I.Material.

Title: Saigai eno Shakai Kagakuteki Appoach (Social Scientific Approach to Disasters)

Author: Hirose, Hirotada (ed.)

Publisher and Year: Shinyo-sha, Tokyo, 1981

II. Agent and/or Event.

Type of Disaster Discussed: Disaster as general

III. Table of Content.

See the attached

IV. Abstract (Major ideas and suggestions.).

See the attached

Social Scientific Approach to Disasters. edited by Hirotada HIROSE, 1981
Shinyosha, Tokyo, Japan

TABLE OF CONTENTS

Summaries of chapters

Chapter 1 - Disaster Process by Hirotada Hirose

Disasters are defined as loss of lives, property, and breakdown of social order caused by mal-adaptations of individuals, groups, organizations, and society as a whole to environmental threats brought by disaster agents.

Chapter 2 - Disaster and Organizations by Yasumasa Yamamoto

Reviews of the previous studies on disasters from the organizational viewpoint.

Chapter 3 - Disaster and Information by Hirosuke Mizuno

The role of disaster information for appropriate responses is emphasized. It is indicated that necessary information should be transmitted via proper channels.

Chapter 4 - Disaster and Public Administration by Hiroshi Miyagawa

The article describes the countermeasures by Shizuoka prefecture, reports the computer simulation on damage assessment in Shizuoka prefecture due to the so-called Tokai Great Earthquake.

Chapter 5 - Reconstruction after Disaster and Society by Takeo Matsumura and Makoto Nakada

Using historical records, the authors analyze the political and economic effects of disasters. In addition, the effects on urban structures and on life styles or life structures are discussed.

Chapter 6 - Helping Behavior in Emergency Situations by Hiyoshi Nakamura

Using many psychological studies and actual events, the author describes the psychological process through which people hlep others in emergency situations. Based on the discussion, psychological process model of helping behavior is provided.

Chapter 7 - Decision-Making and Disaster by Kenichi Ikeda

Mechanisms of individual decision-making in crises are described in terms of two phases of an information process and decision-making process. Then, the author indicates four types of roles played by others.

Chapter 8 - Case Study I: The Eruption of Mt. Usu by Yoshitomo Watanabe

This article is similar to "Panic--Aesop no Guwa ga Yomigaeru Hi (Panic--The Day of Rebirth of the Aesop's Fables)" by Hirose et al.

Chapter 9 - Case Study II: The Miyagiken Oki Earthquake by Takashi Ohmi

Using the results of several studies not only from an architectural point of view, but also from a sociological viewpoint, the author pointed out several factors which made urban areas vulnerable to an earthquake.

Appendix - The Eruption of Mt. Ontake and Its Effects by Osamu Hiroi and Yoshitomo Watanabe

They report (1) that area-specific media such as cable broadcasting systems are better in a small area than ordinary mass media, and (2) that a person who has a strong identity with an many human ties in a community tends to conform to police or governmental officials' directions and to be active in helping others.

I. Material:

Title: The Cognition of the Damages, caused by the 1978 Miyagik Oki Earthquake, and Its Corresponding Behaviors. (Jishi Higai no Ninchi to Taio Kodo).

Author: Horige, Kazuya and Hiroshi Oura

Publisher and Year: in The Study of Sociology (Shakaigaku Kenkyu), Vo. 38, pp. 9-67, 1979
Tohoku Sociological Association

II. Study:

(1) Agent and/or Event

Type of Disaster: Earthquake

Date of Occurrence: June 12, 1978, 5:14 p.m.

