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Sustainability in Marginalization Process of Rural Community: Implication for Managing Aging Society

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ABSTRACT

This thesis aims to analyze the marginalization process of rural community, represented by aging and population decline, from the perspective of resident's living condition. In other words, it aims to elucidate the actual changes that residents face in the marginalization process of rural community. A series of field survey was conducted in Yurihonjo City in Akita Prefecture. Total of five rural communities were selected from remote and central area of the city. Field survey was composed of questionnaire-based household survey and interview survey in each community. In order to capture the living condition of residents, the applied variables in the questionnaire were set based on the categories in Sustainable Development Indicators. This process ensured a wider perspective on capturing living condition of residents. The comparative analysis of the result first illustrated a significant difference on farming type between remote and central community. In remote community, more households are engaged in cultivation for self-consumption purpose than central community. This finding implies that various activities may gradually change their contents rather than their immediate disappearances in the marginalization process. Second, the results of self-evaluation on living condition, future concerns, and residents' willingness to stay in the same community prevailed that the residents of remote community are more concerned on the practical factors to sustain living condition of individual households, while residents of central community expressed higher level of concern on the sustainability of the entire community. Those observed differences in field survey are rooted in the continuous outflow of young population from rural to urban area. This implies the existence of urban system on the other side of those various marginalizing phenomena in rural community. Thus, the result of this study suggests the importance of establishing a new interaction, more of interdependence, between rural and urban areas in today's local governance as one of the potential measures to the current situation of rural community.

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Chapter 1: Introduction

Aging of population is one of the most significant social issues for many developed countries today. It is particularly so for Europe, which has prior experiences with aging populations when compared to other parts of the world; it also a critical issue for Japan, the fastest aging country in the world. Aging population is somewhat recognized as an inevitable social phenomenon (Stockdale, 2006; Wang, 2006; *The Economist*, 2010) and also as one of the future, over-arching problems of developed countries. Jean-Philippe Cotis the Chief Economist of OECD, stated in 2005:

> Over the next couple of decades nothing will impact OECD economies more profoundly than demographic trends and, chief among them, aging. (Jean-Philippe Cotis, Chief Economist of OECD, 2005)

Increase of aging population indicates a future society in which a smaller portion of the working population will support a larger portion of a dependent, mainly elderly, population than today. This emerging change, based on the balance of two age groups, has been created by three demographic trends: a low fertility rate, an increase of the elderly population age 65 and above, and the retirement of the baby-boom generation (European Commission, 2006, 2009). Consequently, aging of population substantially has a potential to threaten the sustainability of social systems, such as national pensions, national health care, education, employment of the elderly, and countermeasures to the falling birthrate.

One of the most critical examples of a developed country facing this issue is Japan. Along with the fastest aging population, Japanese society is going to face a rapid decline of population. Based on the population projection by the National Institute of Population and Social Security Research, the total population of Japan, 128.1 million in 2010, would fall below 120 million by 2025, and become less than 100 million, i.e., 95.2 million, people by

2050. This drastic decline of population is in fact the main cause for the aging of Japanese society. As a result, an intergenerational disparity on both supporting and benefitting from various social systems is emerging. Current aging and population declining phenomena in Japanese society has been named "The Japan syndrome," referring to the shrinkage in the working population, the rising cost in social-security systems, and declining demands in the market (*The Economist*, 2010). These three shrinking factors would weaken the Japanese economy significantly and change Japan's social atmosphere markedly.

Therefore, it is now a challenge and a choice for developed countries; especially Japan and European countries, to establish a new social structure to sustain current social systems or to build new sustainable social systems while the gradual aging and physical shrinkage of the population are observed. As for their first step to do so it is necessary to examine various declining factors within society as aging and population decline further expand. This examination on the process of aging society phenomenon in Japan is particularly important for those countries with smaller numbers of women in employment after becoming mothers as well as the number of immigrants admitted into the country (*The Economist*, 2010). Especially some of the middle-income countries in Asia, such as South Korea, Thailand, and China will face an even faster aging and gradual decline of population in the near future (Ohizumi, 2007; The Wisdom Years on Aging, 2008).

