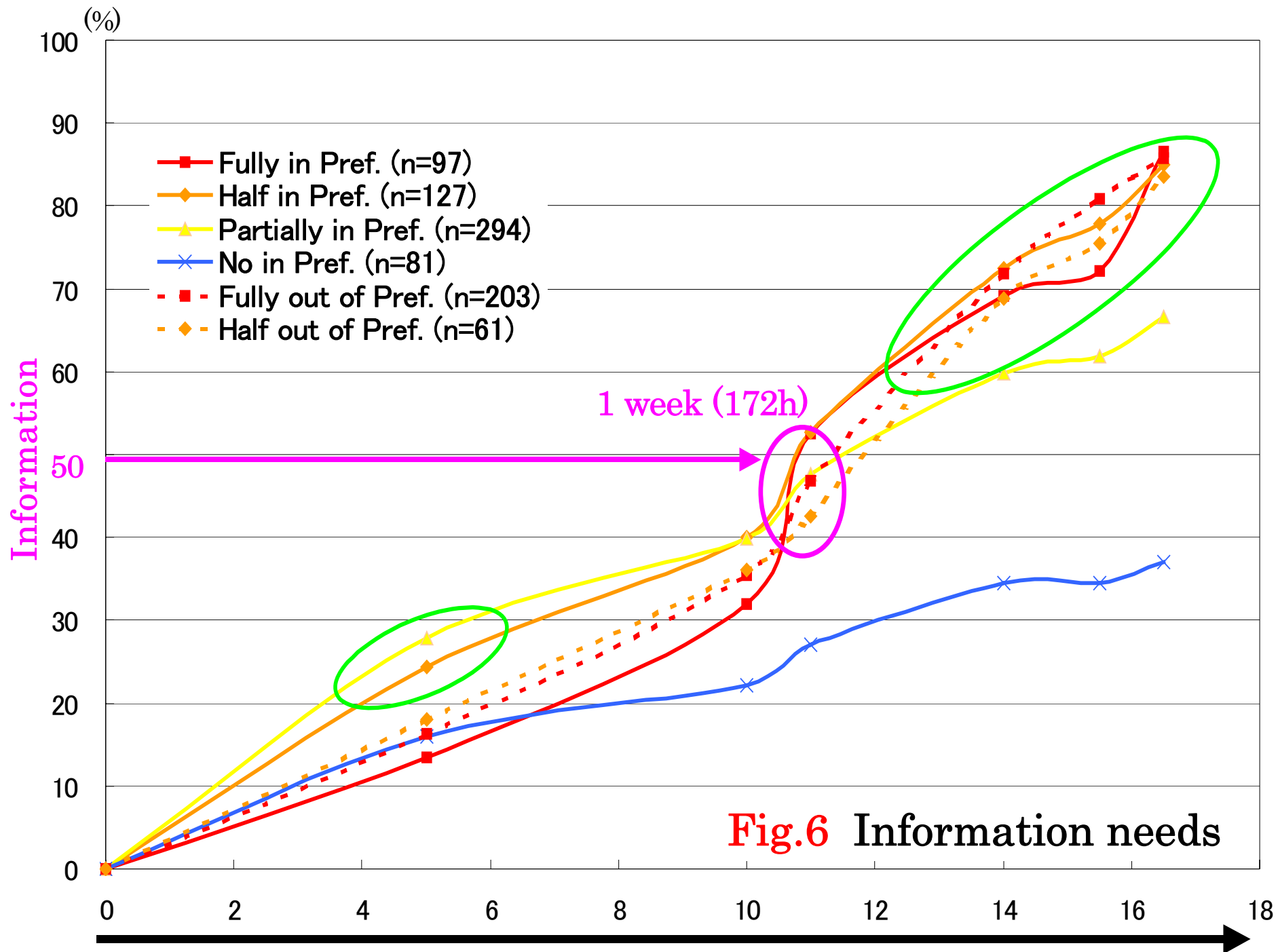
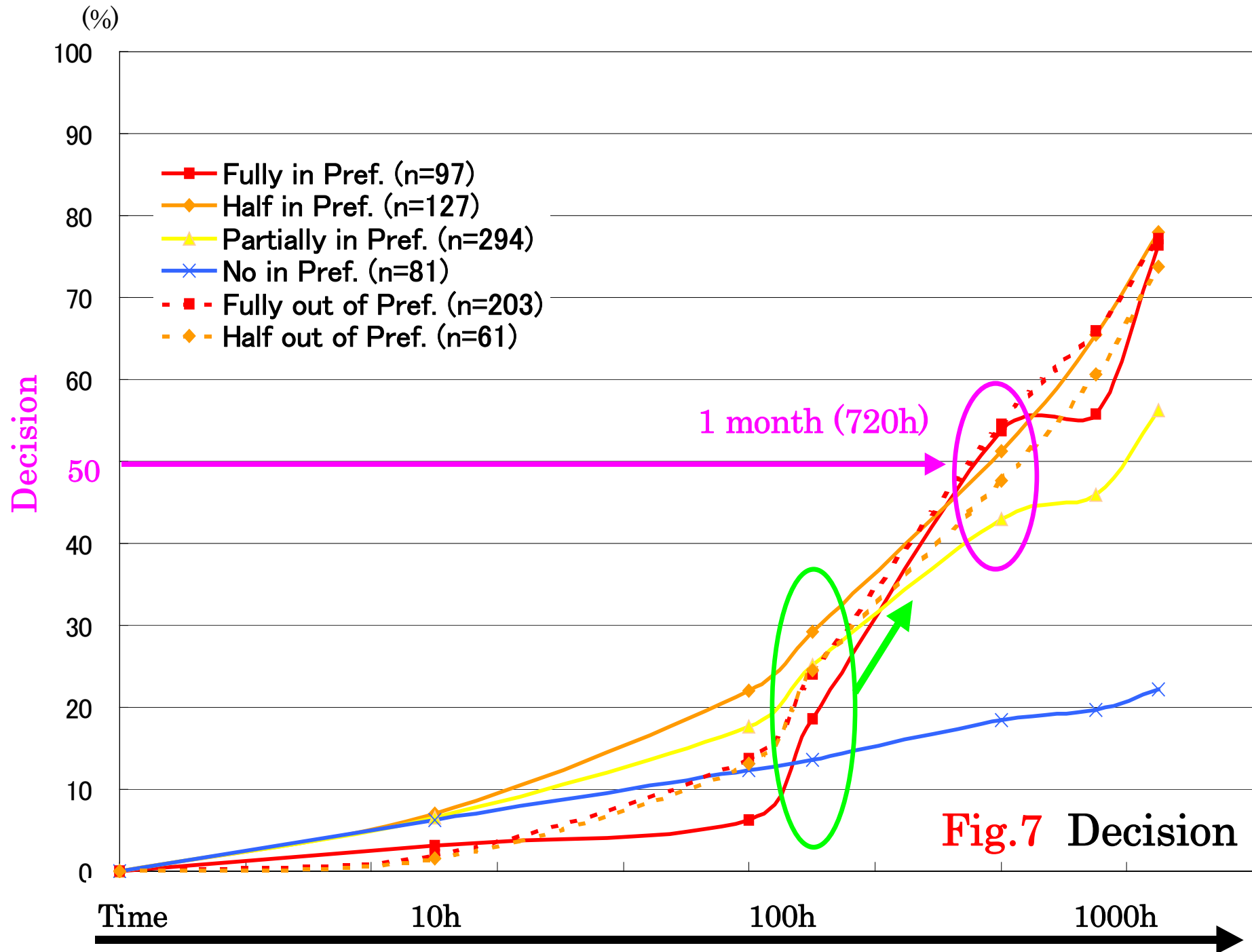


Fig.5 Victims' evacuation(3)





Conclusion

1. 4 Subgroups needed the Different Government Policy.
2. People who suffered complete damage needed Special care.
3. Within 1 week,
 1. Evaluation as to Housing Damage
 2. Cost-effective way to Deal with Damage Housing
4. Within 1 month, the Whole Picture of Housing Recovery Policy should be provided