Location: Miyagi Prefecture, Japan

Casualties and Damage: Killed: 28; Injured: 10,247
Completely destroyed houses: 1,279
Partially destroyed houses: 132,594
Flooded houses: 5
Destroyed portions of roads: 1,037
Land slides: 167
Fires: 12

(2) Method

Method in detail:

See the attached

Date of Study:

III. Hypothesis and Findings.

I. Method

A. Structured interviews with 1,014 housewives in 6 areas of Seudai city

B. Sampling procedure: Stratified two stage sampling

C. Date of Study: December 8-12, 1978

II. Results

A. Perceptions about the event

1. People who perceived the earthquake as great	96.0%
2. People who perceived the damages as great	73.0%
3. People who had strong fears	95.0%

B. Characteristics of the earthquake which people indicated

1. Breakdown of life-line functions	69.0%
2. Falling of concrete block walls	36.0%
3. Different degrees of damages by areas	34.0%

C. An act of God or a man-made disaster?

1. The earthquake disaster was an act of God	83.0%
2. The earthquake disaster was due to human failure	17.0%

D. When people were asked about who was responsible for the damages, those who regarded the disaster as an act of God decreased.

1. Government is responsible.	19.0%
2. Real estate companies are responsible.	32.0%
3. People who had damages are responsible.	4.0%
4. No one is responsible; it was an act of God.	43.0%

E. What people wanted to know on the day of impact (multiple choice)

1. About after-shocks	66.7%
2. About life-line functions	47.2%
3. About family members or friends	35.2%
4. About damages	27.4%

F. What people were troubled about

	on the day of impact	following days
1. Interruption of electricity	70.7%	26.5%
2. Interruption of gas	50.6%	65.1%
3. Interruption of telephone	24.3%	-
4. Interruption of water	18.7%	53.5%

G. Mutual assistance in neighborhood?

1. No mutual assistance	27.4%
2. People who answered "Yes"	70.9%
3. The mutual assistance was in	
a) providing meals or bathing facilities	24.4%
b) cleaning the debris up	11.8%
c) psychological support	19.0%
4. Whether or not any change occurred in neighborhood?	
a) no change	61.8%
b) people became better acquainted	12.6%
c) people became more cooperative	4.5%
d) people became more integrated	18.1%

5. The younger they are, the more changes they perceived.

6. People in the central part of the city perceived less change.

H. People's demands on the governments were

1. To accurately and effectively predict an earthquake	62.4%
2. To exercise a closer supervision over the real estate companies	82.0%
3. To establish a better system for compensating individuals losses due to disaster	29.0%
4. To set up a better evacuation system	22.0%
5. To set up a better communication system	25.0%

The Study of the Responses to Earthquake Prediction: Part II

(Zoku Jishin Yochi Joho eno Taio). Ikeda, Kenichi et al

NOT COMPLETE

I. Material:

Title: Report on the Psychological Research for Countermeasures Against Earthquake Disasters--How Do Tokyo Residents Think About and Prepare Against an Earthquake Disaster?, Vol (Daishinsai Taisaku no tameno Shinrigakuteki Chosa Kenkyu--Tomin wa Dou Kangae Dou Sonaeteiruka? Dai 1-ho)

Author: Guard Police Psychology Research Society (Keibi Shinrigaku Kenkyukai)

Publisher and Year: Tokyo Metropolitan Police Board (Keishi-Cho), 1965

II. Study:

(1) Agent and/or Event

Type of Disaster: Hypothetical earthquake

Date of Occurrence:

Location: Tokyo, Japan

Casualties and Damage:

(2) Method

Method in detail: See the attached

Date of Study: See the attached

III. Hypothesis and Findings.

I. Methods

A. Questionnaires delivered and collected by police
   1. Samples: 10,000 individuals, chosen by purposive selection
   2. Valid answers: 9,720
   3. Date of Study: April-May, 1965

B. Questionnaire survey and interviews
   1. Samples: 700 individuals drawn by a sub-sampling method
   2. Valid answers: 502
   3. No details about interviews
   4. Date of Study: July 11-12, 1965

C. Group interviews with eight groups
   1. Community leaders in downtown areas
   2. Housewives in residential areas
   3. Principals or head teachers of elementary and junior high schools
   4. Hotel managers or owners
   5. Traders or manufacturers dealing with dangerous substances
   6. Managers of theatres or department stores
   7. Managers of big business firms
   8. Owners of small business firms
   9. Date of Study: July 13-20, 1965

II. Results

A. Supposed emergency responses

1. Put fire out	75.0%
2. Open a door	56.0%
3. Observe the situation	54.0%
4. Remove valuables	34.0%
5. Get dressed	30.0%
6. Rush out	.9%

As age increases, the number of people who would do a., b., d., or e. increases.

