

A Survey of Social Support Networks in a Depopulating Japanese Village

Yukari YAGI*, Kohei NAGAI*, Naofumi SUZUKI**, Petr MATOUS*

The University of Tokyo*

Hitotsubashi University**

ABSTRACT: Japanese rural areas are depopulating and the proportion of the elderly is rapidly increasing as young people are migrating to urban areas. There are less and less public services because of the financial difficulty of the local governments. The study explores what makes their lives sustainable under such circumstances, with a particular focus on social capital. The subject of the study is a mountainous village in Kochi prefecture, Japan, where about 800 people live in 300 households, with the rate of elderly people is over 30%. To explore (1) the elements that constitute the well-being of different types of people, and (2) the relational ties through which they acquire those elements, a social network analysis has been employed. A face-to-face questionnaire survey was carried out with the whole adult population (age 16+), by visiting each household in the area. Two methods for social capital and social network data gathering, namely resource and name generators, were combined into a single instrument. This paper reports *Dandan-club*, a residents association trying to vitalize the village, plays an important role to keep the residents' daily lives comfortable.

Keywords: aging society, rural area, social network

1. INTRODUCTION

Recently Japan has become an aging society and been faced with depopulation. Japanese rate of the elderly (age 65+), which is 23.1% (2010), is the highest in the world: 12% in USA, 16% in UK (2005 both) and 20% in Germany (2006). Depopulation especially in the rural area is very serious. Mountainous villages become *Genkai-shuraku*, a village where the rate of the elderly is more than 50%, one after another.¹ The local governments in such areas have financial difficulties and provide the people with less and less services. It has become difficult to cooperate in leading a daily life with the residents each other because mountainous areas are dotted with villages and each village has more and more elderly people. More and more villages in mountainous areas just manage to keep the functions

as a village.

It is supposed that the cooperation with residents is more important while the public services are shrinking one after another. The objective of this study is to show the social network between the residents in a village and how they acquire resources which are necessary for their daily lives through the social network. It is also the objective to specify who has a centrality in the social network and clarify the living in a mountainous village more in detail.

Two methods for social capital and social network data gathering, namely resource generator and name generator, were combined into a single instrument. Based on the qualitative data gathered through the pilot study, 16 items were selected as the resources that would potentially be relevant to the inhabitants'

lives. The respondents were asked if they had an access to a resource, what the name of the person whom they get it from was, and if they could get it by themselves. Geographical coordinates of all respondents' locations were also recorded.

2. RESEARCH PLACE

The subject of this study is *Choja*, a mountainous village in *Niyodogawa* town in Kochi prefecture (Figure 1). The rate of the elderly in *Choja* is 32.3% (2009) and about 800 people live in 300 households (2009). The rate of the elderly is not so high in comparison with that in *Niyodogawa* town; 47.6% (2009) because people in their around thirties live in construction company housing in *Choja*. The village is on steep sides of mountains, so it takes many ups and downs to move in the village.^{2,3,4}

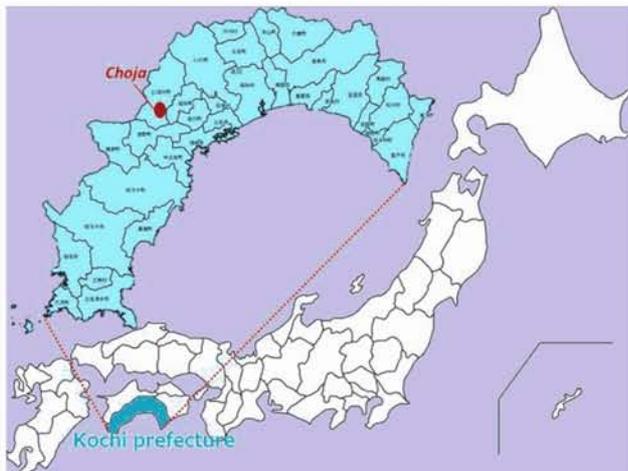


Figure 1 Location of Choja

Choja is separated to 15 settlements (Figure 2) and each settlement chooses a leader whose term is a few years. There are two kinds of the company housing; one is for families and the other is for singles.