While much attention is paid to the sustainability of social systems, there is another face on the aging and depopulation issue: the actual impact on people's daily lives. Official reports of the European Commission and preliminary studies emphasize aging and its various impacts on Europe (Bijak, Kupiszewska, Kupiszewski, Saczuk, & Kicinger, 2002; *Economic Policy Committee and The European Commission*, 2006; European Commission, 2009; Goll, Union, States, & Kingdom, 2010; Sircelj, 2002). Similar discussion on a national scale is also observed in Japan; much focus is on macro-scale discussion, the

projected demographic change and its consequence, as further increase of elderly population and decline of youth population continue (Kaneko, 2006). In the case of Japan, the ratio of the elderly population age 65 and above will surpass 40%, the youth population will be 8.4%, and the productive population will be 51.1% in 2055. Simply there will be more than 4 elderly people out of every 10 person in the future Japanese society. At the present time, 2.8 working people are supporting one senior resident; however the former number will drop to 1.3 by 2055. Although a vague anxiety towards a future aging and shrinking population is shared both in Japan and Europe, there is not much discussion on how these social phenomena are going to change social structures and create differences in people's daily lives.

The impact of aging and depopulation has partly been addressed in rural studies both in Japan and Europe. Particularly in recent years, some researchers raise the rural community as 'the pioneer' area because of its prior experience in social changes caused by aging and depopulation (Champion & Shepherd, 2006; Sakuno, 2006). They argue that examining the impact of aging and depopulation in rural areas would provide thoughtful insights and practical ideas to the aging population of an entire country.

In existing studies on rural areas, literature in Europe has discussed various types of migration. Outward migration from rural areas, particularly that of young adults, is identified as the main cause for degradation of rural areas in Europe (Amcoff & Westholm, 2007; Champion & Shepherd, 2006; Muilu & Rusanen, 2003). On the contrary, a new trend of inward migration to rural area appeared in the 1960~70s: "counter-urbanization" (Berry, 1977; Champion, 1989). Recently a new type of international migration, migration to rural or non-metropolitan areas of wealthy countries, is also being widely observed (Amcoff, 2006; Bijker & Haartsen, 2011; Graeme Hugo & Moren-Alegret, 2008). These new trends of migration into rural or non-metropolitan areas are expected as a means for possible

recovery of rural populations and these migrants are often seen as crucial human capital for the revitalization of local economies (Bull, 2008; Kalantaridis, 2010; Klinthäll, 2006). It is evident that international migration has a significant impact on the population growth of many western countries. Particularly in Europe, as they determine population growth of many countries (European Commission, 2009); migration is one of the key components whenever aging in rural Europe is discussed.

On the contrary, in the case of rural studies in Japan, much attention is paid to the living condition of residents in rural communities. One of the best known researches on this topic in Japan is "marginal community"[i] coined by Professor Ohno. In his distinctive work in 1991 he presented a new term *genaki shuraku* (marginal community) as one of the four definitions that illustrate the degree of fading functions of rural communities. He defined a residential community in which more than 50% of its residents are elderly, that is, age 65 and above, and where a significant decline in community-based autonomy is observed due to the outflow of young adults coupled with a rapid aging of remaining residents as a "marginal community" (Ohno, 1991, 2005, 2008). Around 2007 this term appeared widely in newspapers and academic papers and quickly gained popularity mostly because of its distinctive word choice, "marginal," and its simple definition by percentage (Odagiri, 2009, 2011). In recent years, further studies have been conducted to illustrate the details of the marginalization process of rural communities. Especially Kasamatsu (2005), Odagiri (2009; 2011), and Sakuno (2006) have developed conceptual frameworks of the marginalization process of rural communities. Odagiri (2009, 2011) particularly extended the framework further and explained the marginalization process by three steps of hollowing phenomena: people, land utilization, and community. These three types of hollowing phenomena in the marginalization process of rural communities was further verified in the application of actual statistical data (Sakamoto, 2003); however, the applied data were mostly limited to

macro-scale and agriculture-related data. Therefore, it is necessary to apply smaller-scale, community-based data in order to explicate the details of the marginalization framework and three types of hollowing in actual context of an individual rural community. This process will make it possible to elucidate the shrinking process of a particular rural community, which is affected both by aging and population decline.