People who have experienced an earthquake disaster are more likely to indicate they would do a., b., d., or e. in comparison with people who have no such experience.

People who have a conversation at home on how to respond indicate they would more likely do a., b., d., or e. than people who do not have such a conversation.

B. Supposed disasters due to an earthquake

1. Fires	90.5%
2. Collapse of houses	71.2%
3. Shortage of water	39.0%
4. Shortage of foods	31.5%
5. Breakdown of traffic systems	21.8%
6. Infectious or contagious disease	10.5%

People who live in downtown areas tend to predict the greater damage.

What is emphasized varies according to areas of residence.

C. People who have had a conversation at home on how to respond 62.0%
   1. What they have talked about at home
      a) evacuation places 46.2%
      b) what they should remove 32.0%
      c) how to evacuate 30.0%
      d) where family members will meet 17.7%
      e) a temporary shelter 17.4%
      f) how to communicate with each other 16.9%
   2. People who have experienced an earthquake are more likely to have had a conversation regarding these possibilities.

D. Fear and psychological readiness

(fear)	ready	not ready
strong	48.6%	51.4%
medium	45.8	54.1
weak	36.1	63.9

   1. As the feeling of fear decreases, psychological readiness or preparation is less.

E. Evacuation and drills
   1. Where they would evacuate
      a) nearby open spaces 58.4%
      b) public facilities 25.1%
      c) nearby heights 3.4%
   2. Many youths answered they did not know where they would evacuate.
   3. People who have school-age children are more likely to indicate they would evacuate to public facilities, because most people who answered "public facilities" seemed to mean school facilities.
   4. As age increases, the number of people who would evacuate to nearby open spaces increases.
   5. How they would evacuate

	men	women	total
a) on foot	74.2(%)	76.4(%)	75.2(%)
b) by bicycle or motorcycle	3.0	1.0	2.3
c) by car	11.8	9.1	10.7
d) other	2.3	2.0	2.2
e) don't know	8.0	11.6	9.1

   6. People who have had a drill
      a) never 84.0%
      b) yes 16.0%
      c) for floods 15.0%
      d) for fires 73.0%
      e) evacuation 40.0%
   7. People who think that a drill is essential 70.0%
   8. People who think that a drill is not essential 10.0%

I. Material:

Title: Report on the psychological Research for Countermeasures Against Earthquake Disasters--How Do Companies, Schools, and Neighborhoods Respond to an Earthquake Disaster? Vol.2 (Daishinsai Taisaku no tameno Shinrigakuteki Chosa Kenkyu--Kigyo, Gakko Chiiki wa Ikani Taisho Sureba Yoika? Dai 2-ho)

Author: Guard Police Psychology Research Society (Keibi Shinrigaku Kenkyukai)

Publisher and Year: Tokyo Metropolitan Police Board (Keishi-Cho), 1966

II. Study:

(1) Agent and/or Event

Type of Disaster: Hypothetical earthquake

Date of Occurrence:

Location: Tokyo, Japan

Casualties and Damage:

(2) Method

Method in detail: See the attached

Date of Study: See the attached

III. Hypothesis and Findings.

I. Methods

A. After disaster drills in two areas of Tokyo, group interviews were carried out with 700 participants. Among them, 268 persons were administered questionnaires.