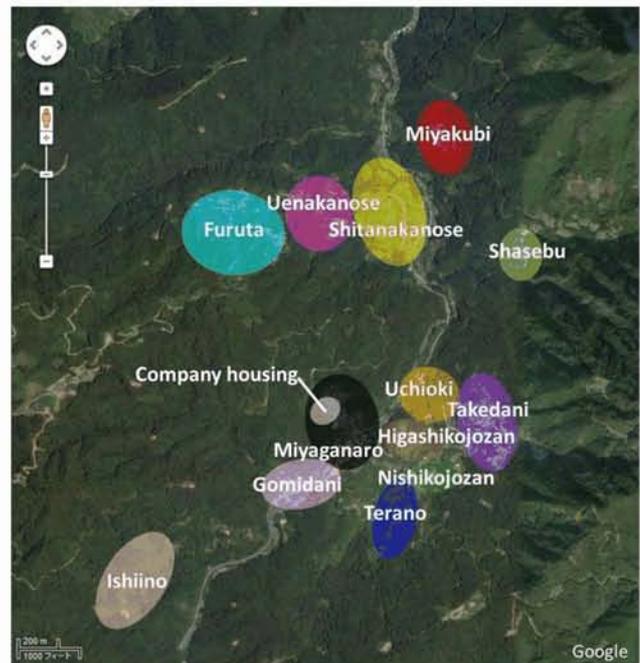


Figure 2 Settlements in Choja

Choja has a lot of residents' associations such as fishing, hunting and badminton associations. *Dandan-club* is one of them. It maintains rice terraces in *Choja* and holds some festivals there to vitalize the village. This study analyzes a role of the *Dandan-club* members in the network.

3. METHODOLOGY

To show the social network between the people in *Choja* and the way of acquisition of resources which are necessary for their daily life, resource generator and name generator, which are known as methods for measuring social capital quantitatively, were combined.^{5, 6} As what helps the life in the mountainous village should be known in this study, the resources which are necessary for the daily life there were firstly defined by analyzing the interviews to the people in *Choja*. In the part of resource generator, it is asked if the resource can be accessed, who the resource supplier is and if he or she is a relative. The access to a resource could be regarded as an index of easiness to live. In the part of name generator, it is asked what the name of the resource

supplier is in order to draw the social network between the people in *Choja*. As this survey was carried out with the whole adult population in *Choja* (age 16+), the whole social network for the acquaintance of the necessities for their daily life could be shown by putting all respondents' ego-network together. Each resource is asked how necessary it is to define which resource is necessary for the people in *Choja*.

4. SURVEY IN *CHOJA*

4.1 Pre-survey

It is important to select really necessary resources for the people in a mountainous village and make a questionnaire. Past interview data is analyzed qualitatively and interviews to the 14 leaders in the settlements in *Choja* and some people there were held from 13/9/2011 to 18/9/2011.

The rough numbers of households, people and the elderly in each settlement were grasped. It was found that the people naturally help each other, beasts and

birds such as boars, monkeys and crows are very harmful and many hobbies take root in nature, for example, fishing in a river and hunting. There are 25 residents' associations and *Dandan-club* is one that tries to revitalize the region and takes root in *Choja*.

Through the interview results, 16 resources were chosen so as to minimize the burden of the respondents and cover as all functions of daily life as possible. 16 resources are shown in Table 1.

4.2 Main survey

This survey was carried out in order to specify the resources necessary for the residents' daily lives and how they gain the resources through the social network between the residents. The results can show how belonging to residents' associations and the individual attributions such as age, sex and living settlement influence gaining the resources and the social network. Then this study tries to suggest how to make the life in *Choja* comfortable.

