

Text Mining Analysis of Efficiency of the Continuously Implemented Gathering Type Action Plan for Male Elderly People Obtained

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Abstract

Aim: To clarify transformation of the participants' consciousness for rebuilding the community and its factors from the discussion contents by actions for male elderly people in Town A in Fukushima prefecture. **Design:** This study was an action research. **Method:** The author verbalized discussion contents of the action conducted in 2018-2019 and analyzed them for each year by the text mining method. **Results:** The word appearance frequency was high in the order of "Person" and "Town A" in both years. One large word network was formed in 2018 and its topic was about what the participants feel in their life in Town A. Two large word networks were formed in 2019 and their topic was about the community participation including difficulty in motivating others such as how people who do not participate can feel like joining it.

Keywords

Action Research, Male Elderly People, Community Reconstitution, Text Mining Method, Nuclear Power Plant Accident

1. Introduction

The Fukushima Daiichi Nuclear Power Station accident caused by the Great East Japan Earthquake in 2011 (hereinafter called Fukushima nuclear plant accident) caused over 150,000 refugees in the radioactive contamination region [1]. Approximately 37,000 people are forced to live as an evacuee even in July, 2020,

more than eight years after the earthquake disaster [2]. The earthquake of magnitude 9.0 and massive tsunami hits the Pacific coast of the Tohoku district, Japan on March 11, 2011, and four nuclear reactors at the Fukushima Daiichi Nuclear Power Station collapsed during the period from March 12 through 15. After the accident, radioactive substance was distributed in the radiation exposure region. This accident has been evaluated temporarily as Level 7, which is same as the Chernobyl nuclear power plant accident, by International Nuclear Event Scale [3]. The government released evacuation order to 11 municipalities under the influence of the accident. This refuge forced the community residents to leave their hometown and various communities such as families and neighborhoods broke up [4]. Starting from Miyakoji district in Tamura city on March 31, 2014, the evacuation order has been canceled gradually, and the cancellation was completed in 9 municipalities by the spring of 2017. According to the newspaper article of March, 2018, the rate of people who were planning to attend school and living in the 9 municipalities for which the evacuation order was canceled is 8.6% of that before the accident, and the return movement by the families raising children is slow [5]. Moreover, it has also been reported that most of people who return to their hometown are actually elderly people and the demand for library service for the aged is currently rising [6]. Further, reports about deaths of elderly people related to the earthquake disaster are also often found. As one of the factors for this, it has been pointed out that with the long-term refuge, the self-help has weakened as a result of being isolated from the public help by the government and mutual assistance by the community [7]. In Japan, aging is progressing more rapidly than that in foreign countries is. Ministry of Health, Labour and Welfare is advocating the need of the construction of a local comprehensive care system, aiming at building up a system that allows residents to continue their own life in their home region [8]. It also states the importance of the mutual help such as voluntary organizational activity by residents together with maintenance of the service systems for medical service, nursing care and welfare [9]. Healthy Japan 21 (the 2nd), which provides the policy of the making of national health, advocates “Promotion of the social participation and contribution to society” and “Prevention of the situation that needs nursing care” as a goal of people in advanced age [10]. However, since it is said that people in advanced age experience retirement, moving, separation by death and loss of health [11], it is the period when their social participation easily disturbed and they are socially isolated. A survey by National Institute of Population and Social Security Research has shown that particularly male elderly people living alone tend to be socially isolated [12]. The problems related to social participation of elderly people are thought not only to cause regions where the families and communities were forced to break up by the Fukushima nuclear plant accident but also to lead to social isolation and life-related problems by discrete of the local where aging is progressed. Actions to create the opportunity for the community residents to gather such as a salon are taken in various regions places for the purpose of preventing social isolation and nursing care while there