1. Samples for a questionnaire survey; 268 (Men: 91, women: 177)
2. Date of Study: June 12, 1966

B. After the disaster drills in two schools, group interviews were conducted.

1. Samples
   a) an elementary school: techaers - 26, pupils - 764
   b) a junior high school: teachers - 31, students - 805
2. Date of Study: June 18, 1966

C. A questionnaire survey was conducted of business firms.

1. Samples: 500 business firms in Tokyo (A general manager answered questions on behalf of his or her company.)

(Area)	(Size) large	medium	small	total
Yamanote area	64	133	55	252
Shitamachi area	58	127	52	237
Central part	37	61	15	113
Total	159	321	122	602

Yamanote area - mainly the residential areas in Tokyo, such as Shibuya Suginami, Bunkyo, and other wards

Shitamachi area - mainly the commercial areas or small-industry areas mixed with residences, such as Kohto, Ohta, and other wards

2. Size
   a) large (over 500 employees)
   b) medium (between 100 and 500 employees)
   c) small (less than 100 employees)
3. Date of Study: June 20-July 10, 1966

D. A questionnaire survey for employees of the companies chosen as above.

Samples	large	medium	small	total
Yamanote	326	668	306	1300
Shitamachi	272	624	254	1152
Central part	187	222	76	485
Total	787	1514	636	2937

1. Date of Study: June, 1966

II. Results

A. Business firms

1. Business firms which have emergency planning
   a) for fires 86.0%
   b) for typhoons or floods 49.0%
   c) for earthquakes 29.0%

Large business firms are more likely to prepare for disasters than small business firms.

2. Division of labor in an emergency
   a) business firms which have a division of labor for emergency responses 84.0%
3. Evacuation
   a) business firms which have a plan on how to evacuate (escape) 67.5%
   b) business firms which have a plan about evacuation places 65.0%
   c) among business firms which have a plan, those whose employees recognize the plan well 38.0%
4. Communication

	large	medium	small	total
face-to-face	42.7(%)	51.0(%)	61.5(%)	50.7(%)
loud speaker	7.6	2.9	2.5	4.1
wire telephone	43.4	39.8	19.7	36.1
wireless	1.9	0.3	0	0.7
other	3.8	4.0	9.0	5.0

5. Business firms which have prepared necessary equipment or material for an earthquake disaster 90.0%
   a) medicines or first-aid kits 87.0%
   b) flashlights 86.0%
   c) overalls 59.0%
   d) radio 57.0%
   e) tents and blankets 40.0%
   f) food and water 23.0%

B. Employees
1. Employees who have been informed of appropriate responses 43.2%

Men are more likely to be informed of appropriate responses than women.

2. Employees who have participated in a disaster drill 47.0%
   a) ratios of the employees who have participated

large :	54.3%	Yamanote :	46.5%
medium:	46.8%	Shitamachi :	48.6%
small :	37.9%	Central part:	43.8%

Most drills were conducted on how to extinguish a fire.

3. Recognition of an emergency commander
   a) employees who recognize it 65.7%

	heard instructions	never heard
(a) knew about an emergency commander	88.0%	51.3%
(b) did not know about an emergency commander	11.9%	48.6%

4. If an earthquake occurred before or after office hours
   a) employees who think they would go to their offices immediately 41.5%

	heard instructions	never heard
(a) should go to company	54.3%	33.7%
(b) do not have to go to a company	45.6%	66.2%

5. When they are outside

	(immediately go to company)	(immediately to home)	(D.K.)	(other)
large	29.2%	48.2%	6.5%	15.9%
medium	30.3	47.3	7.3	15.0
small	35.4	43.7	6.7	14.1

C. Schools
   1. Although they have had disaster drills, no drills against earthquake disasters have been carried out because it is hard to set up the hypothetical situation.
   2. Most teachers worried about whether or not they can successfully help children escape.