Table 1 Resource list

	resource (someone who...)
1	clean up your house
2	cook for you
3	help you to move a bookshelf
4	take you to a hospital
5	go to a supermarket for you
6	advise you about looking for work
7	you can confide your serious problem to
8	drop at your house just to see you
9	you can easily ask to lend 1000 yen
10	help you to work in the fields
11	can use the Internet on a PC
12	exterminate harmful animals like wasps and crows
13	share vegetables with you
14	drink with you
15	chat with you without any reasons
16	have same hobby as you

Table 2 Number of households, residents (age 16+) and respondents

Settlement	Number of households	Number of residents (age 16+)	Number of respondents
Miyakubi	8	17	17
Uenakanose	12	22	18
Shitanakanose	12	19	15
Furuta	18	32	27
Shasebu	2	4	4
Miyaganaro	35	63	56
Takedani	35	65	55
Uchioki	16	32	28
Nishikojozan	20	41	34
Higashikojozan	35	65	54
Gomidani	5	26	19
Ishiino	5	8	6
Terano	23	47	39
Company housing for families	42	84	45
Company housing for singles	19	19	13
Total	287	544	430

The main survey was carried out from 13/11/2011 to 28/11/2011 for all residents in *Choja* (age 16+). The questioners visited each house and interviewed all people in the household for about 10 minutes. Only for the people living in the company housing, the questionnaires were handed out and collected later. The number of the people answered was 430 and the response rate was 79.0%; apart from the people in the company housing; they are 372 and 84.4%, respectively. The number of households, residents (age 16+) and respondents in each settlement is listed in Table 2.

The questionnaire is divided into two parts. One is for a family and the other is for an individual. The part for an individual is also divided into three parts; about individual attributions, about belonging to residents' associations and about resources. The question list is shown in Table 3.

5. RESULTS

5.1 About respondents' attributions

45% of the respondents are male: 55% of them are female. The number of females is a little more than

Table 3 Question list

		Questions
for a family		living settlement
		household number
		full names of all the people in the household
for an individual	individual attributions	sex
		age
		birthplace
		length of living in <i>Choja</i>
	belonging to residents associations	which associations they belong to
	for 16 resources (Table1)	how important it is
		1. NOT very important
		2. a little important
		3. very important
		4. indispensably important
if they have the resource supplier		
-full name		
-a relevant or not		
-living in <i>Choja</i> or not		
-settlement in <i>Choja</i>		
if he or she can do it by himself		
if he or she uses any services to do it		

that of males. The age of respondents and *Dandan-club* members is shown in Figure 3. The average age of the respondents is 60.4. As the people in the company housings are young, the average age except them is 64.8. The respondents' birthplace is shown in Figure 4. The number of people born in *Choja* is almost the same as that of people born out of *Choja*. The number of people of each span living in *Choja* of respondents and *Dandan-club* members is shown in Figure 5. The rate of people belonging to some groups is shown in Figure 6. More than the half respondents belong to some groups.