have been only few training courses that verify their effect, and most of them provide only practice reports [13] [14]. The authors reckon that focusing on transformation of consciousness and behaviors of the persons who participated in the actions such as salons would allow evaluating the efficiency of such projects though such a study is uncommon in the present situation. After the Fukushima Daiichi Nuclear Power Station accident, Town A, from where all the residents were forced to take refuge, and University B which concluded a cooperation agreement in September of the accident year has conducted various activities to accumulate scientific knowledge with support for relief and safety of the residents and to contribute to reconstruction and restoration of the town in its turn. Evacuation order was canceled for some regions of Town A in 2017. As of December, 2019, approximately 1200 residents of around 750 households, most of the residents in other words, were 65 years old or older due to employment and safety, being different from the community of the former Town A where around 21,000 residents lived in 2011 before refuge, we presume. There was a concern about social isolation of elderly people living in such an environment, aged male living alone in particular. This seems to be a problem regarding people who returned to the community which was originally formed. It is required to practice an action that aims to promote the reconstruction of a new community of the participants for male elderly people living in such situation. The purpose of this study is to clarify participants' (consciousness) change for reconfiguration of the community and its factors from the discussion content of the action planned for the male elderly people who returned to Town A in Fukushima. Components have been specified for three reasons: 1) ease of use when formatting individual papers, 2) automatic compliance to electronic requirements that facilitate the concurrent or later production of electronic products, and 3) conformity of style throughout a journal paper. Margins, column widths, line spacing, and type styles are built-in; examples of the type styles are provided throughout this document and are identified in italic type, within parentheses, following the example. Some components, such as multi-leveled equations, graphics, and tables are not prescribed, although the various table text styles are provided. The formatter will need to create these components, incorporating the applicable criteria that follow.

2. Term Definition

“Community” has been defined variously since 1917 when it was firstly defined by MacIver, an American sociologist [15]. Definition of community is mentioned in community psychology, which is a study to consider how the environment and people exert their influence each other. According to Sarason (1974), community is “A network that is supportive for each other and that people can depend on and easily use” [16]. In this study, the author adopted the definition by Sarason for using community as a network used for realizing the initiative of each participant while capturing the male elderly people who live in the place for which the evacuation order was canceled as cooperativity.

3. Prepare Your Paper before Styling

3.1. Positioning of the Action Research in This Study

This study adopted the method of the participation-type action research. Action research was reflective practice research, a method that had the potential to yield insights that could not be obtained from a positivist perspective alone [17]. For the residents in Town A in Fukushima, social isolation of male elderly people living alone was the concern in particular. For isolation prevention, the author planned and drafted the action that aims to promote independent community participation for male elderly people, and held it continuously with the participants' cooperation for data collection based on the participants' understanding on its purpose. The author repeated practice and evaluation of the action by conducting questionnaire to the participants each time.

3.2. Units

Town A in Fukushima prefecture, which is the subject region of this study, is located in Hamadori in Fukushima prefecture in South Tohoku of Japan. It is the place that is nearest from the Fukushima Daiichi Nuclear Power Station, and some part is located within the range of 5 km in direct distance from the power plant. Approximately 21,000 people lived there before the earthquake disaster, and it is richly endowed with nature such as sea, mountains and rivers, being famous for marine products. The coastal region suffered the enormous damage caused by seismic sea waves in the Great East Japan Earthquake and the evacuation order was issued to the whole town for the accident of the Fukushima Daiichi Nuclear Power Station, which forced the residents to live in the shelter for six years. Although the evacuation order was canceled for some regions in March, 2017, it does not mean Town A was recovered to the original state, and the life while the town was gradually activated for restoration such as infrastructure maintenance continued. Based on the information site of Town A, change of Town A during the period from the accident of the Fukushima Daiichi Nuclear Power Station to the action performed in December, 2019 is shown in **Table 1** together with transition of the number of residents and households.

3.3. Material Provider

Among the male elderly people who were 60 years or older and participated in the action held by the researcher in 2018-2019, those who agreed to cooperate with the study, including recording of discussion.

3.4. Procedure for Obtaining Cooperation and Agreement

The researcher explained about the purpose and content of the meeting, the purpose and method of the study, document store method, ethical consideration and so on to the participants, and obtained oral consent for the use of recording data for reports and the study.