D. Neighborhood
   1. A conversation at home about a disaster
      a) people who have had a conversation at home 86.0%
      b) what they have talked about at home
         (1) how to put fire out and remove valuables 49.6%
         (2) where to evacuate 35.7%
         (3) emergency responses 26.3%
   2. Group evacuation
      a) people who prefer
         (1) an official order 49.6%
         (2) together with neighbors 45.5%
         (3) as one likes 35.5%
   3. Middle age people tend to prefer to evacuate with neighbors, while women are more likely to think they will evacuate in accordance with an official order.

I. Material:

Title: Report on the Psychological Research for Countermeasures Against Earthquake Disasters--How Should Tokyo Residents Respond to an Earthquake Disaster in Undergrou Shopping Malls or on Bustling Strees?, Vol. 3

Author: Guard Police Psychology Research Society (Keibi Shinriga Kenkyukai)

Publisher and Year: Tokyo Metropolitan Police Board (Keishi-Cho), 1967.

II. Study:

(1) Agent and/or Event

Type of Disaster: Hypothetical earthquake

Date of Occurrence:

Location: Tokyo, Japan

Casualties and Damage:

(2) Method

Method in detail: See the attached

Date of Study: See the attached

III. Hypothesis and Findings.

I. Method

A. Structured interviews at four underground shopping malls with

1. 1,102 residents chosen from selected areas
2. 1,080 workers or students chosen from selected companies or schools
3. 175 workers or owners of stores in underground shopping malls
4. 1,493 pedestrians chosen in a haphazard way in underground shopping malls

B. Date of study: June 8 - July 8, 1967
July 3 - July 4, 1967

II. Results

A. On samples 1, 2, and 4

1. Whether of not they have imagined an earthquake in underground shopping malls.
a) yes 33.2%
2. Men are more likely to imagine that an earthquake may occur than women. Generally speaking, women are more optimistic than men.
3. As age increases, the number of people who imagine the occurrence of an earthquake increases.
4. People who frequently visit the underground shopping malls are more likely to imagine the occurence of an earthquake than people who less frequently visit.
5. People who visit the underground shopping malls at night are more likely to imagine the occurrence of an earthquake than people who visit during the daytime.

B. Perception about dangers of underground shopping malls due to an earthquake

1. People who perceive the underground shopping malls as dangerous 65.0%
2. As age increases, the number of people who do not perceive malls as dangerous increases.
3. People who frequently visit are more likely to perceive the underground shopping malls as less dangerous.
4. What is dangerous

	men	women	total
(1) collapse	45.4%	39.6%	43.1%
(2) fires	17.4	18.4	17.8
(3) crowds	17.6	24.0	20.2
(4) disruption of electricity	16.1	12.2	14.5
(5) don't know	3.5	5.8	4.4
total	100% (894)	100% (599)	100% (1,493)

5. Perceived possibility of evacuation from the underground shopping malls
   a) people who think it is possible 21.2%
   b) people who think it is impossible 55.2%
6. Women are more pessimistic about the possibility of successful evacuation.
7. People who frequently visit the underground shopping malls tend to perceive a greater possibility of successful evacuation than people who less frequently visit.

C. Emergency responses
1. Three types of emergency responses
   a) the wait-and-see attitude (WAS type) 35.0%
   b) the rush-into-exits type (RIE type) 40.0%
   c) the rush-to-and-fro type (RTF type) 20.0%
2. Men tend to respond with WAS type, while women tend to respond with RTF type.
3. As age increases, the WAS type of responses increases.
   a) Youth tend to respond with RTF type.
4. People who are familiar with the underground shopping malls tend to respond with WAS type, while people who are less familiar with them tend to respond with RTF type.