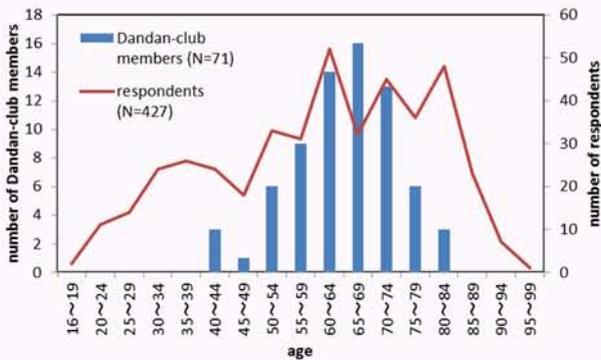


Figure 3 Age of respondents and *Dandan-club* members

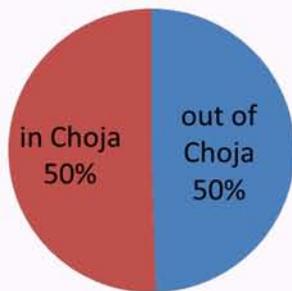


Figure 4 Birthplace

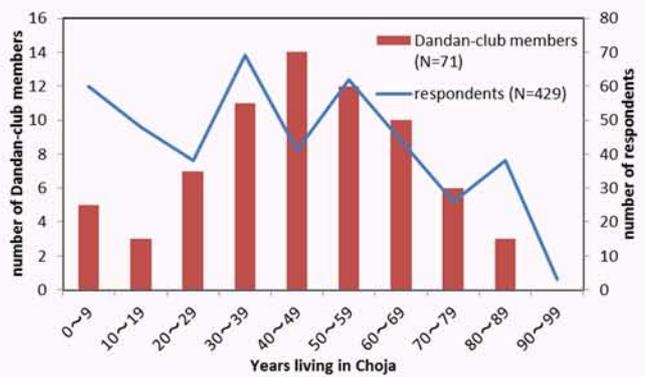


Figure 5 Years living in *Choja* of respondents and *Dandan-club* members

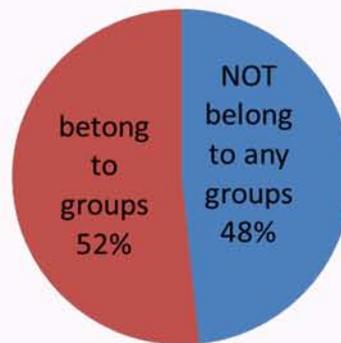


Figure 6 Belong to groups

5.2 *Dandan-club*

Dandan-club is a residents' association which maintains and beautifies the rice terraces in *Choja* and takes advantage of the rice terraces to hold some festivals so as to vitalize the village. As 71 people of the respondents belong to *Dandan-club*, it is a very big group in *Choja*.

The age of *Dandan-club* members is shown in Figure 3. Many members are at the age of 60~74 while no member is under 39 years old. Most members are after retirement. 37% of *Dandan-club* members are male; 63% of them are female. Female members are more than male ones.

The birthplace of *Dandan-club* members is shown in Figure 7. Members born in *Choja* are little more

than ones born out of *Choja*.

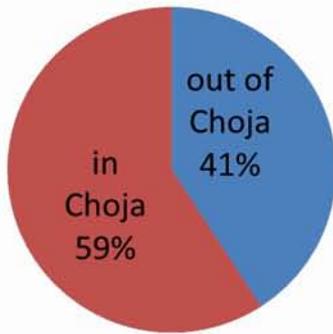


Figure 7 Birthplace of *Dandan-club* members

The years living in *Choja* of *Dandan-club* members are shown in Figure 5. The years living in *Choja* of *Dandan-club* members show almost the same tendency as respondents' except for less than 20 years.

5.3 Analysis of access to resources

The number of accesses to resources means a respondent's comfort of living. The number of people of each number of accesses to resources is shown in Figure 8. Many people have 12~14 accesses to resources. The average number of accesses to resources is 11.08. It can be said that most residents in *Choja* have enough accesses to resources.

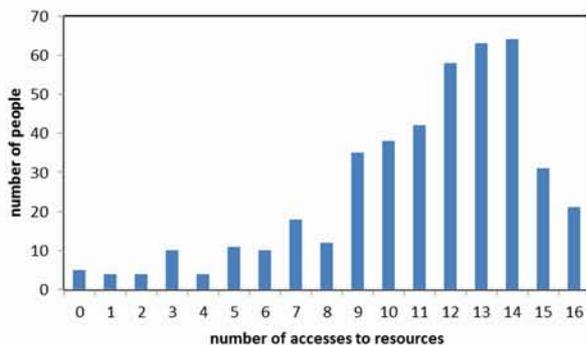


Figure 8 The number of accesses to resources

The average of the number of access to resources by belonging to *Dandan-club* is shown in Figure 9. The average of the number of accesses to resources

is little different by belonging to *Dandan-club*.