Table 1. Change of town a after the accident of the fukushima daiichi nuclear power station.

Date	Content	Number of residents	Number of households
Before the earthquake disaster in 2011		Approx. 21,000	7671
Mar, 2011	The whole town was forced to evacuate by the Fukushima Daiichi Nuclear Power Station accident		
Apr, 2011	The whole area of the town was designated as caution zone and planned evacuation zone	-	
Nov, 2013	Full-scale decontamination started in the zone in preparation for the lifting of the evacuation order and zone where residence is restricted in the town	-	
Dec, 2014	security watch unit by the townsmen is a start	-	
Sep, 2015	Verification committee for evacuation order cancellation was organized, started verification	-	
Sep, 2016	Implementation of lodging as special treatment	-	
Oct, 2016	Temporary shopping center opened (restaurant, retailer, laundry etc.)	-	
Nov, 2016	Started to prepare for lodging	-	
Mar, 2017	The evacuation order was canceled for some parts of the town→ Enabled to live		
	Medical office opened	Approx. 200	140
Mar, 2017	Most of the government office functions returned to the main building		
Apr, 2017		234	165
May, 2017	The 1st disaster public house was completed	264	186
Jun, 2017	The 2nd disaster public house was completed	703	468
Mar, 2018	The rail between Sendai-Town A opened		
Apr, 2018	Elementary and junior high schools opened, child school opened		
Aug, 2018	Town block ground golf started (voluntarily organized)		
	Medical treatment private medical institution (dentistry) reopened	825	539
	This action started		
Oct, 2018	The first elementary, junior-high and child school athletic meet held	853	561
Nov, 2018	Festival held		
May, 2019	Exchange and, information transmission base facilities Construction work starting of the roadside station		
Jul, 2019	The first super in the town opened	1095	712
Dec, 2019	The 9th action held	1189	772

3.5. Survey Period

From August, 2018 to December, 2019.

3.6. Outline of the Action

The author explained about the purpose of the study to the town office staff members of the section in charge of elderly people, and obtained consent for

implementation of the action and cooperation for it. The meeting place of an apartment house in Town A was used as a main hall and the subjects were informed of it by distribution of flyers beforehand.

Form of the action was salon, and the researcher

- 1) Planned a scheme for which the subjects' "What I want to do next" is considered,
- 2) Set time for events including dining with other subjects, and
- 3) Set time for discussion mainly on the topic of "Community formation" every time.

Action implementation time was determined as 3 - 5 hours including lunch hour.

3.7. Outline of the Action

The discussion content of each time was recorded as data. The researcher set a discussion theme for promoting community formation. Different themes were set every time, and some of them were proposed by participants. Data were collected four times in 2018 and five times in 2019, nine times in total.

3.8. Analysis Method

Discussion scenes were recorded under permission, and the participants' speech contents were verbalized. Identical participant's parts were treated as one line. After that, the researcher obtained basic information of the text, examined word appearance frequency transition and word dependency frequency transition, and performed word network analysis and notable word information analysis for each year using the language analysis software Text Mining studio 6.4 (NTT data system). Since it was found that "iu" and "sou" included in the sentences converted to texts could be regarded as words they mention as a habit when they say "to iuyouna" "souitta" when referring to the original sentences, they were excluded from the analyses.

3.9. Ethical Consideration

This study was approved by the Ethical Review Board of the university that the researchers belong to (reference number 2018-032). The researcher explained about the purpose of this study to the subjects at the time of the first participation, and that nonparticipation would not cause any disadvantage, data would be processed in the way that the place of refuge and individuals could not be identified and the data obtained in the action would not be used for purposes other than the study purpose both orally and in document form.

4. Results

4.1. Basic Information of Text

The action was implemented nine times in total during the period from 2018 to 2019. The basic information of the texts obtained from all nine times of discus-

sion data was total line count 869, total sentence count 1604, total word count 6433 and word type count 2096.