D. Recognition of countermeasures of the underground shopping malls
1. People who think that the underground shopping malls have
   a) some countermeasures 48.5%
   b) no countermeasures 34.8%
2. People in their 40s or 50s are more likely to think the underground shopping malls have some countermeasures against an earthquake than people in their 20s or 30s.
3. People who visit the underground shopping malls at night tend to think they have some countermeasures.
4. People who respond with WAS type tend to think that the malls have some countermeasures.
5. Preparations thought to be necessary
   a) set up self-defense organizations in the underground shopping malls 85.1%
   b) provide people with official instructions and to supervise them by police or fire departments 95.4%
   c) clearly indicate emergency exits and how to evacuate 97.0%
   d) educate people who visit the malls 89.5%
   e) be equipped with emergency lights and generators 95.4%
6. Evacuation drills
   1. People who think that the drills are essential 80.0%

III. Results

A. On sample 3

1. Perceived possibility of the occurrence of an earthquake
   a) people who perceive a great possibility — 75.0%
   b) in comparison with the samples 1, 2, and 4, the ratio of people who think an earthquake will occur is markedly high
2. Perceived degree of safety of the underground shopping malls
   a) people who think that the malls are safe — 33.0%
   b) in comparison with the samples 1, 2, and 4, the ratio of people who think the malls are safe is markedly high
3. Predicted damages from an earthquake

	Samples 1,2,4	Sample 3
a) buried alive due to collapse	74.1%	64.5%
b) injured due to collapse	92.7	90.3
c) killed by fires or smoke	86.3	77.1
d) killed by gas explosions	80.6	65.2
e) confusion due to darkness	92.7	78.3
f) crushed by crowds	85.7	52.0
g) trapped underground	80.6	51.4
h) floods	59.4	43.4

4. Perceived possibility of evacuation
   a) people (Sample 3) who think that
      (1) they can safely evacuate — 55.0%
      (2) they cannot evacuate — 27.0%
      (3) don't know — 18.0%
5. Predicted actions if an earthquake occurred
   a) wait-and-see behavior — 59.4%
   b) rush-into-exits behavior — 28.6%
      (1) women are more likely to respond with this type of behavior
   c) measures to prevent looting — 1.7%
   d) tell people about the safety of the underground shopping malls — 2.3%
6. Preparations people have made for an earthquake
   a) flashlights — 54.3%
   b) transistor radios — 20.0%
   c) first-aid kits — 51.4%
   d) candles — 41.4%
   d) private generators — 22.3%
7. How they would communicate with each other in an emergency
   a) wired broadcasting system — 28.6%
   b) loud speaker — 13.7%
   c) face-to-face — 31.4%
   d) others — 4.0%
   e) no ideas — 40.6%

I. Material:

Title: Report on the Psychological Research for Countermeasures Against Earthquake Disaster--Drivers' Consciousness About and Behaviors in Response to an Earthquake Disaster, Vol. (Daishinsai Taisaku no tameno Shinrigakuteki Chosa Kenkyu Daishinsai ni taisuru Jidosha Untensha no Ishiki to Kodo. Dai 4-ho)

Author: Guard Police Psychology Research Society (Keibi Shinrigak Kenkyukai)

Publisher and Year: Tokyo Metropolitan Police Board (Keishi-Cho), 1969

II. Study:

(1) Agent and/or Event

Type of Disaster: Hypothetical earthquake

Date of Occurrence:

Location: Tokyo

Casualties and Damage:

(2) Method

Method in detail: See the attached

Date of Study: See the attached

III. Hypothesis and Firdings.

I. Method

A. Structured interviews with 2,817 drivers who came to the drivers' license office to renew their licenses (ordinary drivers).

B. Questionnaires delivered and collected by police.

1. Samples

a) 505 taxi drivers
b) 500 truck drivers } professional drivers
c) 384 bus drivers
d) 200 managers of transportation companies

C. Date of Study: June, 1969

II. Results

A. On drivers

1. The degree of concerns about an earthquake
   a) drivers who have a relatively high concern 56.0%
2. Professional drivers have stronger concerns about an earthquake than ordinary drivers.
3. Professional drivers who belong to the larger companies tend to have stronger concerns than those of professional drivers of small companies.
4. Drivers who have been driving for a longer period are more likely to have strong concerns than drivers with fewer experiences.