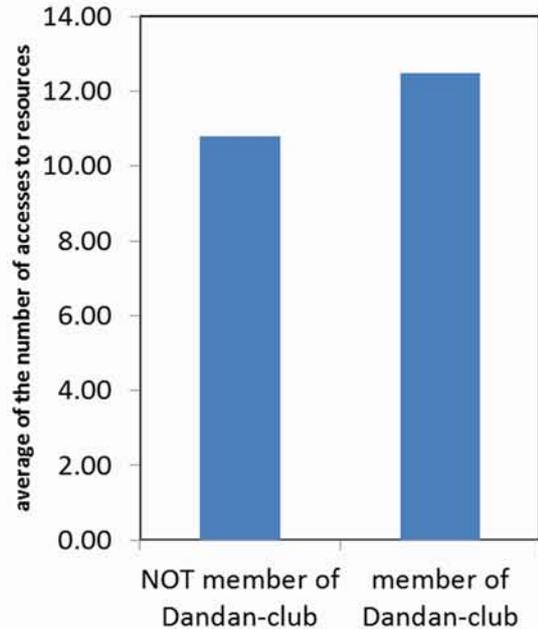


Figure 9 The average of the number of access to resources by belonging to *Dandan-club*

The average of the number of accesses to resources by each span living in *Choja* is shown in Figure 10. After living in *Choja* for more than 10 years, the average of the number of accesses to resources is little changed.

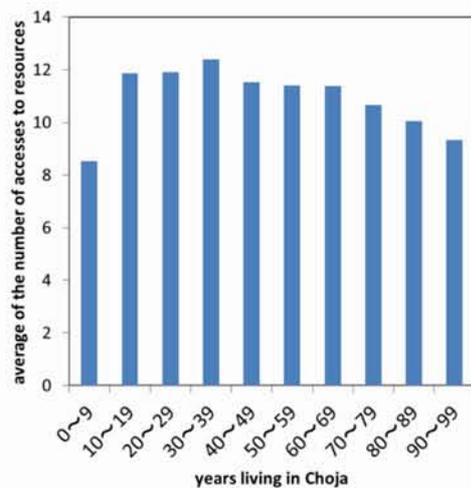


Figure 10 The average of the number of accesses to resources by each span living in *Choja*

As the residents in *Choja* secure accesses to resources on average, they live comfortably.

5.4 Analysis of centrality in the social network

Social network between residents drawn by the result of the survey in *Choja* is shown in Figure 11. One square means one male and one circle means one female in the figure. The coordinate in the figure is obtained by GPS data. The nodes' settlements are distinguished by using different colors. Many ties between settlements can be seen.

Indegree and betweenness are indexes measuring the centrality in a network. Indegree means the number of arrows to the respondent on a network. In this study, indegree expresses how reliable the respondent is. Betweenness means the degree of the

respondent's being on the shortest path between random pair. In this study, betweenness expresses how the respondent links a resident to another in the social network. If the person is not on the any shortest link between residents, the betweenness is 0; if the person links all pairs in the network to each other, betweenness becomes 1.

The number of people of each indegree is shown in Figure 12. Many people have 1~2 accesses to resources. The maximum indegree is 23. The average indegree is 2.78.