4.2. Outline of Participants

The average age of 14 participants (age band) in the first participation was 73.67 years old (67 - 83 years old). For households, the number of subjects who were living alone and living with their life was six for each, and the number of those who were living with their mother and living with their child was one for each. For neighborly relations since they moved to Town A, seven answered "I almost don't know about my neighbour", four answered "There are familiar people I know", one answered "There are no people living in my neighborhood" and one answered "There are several people I know". Further, the number of people from Town A town is around 4 - 5, and others had migrated to Town A for their job before the earthquake disaster.

4.3. Basic Information of Each Action

Shown in **Table 2** are Date and time, the number of participants, theme, discussion time and basic information on text mining of each action. The number of participants of each action was 4 - 8, the total number of participants was 57 (FY2018: 20, FY2019: 37), and the repeat rate was 71.93% (FY2018: 50%, FY2019: 83.78%). Discussion themes in 2018, the first year, were mostly of the participants themselves such as "Motivation for participation". In 2019, the themes shifted to those toward the environment and others people such as "Present situation of the town", "How can we encourage other people who do not participate in the action to join us?" and so on. The discussion time was 29 - 60 minutes (average 42 minutes and 21 seconds). For discussion themes, the researcher prepared topics for community formation. The participants voluntarily presented topics from the 7th and 8th actions.

4.4. Result of Word Appearance Frequency Analysis for Nouns of Each Year

Shown in **Table 3** are Date and time, the number of participants, theme, discussion time and basic information on text mining of each action. The number of participants of each action was 4 - 8, the total number of participants was 57 (FY2018: 20, FY2019: 37), and the repeat rate was 71.93% (FY2018: 50%, FY2019: 83.78%). Discussion themes in 2018, the first year, were mostly of the participants themselves such as "Motivation for participation". In 2019, the themes shifted to those toward the environment and others people such as "Present situation of the town", "How can we encourage other people who do not participate in the action to join us?" and so on. The discussion time was 29 - 60 minutes (average 42 minutes and 21 seconds). For discussion themes, the researcher prepared topics for community formation. The participants voluntarily presented topics from the 7th and 8th actions.

Table 2. Basic information of each action.

Number of times (date)	1st (Aug 31, 2018)	2nd (Oct. 13, 2018)	3rd (Nov. 19, 2018)	4th (Dec. 10, 2018)	
Number of participants (continuing member)	4(-)	7(2)	5(5)	4(3)	
Discussion theme	① Motivation for participation ② Impression of participation ③ What you want to do in the meeting	① Impression of dining ② What you want to do in the future meeting	① Own health ② What you want to do in the future	① What you always feel ② What you want to ask the participants	
Discussion time	29:05	52:10	39:05	47:30	
TMS basics					
Total lines	94	116	160	31	
Total sentences	146	207	331	96	
Total words	582	677	1624	438	
Word types	312	400	702	286	
Number of times (date)	5th (May 13, 2019)	6th (July 17, 2019)	7th (Aug. 8, 2019)	8th (Oct. 7, 2019)	9th (Nov. 25, 2019)
Number of participants (continuing member)	7(3)	8(7)	8(8)	7(7)	7(6)
Discussion theme (*Theme proposed by participant)	① How you spend winter ② Situation of participation in other meetings ③ What you want to ask the participants	① This meeting's content connected from the last meeting's content ② How you want to spend your life	① Importance of meeting ② How you feel about friend making ③ For making friends in Town A*	① Present pleasure * ② How you feel about the present situation of Town A town ③ What you feel participating in the salon	① What you feel living in Town A after evacuation order was canceled ② How you encourage other people who do not participate to participate*
Discussion time	49:24	32:30	48:50	49:24	60:15
TMS basics					
Total lines	97	25	67	152	153
Total sentences	172	75	156	257	257
Total words	647	503	696	957	797
Word types	377	253	375	475	439

Table 3. Word frequency analysis of noun.