B. Predicted traffic conditions

(Impossible to drive a car

1. Ordinary drivers 66.3%
2. Professional drivers 71.7%
3. The young drivers tend to think that they can drive a car even after the quake occurs.
4. Truck drivers tend to think that they can drive even after the quake.
5. Professional drivers of large companies are more likely to think that it will be impossible to drive in Tokyo.

C. Expected emergency responses

	Ordinary Drivers	Professio Drivers
(a) parking a car on the left side of a road and waiting to observe the situation	27.2%	43.9%
(b) parking a car on the road and waiting to observe the situation	24.3%	33.3%
(c) leaving a car on a road and evacuating	30.7%	-
(d) continuing to drive until reaching a certain safe place	6.6%	15.6%
(e) letting customer leave and go back to a company	-	4.5%

1. Whether or not they should lock their car after an earthquake
   a) Although it is desirable for them not to lock their cars, the ratio of people who did not expect to lock their cars was 30.0%
   Most of them answered that it depended on the situation.

2. Whether or not they would use a car for evacuating

	(Ordinary Drivers)	(Professional Drivers)
Yes	16.0%	22.2%
No	60.5%	53.9%
Don't know	9.8%	11.6%

D. Recognition of the emergency traffic control system

	Ordinary Drivers	Professional Drivers
Know about it	12.1%	20.4%
Don't know	87.6%	79.6%

E. Expected basis of their decision
   1. To conform to police instructions 56.9%
   2. From information from radios 33.0%
   3. What other drivers would do 4.6%

F. Drivers who would try to conform to police instructions are more likely to
   1. Carry a fire extinguisher in their car
   2. Have a stronger concern about an earthquake
   3. Have more knowledge about the emergency traffic control system

Drivers who would make a decision on the basis of other drivers' behavior tend to have less concern about an earthquake, to have less knowledge about the emergency traffic control system, and would try to evacuate by car.

G. On managers of transportation companies
   1. Instructions for drivers
      a) managers who gave instructions 44.0%
   2. What the managers instructed
      a) to report where drivers are and to evacuate leaving the car at a safe place 27.0%
      b) to conform to police instructions 21.0%
      c) to evacuate leaving a car at a safe place 13.4%

H. Preparation against an earthquake
   1. Preparations such as carrying a fire extinguisher in a vehicle or giving instructions for drivers are carried out more often in bus companies than other transportation companies. Truck companies are the poorest in preparing for an earthquake.
   2. The more cars they have, the more and better they tend to prepare.

I. Material:

Title: Report on the Psychological Research for Countermeasures Against Earthquake Disasters--On Evacuation Behaviors, Vo (Daishinsai Taisaku no tameno Shinrigakuteki Chosa Kenkyu--Hinan Kodo ni tsuite, Dai 5-ho)

Author: Guard Police Psychology Research Society (Keibi Shinrigak Kenkyukai)

Publisher and Year: Tokyo Metropolitan Police Board (Keishi-Cho), 1970

II. Study:

(1) Agent and/or Event

Type of Disaster: Hypothetical earthquake

Date of Occurrence:

Location: Tokyo, Japan

Casualties and Damage:

(2) Method

Method in detail: See the attached

Date of Study: See the attached

III. Hypothesis and Findings.

I. Method

A. A questionnaire survey

1. Questionnaires were delivered and collected by police.

B. Samples: 7,200 Tokyo citizens chosen by police stations (Seventy-two police stations in Tokyo chose 100 citizens, respectively.)

C. Return Ratio: 6,938 96.0%

D. Date of Study: May 2-11, 1970

II. Results

A. On evacuation

1. Predicted damages

a) collapse of house	20.0%
b) fires	23.1%
c) disruptions of gas, electric, and water supplies	22.6%
d) failure to evacuate due to traffic confusion	15.0%
e) increased anxiety because of social disorder	6.9%

People over age 19 indicated "fires" as the most probable disaster.