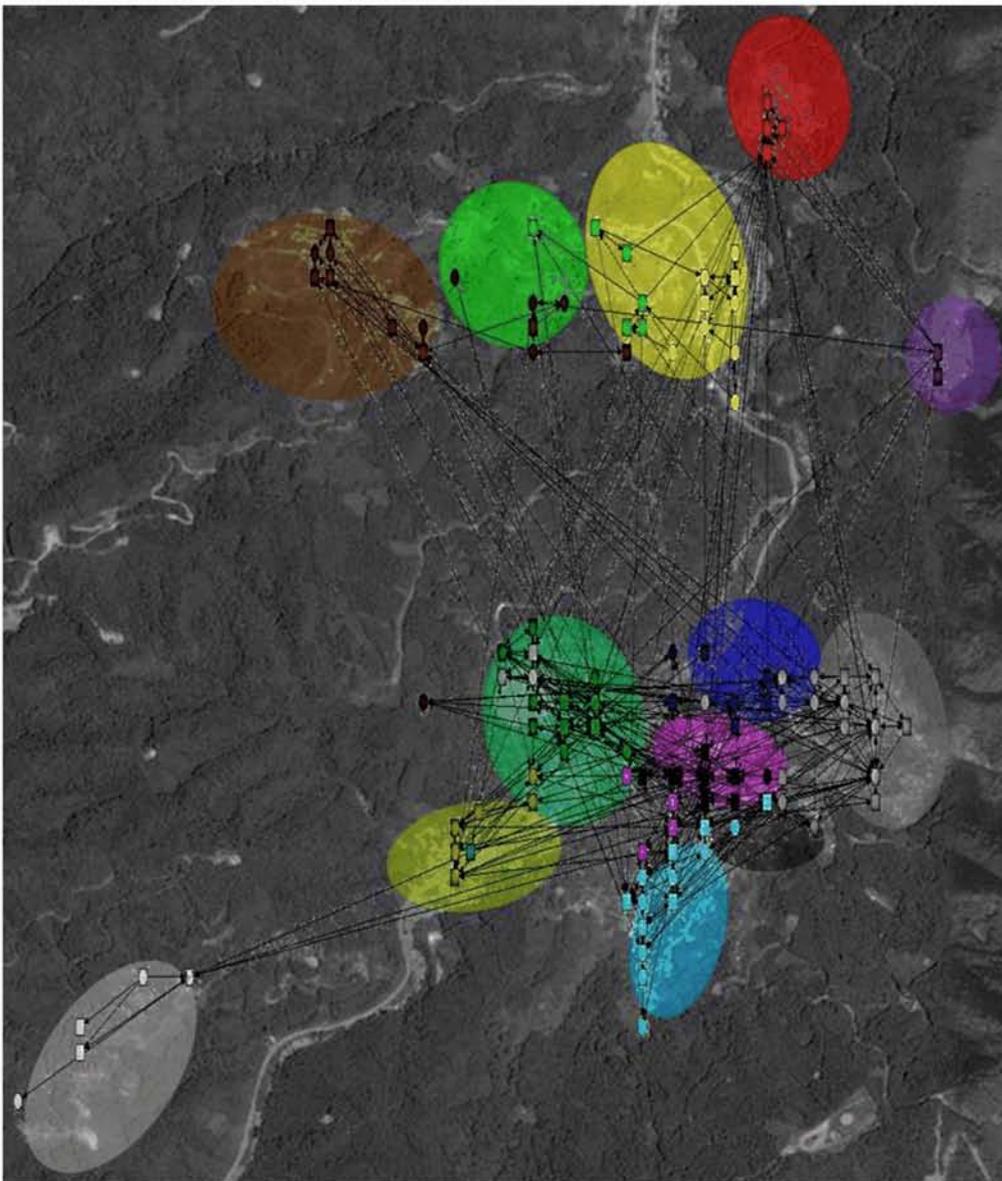


Figure 11 Social network

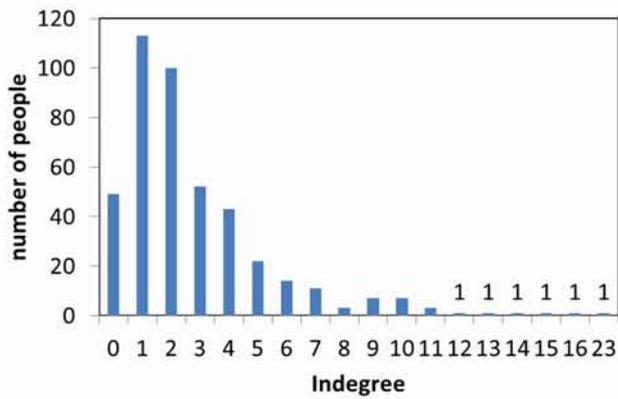


Figure 12 Number of people of each indegree

The number of people of each betweenness is shown in Figure 13. Many people have less than 0.01 betweenness. The average betweenness is 0.011.