Group	Words	2018	2019	total
Words related to people	Person	33	63	96
	People	0	12	12
	Myself	6	6	12
	Together	5	7	12
	Story	5	6	11
	Face	4	5	9
	Child	4	4	8
	Female	6	2	8
	Voice	6	0	6
Words related to life in Town A	Town A	17	32	49
	Wild boar	7	12	19
	Car	5	10	15
	Job	5	5	10
	House	6	1	6
	Liquor	6	1	6
	Mah-jong	0	6	6
Others	No use	9	7	16
	Last time	5	9	14
	Feeling	5	4	9
	Around	6	1	6

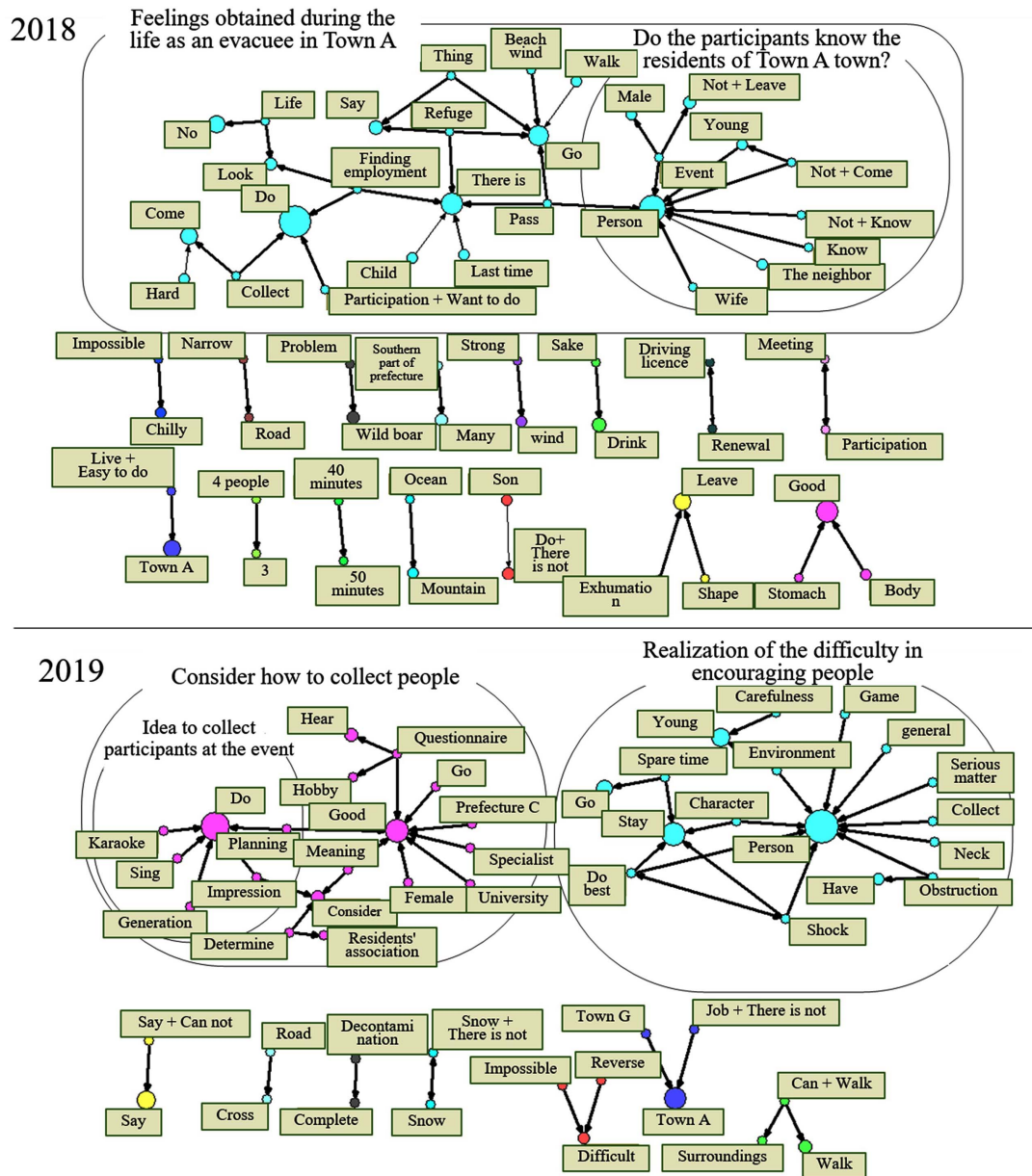
Extracted top 20 words of each year with the number of times of appearance as attribute.