Residents of one- or two-story houses tend to be in fear of fires, while residents of three- or more-story houses tend to be anxious about disruptions of gas, electric, and water supplies.

2. Predicted damages for their own houses

a) completely collapsed	25.0%
b) partially collapsed	50.8%

As age increases, the number of people who predict that their houses will completely collapse decreases.

Residents of three- or more-story houses are more likely to predict that they will not experience great damage.

3. When they think they will begin to evacuate

a) immediately	19.3%
b) when they see fires	34.3%
c) when the dangers approach	11.5%
d) when the order is issued	31.5%
3) don't know	3.3%

a) and b) ⇒ positive type of evacuation
c) and d) ⇒ passive type of evacuation

Men tend to be the passive type in evacuating, while women tend to be the positive type.

People over sixty years of age tend to be the positive type.

Residents of one-or two-story houses tend to be the positive type.

People who intend to try to evacuate to nearby open spaces, parks, or public facilities (mainly schools) tend to be the positive type, while people who intend to try to evacuate to the designated evacuation place tend to be the passive type.

4. How they think they will evacuate

a) with all family members	76.7%
b) with neighbors	14.0%

5. Where they think they will evacuate
   a) nearby parks 29.6%
   b) nearby high or open spaces 26.4%
   c) designated evacuation place 19.9%
   d) nearby public facilities 13.7%
6. How long they think it will take for them to reach facility of evacuation
   a) 5 minutes or less 56.2%
   b) 6 minutes to 10 minutes 18.5%
   c) 11 minutes to 30 minutes 13.4%
   d) over 60 minutes 2.1%
7. Parks or open spaces they intend to try to evacuate to
   a) 500 square meters or less 10.3%
   b) 500-3,000 square meters 32.6%
   c) 3,000-10,000 square meters 27.7%
   d) 10,000-50,000 square meters 18.4%
   e) greater than 50,000 square meters 11.0%
8. Whether or not they perceive they can safely evacuate
   a) yes 59.1%
   b) no 16.9%
   c) don't know 23.5%
9. Reasons why they think the cannot safely evacuate
   a) confusing traffic conditions 70.1%
   b) fires and smoke 13.8%
   c) breakdown of roads or bridges 13.6%
10. Present knowledge of designated evacuation place
   a) people who know 31.6%

Although there is no significant difference regarding sex, there is regarding ages. That is, people who are over 30 tend to have better knowledge about the designated evacuation place.

People who know about the designated evacuation place tend to perceive the place as safe.

11. Major reasons why they do not think they will evacuate to the designated evacuation area
   a) not safe 5.0%
   b) too far 21.3%
   c) don't know the way 64.9%
12. Attitudes toward a disaster drill
   a) favorable to and have participated in a drill 39.9%
   b) favorable to a drill, but few chances to participate 40.8%
   c) favorable to a drill, but it should be improved 16.6%
   d) not favorable 2.7%

B. On subways
1. The place perceived as most dangerous during a quake
   a) on subway trains 33.2%
   b) in subway stations or underground shopping malls 29.1%
   c) in high-rise buildings 15.5%
   d) on ordinary trains 11.1%
   e) in automobiles 5.1%

2. What is dangerous in subways
   a) being trapped because of possible collapse 30.7%
   b) darkness due to disruption of electric service 20.7%
   c) being crushed by crowds 14.5%
   d) fires on trains 8.5%
   e) floods in subway systems 8.5%
   f) danger from high voltage electricity 6.9%
   g) being injured by falling objects 6.3%
3. Emergency responses (prediction of their own responses)
   a) they would conform to the operator's or the conductors' instructions 81.0%
   b) they would stay in a train 3.9%
   c) they would conform to what other people do 7.4%
   d) they would walk to a nearby station 5.2%
4. What people predict about other's responses in a quake
   a) conform to the operator's or the conductor's instructions 40.2%
   b) stay in a train 1.5%
   c) conform to what other people do 18.0%
   d) walk to a nearby station 37.0%