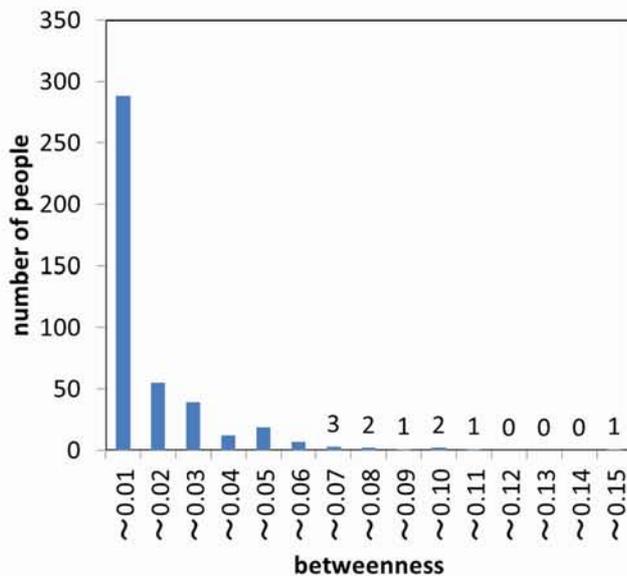


Figure 13 Number of people of each betweenness

Only few people have especially high centrality in both indegree and betweenness. This may be characteristic of a mountainous village.

The average of indegree by belonging to *Dandan-club* is shown in Figure 14. The average of betweenness by belonging to *Dandan-club* is shown in Figure 15. Both indegree and betweenness get high by belonging to *Dandan-club*. Belonging to it contributes to make the whole residents' living

comfortable.

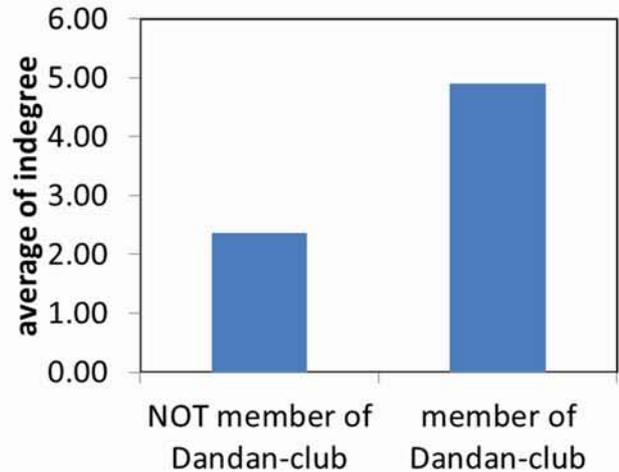


Figure 14 Average of indegree by belonging to *Dandan-club*

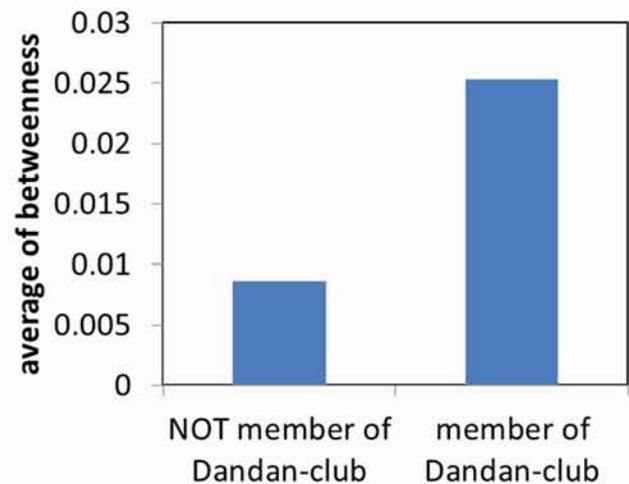


Figure 15 Average of betweenness by belonging to *Dandan-club*

The average of indegree of each span living in *Choja* is shown in Figure 16. The average of betweenness of each span living in *Choja* is shown in Figure 17. Especially in the years living in *Choja* are less than 30 years, the centrality of *Dandan-club* members is much higher than that of respondents in both indegree and betweenness. This means that people coming from outside of *Choja* can contribute to make the residents' life comfortable by belonging to *Dandan-club*.