4.5. Word Network Analysis Result of Each Year

The authors performed a word network analysis for 2018 and 2019 to capture the unity of the topics of each year (**Figure 1**). The word network is a analysis that visualizes collocation of words. Collocation means word phrase relationships that appear together in the same sentence and designated data. For the nodes attached to the words, larger nodes indicate higher appearance frequency. The collocation is expressed by edge, not far and near of the location of nodes. The edge indicates direction of the relation while thicker edge indicates stronger collocation. In order to grasp the difference in unity of the network of each year, the setting was not changed by year, and collocation was extracted with 60% as the minimum confidence and top 50 words as the extraction upper limit for more than two times of appearance frequency. Further, network relationships whose topics could be grouped were boxed and named as a group.

4.5.1. Tendency of the Topics Seen in the 2018 Word Network

For 2018, large networks containing “Person” and “Do”, which were large nodes,



※ Common setting:
 Extract words with more than two times of appearance frequency and 60% of minimum confidence, and top 50 words
 ○: node (Larger circle indicates higher frequency.)
 →: Edge (Indicate connection among nodes and their directions. Thicker edge indicates stronger collocation.)

Figure 1. Word network for each year.

and 15 small networks were formed. “Participation + Want to do” and “Collect” were bound together toward “Do”. The original sentences of “Participation + Want to do” -> “Do” were of invitation to other meetings and motivation for participating in the event. Further, “Collect” and “Hard” were bound together toward “Come”, while the original sentences of “Collect” -> “Come” were of opportunity to come to Town A and motivation for participation, and those of “Hard” -> “Come” were from contents of wild animal and hospital visit. Further, the original sentences of “Child” toward “There is” were from the contents of the

realization that prosperity of wildlife (wild boar) and the town require human children. For “Person”, connection toward “Person” was seen in “Person”, “Young”, “Not + come”, “Not + know”, “Know”, “Neighbor” and “Event”. Moreover, connection from “Event” to “Male” and “Not + leave” was also recognized. This connection of “Person” was named [The participants themselves know the residents of the town]. Since these formed one network, it was named [Feelings obtained during the life as an evacuee in Town A].

4.5.2. Tendency of the Topics Seen in the 2019 Word Network

For 2019, two large networks, the network containing “Do” and “Good” and the network containing “Person”, and seven small networks were formed. “Do” and “Good” were connected through “Plan”. For the node “Do”, nodes such as “Karaoke”, “Sing”, “Generation” and “Impression” were connected toward “Do”. This connection was named [What are thought for gathering at the event]. For “Good”, topics related to positive evaluation of this action such as “Prefecture C”, “Specialist” and “University” were recognized. Further, “Questionnaire” was connected toward “Good” as well as to “Hear” and “Hobby”, and contained topics about community formation through hobby. This network with “Do” and “Good” as main components was named [Consider how to collect people]. For “Person”, the negative nodes such as “Neck” and “Shock” and the node that indicates the need of effort such as “Trying hard” as well as “Important” and “Collect” were connected toward “Person”. Further, “Young” was connected to “Environment” and “Careful”, and networks for young generation’s housing circumstances were also recognized. This network was named [Realization of the difficulty in encouraging people].

5. Discussion

5.1. Change in Discussion Content

From the common experience such as forced refuge by the accident, obviously fewer residents than those before the accident and life during the reconstruction process of resources such as public help, it is easy to infer that they participate for new connection in the opportunity where only males gather. The participants’ topics are influenced by activation of the environment and residents such as gradual increase in residential population, opening of a supermarket with a major distribution group, gradual increase in stores, increase in official or private meeting and so on. However, the change of the contents is result of this action since they were obtained in the discussion in this action. Now, see the discussion topics of each year based on the analysis result. From the dependency relationship of “Person” and “Town A” that appeared frequently in the word appearance frequency analysis of nouns, it has been revealed that characteristics of general people and own living in Town A were talked in the discussion in 2018. When look at a word network, more than a half of the words are small network, and contents regarding themselves including easiness of living and en-

vironment and participation into the meeting were seen for Town A. [What is felt while sheltering] was a topic in the large network. On the other hand, in 2019, although the use of “Person” did not change, “People” were used several times, “Town A” had a dependency relationship with the words related to those used for a topic about the Town A residents other than themselves. In the word networks, topics to consider how to make residents who did not participate in the community to participate were discussed in the two large networks such as [Consider how to collect participants] and [Realization of the difficulty in encouraging people]. Since there were many continuous participants and the discussion themes became spontaneous, it has been revealed that the participants wish to participate in the new community formation voluntarily.

5.2. Factor for the Change in Discussion Contents

5.2.1. Breeding of the Membership

This action is for people who have common experience of taking shelter for a long period due to the impact by the power station accident. The situation of the Town A residents shows that there were almost no original communities including their neighborhoods and it was needed to form new communities. Sato *et al.* presented sense of accomplishment for their own problem and construction of a new relationship with friends and family as a factor for the male elderly people to participate in health promotion continuously [18]. Further, Festinger *et al.* revealed that physical proximity plays a great role as a condition to feel friendly toward others [19]. Since the participants of this action were males who lived together in Town A that they returned, they easily felt close to each other, the author presumes. In addition, the time discussion was an opportunity know opinions of each other, which made them feel proximity in a social aspect and lead to continuous participation. The word network of the discussion showed that the participants distinguished residents who participated in activities including this action and those who did not. This corresponds to “Border of communities”, which is one of the membership concepts [20]. Further, looking at the other membership concepts, they obtained “feeling of belonging” as a member since many of them continuously participated in this action, the author presumes. Moreover, the discussion shifted to that based on spontaneous topics and self-disclosure was seen, which lead to their “Emotional security”, I reckon. Such a bred membership made the discussion progress and lead to change of topics, the author infers. On the other hand, exhibition of leadership skills was not confirmed. This is not only because leadership skills were not bred but also because the participants might have given consideration to the project side of the action.

5.2.2. Conventional Role of Male

Given the participants’ ages, Japanese traditional sex role such as “Men work and women do housework” based on the conventional family regime [21] remains deeply rooted, the author presumes.

The gender equality is the basic idea nowadays, and the agree rate of the

gender division of labor is falling in the entire society year by year [22]. However, in conventional families, the highness of their social standing was more important than their participation in the family, and men assumed their role of protecting the family by working [23]. Most of the members of congress, prefectural governors, mayors, town managers, and village headmen who actually grasp the power in Japan are men. The reason why the participants actively discussed for the new community formation of the people who did not participate in might be that recognition of the social role to make the region better by the male participants rose. The discussion was done towards the topic obtained from this result simply because males gathered. For successful planning and management, it was important to set the purpose of the event in consideration of a socially-accepted idea, local customs and tradition so that the participants could recognize their social role. Moreover, spontaneous behaviors were drawn not only by setting a purpose but also so by sharing a goal just like that a theme was determined through discussion, the author infers. According to Erikson, the developmental task in advanced age is “Integration vs. Despair” from physical and mental changes [24], it is a life stage that their social role is easily lost caused by environmental variation such as retirement [25]. Moreover, since it is said that well-being is achieved by elderly people acquiring a new role [26], the meaning of the purpose that was same for subjects and the action was significant.