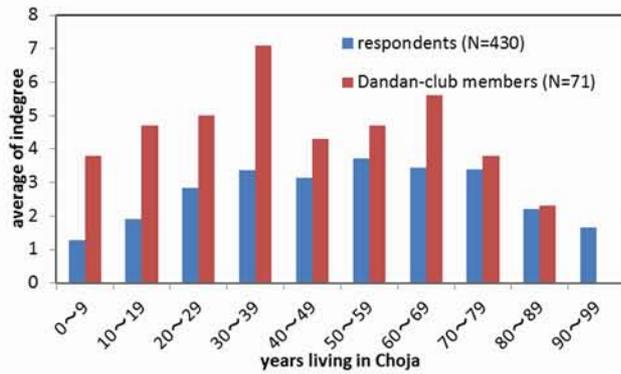


Figure 16 Average of indegree of each span living in Choja

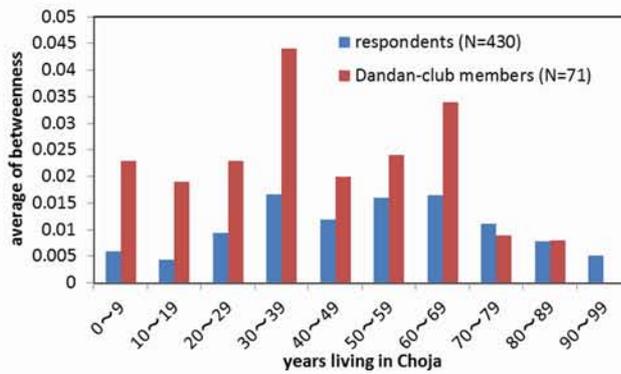


Figure 17 Average of betweenness of each span living in Choja

Through this result, it would be helpful to get people out of the village and have them belong to a residents' association rooted in the area in order to keep the life of entire Choja residents comfortable.

6. CONCLUSIONS

This paper has described the survey on social capital in a mountainous village. The method combining resource generator and name generator can show the role of a residents' association rooted in local area in a mountainous village. The following are concluded from the analyses of survey.

- Belonging to *Dandan-club* has little to do with improvement in accesses to resources or comfort of living. Most residents have enough accesses.
- By the method combining resource generator

and name generator proposed in this study, social network between residents in Choja was successfully drawn.

- Belonging to *Dandan-club* has much to do with improvement in the centrality in the social network. Improvement in the centrality contributes to make whole residents' lives in the village comfortable.
- The centrality can be high by belonging to *Dandan-club* even though they live in the area for a short time.

REFERENCES

1. A. Ohno, *Introduction of environmental sociology of mountainous villages, Nobunkyo* (in Japanese)
2. H. Nishimoto, K. Nagai and N. Suzuki, A Study on the Living Space of the Residents in a Remote Mountainous Village: A Case of Choja Village in Niyodogawa-cho, Kochi, Japan, Society for Social Management Systems, Internet Journal, Society for Social Management Systems, serial No. SMS10-141, 2010
3. K. Nagai, M. Yabe and R. Kanamori, A Study on the Frequency of Movements in a Mountainous Region Focusing on Age-group and Areas of Activities, Society for Social Management Systems, serial No. SMS11-8306, 2011
4. N. Suzuki and P. Matous, The Relevance of Symbolic Physical Environment to the Formation of Social Networks for Rural Regeneration, Society for Social Management Systems, serial No. SMS10-158, 2010
5. Flap, H.D., Snijders, T.A.B., Völker, B., Van der Gaag and M.P.J., Measurement instruments for social capital of individuals, Brief introduction to currently used measurement instruments, listing

questionnaire items of the three instruments from the 1999-2000 Social Survey on the Networks of the Dutch, 1999-2003

6. Robert A. Hanneman and Mark Riddle, Introduction to social network methods, URL: <http://faculty.ucr.edu/~hanneman/nettext/>, (Website References)