5.3. Possibility of the Mutual Help for This Action

Japan is now unprecedented aged society. While we are experiencing the change in social structure such as the falling birthrate, the aging population, population decline and the weakening of the community, realization of “local symbiotic society” is required that enables community residents to develop each person’s living and definite aim and the region supporting each other so that people can live comfortably in the region that they were familiar with while holding various life problems [27]. Therefore, what has been expected in considering structure to support residents’ life is the social role that the elderly people and people in the same generation assume to support other generations, which had been rather for “socially vulnerable” and “subjects of medical service and welfare” [28]. Jaeuk Lee *et al.* state that there is a personal viewpoint that maintenance of their definite aim and health is achieved by attempting to join the society other than the social viewpoint that stability of the social life and maintenance of the social order are achieved by elderly person living in the society with definite aim as a meaning of the social participation of elderly people [29]. Utilization of elderly people is thought to influence self help and mutual help in four helps of community comprehensive care [30]. The idea is to live own life utilizing not only the mutual help including public help and nursing care insurance but also self help that helps residents themselves based on their own resources for solving problem and mutual help, which is informal support, including connections between neighborhoods [30]. Here, consider self help, mutual help, mutual as-

sistance and public help of Town A town from the viewpoint of this community comprehensive care and discuss the positioning of this action. The action started in Town A when one year had passed since the evacuation order was canceled. The government office had its functions at that time and therefore it is easy to imagine that preparation for restoring resources of public help and mutual assistance to support residents' life was being pushed forward. It is difficult to depend on mutual help such as neighborhoods to solve problems since there are only few residents, and residents who are capable of helping themselves live in the community, the authors infer. Although various informal organizations such as the hobby activity group were organized even before the start of this action, since the main target was male elderly people, most of the participants joined the activity continuously even though it was held bimonthly. According to a survey by the Cabinet Office on the participation of the elderly in the community, men were more likely to feel a sense of purpose in life when they were enthusiastic about their favorite activities. The survey was conducted by the Cabinet Office [31]. One of the reasons why they were able to participate continuously was that their mind and body was sufficiently good for participation. Since words related to their hobby that can be enjoyed by multiple people, such as Mah-jong, Go and Karaoke were included in the discussion, as one of the policies that form the community in Town A, it became the definite aim to enjoy common hobbies together, the author presumes. Moreover, the above lead to the consideration of problems on community formation by participants themselves.

These embody the meaning of the social participation of elderly people proposed by Takano.

Takano also states that as meaning of the social participation of the elderly person, participating in activity bring opportunities to come in contact with other people, and that there are "Individual viewpoint" that maintenance of the definite aim and health and "Social viewpoint" that the fact that people in the advanced age period live in the society in which they can maintain their definite aim and health leads to maintenance of the stability of social life and social order [32].

This action, so-called informal support, is mutual help of the 4 assistants, it was thought that it could become a purpose of life for the participants themselves and could involve non-participants.

Although the present study was finished with the grasp of problems, the possibility that it will be an action which leads to settlement of problems on the local community activation has been suggested as one of the opportunities for energetic male elderly people to participate in community care.

6. Conclusions

The analysis of the contents of the discussion about community formation performed in the action for the male elderly people who returned to the zones under evacuation orders for the accident of the Fukushima Daiichi Nuclear Power

Station (2018-2019) by the text mining method for each year has revealed the followings.

1) As for dependency relationship of the words “Person” “Town A” that appeared frequently and tendency of the topics in the word networks, the topics in 2018 were of what the residents were feeling in Town A after the life as an evacuee while those in 2019 were of community formation with people who did not participate in the activity.

2) The subjects were all male residents in Town A and they knew the ideas of others through discussion which grew the intimacy and increased the continuous participation enhancing the membership. This was considered as one of the factors for the above contents shift.

3) The above contents shift was possibly supported by the background that the subjects were elderly males and the purpose of the action matched based on the idea of the conventional sex role that was rooted in them for their age.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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