Despite the difficulty in data availability on the community level, it is still vital for the local government to establish a method to capture the living condition of residents in rural community within the marginalization phenomenon. This method would make it possible to conduct a comparative analysis of rural communities. It is particularly important as a local government sets up practical measures for rural communities either on regional revitalization or welfare-based approaches. Although there are some preliminary studies which have examined the living condition of residents in rural communities affected by aging and depopulation (Niinuma, 2009; Noguchi et al., 2010; Takegawa, 2010; Tamasato, 2009) and also similar studies with wider research boundaries (Fujii, Tarumi, & Fujiwara, 2009; RDPC, 2008; Sakuno, 2006), ultimately it would be valuable for local government to have a reliable method to evaluate living condition in a rural community. This is an essential procedure to develop strategic approaches towards rural aging and depopulating communities.

Thus, this research aims to examine the marginalization process of rural community, which is represented by the degradation caused by population decline as well as aging of remaining population, from the perspective of residents' living condition through a series of field surveys in Yurihonjo City of Akita Prefecture. In this field survey, two groups of rural communities, that is, a total of five communities, have been selected. They include four communities in remote areas and one community in a central area of the city. In the study area, the remote areas were experiencing severe aging and depopulation prior to the central

area; this ensures a comparative study on the living conditions of residents with respect to the shrinking process of a community. The results of field survey are examined within the framework developed by Kasamatsu (2005), Odagiri (2009, 2011), and Sakuno (2006) as well as statistical analysis by SPSS (Statistical Program for Social Science) to illustrate ongoing changes as the shrinking of rural communities further proceeds. In order to capture the multidimensionality of residents' daily lives in rural communities, a variety of variables are applied to a questionnaire-based survey and a qualitative interview survey. The original ideas of applied variables are borrowed from Sustainable Development Indicators (SDIs) developed by international organizations and national governments. SDIs are originally designed to measure the well-being of nation-states; however, the idea of capturing a state of a community should also be applicable on a smaller scale society.

Chapter 1 of this thesis provides a general background of the topic and its pathway to the problem identification for this thesis along with a brief explanation of methodology and thesis overview. Chapter 2 of this thesis gives the demographic trends and projections in Europe and Japan as detailed background information. Chapter 3 reviews preliminary literatures of Europe and Japan to illustrate some similarities and differences on studies on aging and population decline in rural areas. The latter part of this chapter also provides a review of the marginalization process of rural communities developed by Kasamatsu (2008), Sakuno (2006) and Odagiri (2009, 2011). Chapter 4 of this thesis explains study area as well as methodology for field survey. This section also provides a brief review of SDIs in order to elaborate on the applied methodology to field surveys. Accordingly, Chapter 5 of this thesis presents the results of field survey and Chapter 6 provides discussion on findings from these results. Finally Chapter 7 concludes the entire thesis and also touches upon future implications.

Chapter 2: Demographic Trends and Projection of Europe and Japan

2.1 Demographic Trends and Projection of Europe

According to the population projection by European Commission, many of the European countries are going through gradual increase of elderly population and this situation would substantially threat social systems in Europe as well (European Commission, 2006, 2009). Even though there is much diversity on demography among member states, and average ratio of elderly population of EU is still lower than that of Japan, aging is gradually expanding in Europe, particularly from rural areas.

Currently the shares of elderly population age 65 and above are 16.9% in EU-27 (-UK) states and 17.7% in EU-15 (-UK) states. Compared to the same figure of Japan, 23.0% in 2010, these figures seemingly are not yet causing crucial pressures to European society. However, aging in Europe is quite varied by grouping of member states and geographical areas. The ratio of elderly population in NMS-12 is 2.5~3.3% lower than previous two groups of European states, at 14.4%. Even within EU-27 (-UK) some countries are at relatively higher ratio; higher rates than the average of EU-27 states (16.9%) are observed in Belgium (17.2%), Bulgaria (17.2%), Germany (19.3%), Greece (18.6%), Italy (19.7%), Portugal (17.1%), and Sweden (17.3%).

Geographical areas also determine higher ratio of elderly population in Europe. Some higher rates were observed in predominantly rural area of Greece (21.4%), Spain (21.1%), France (20.8%), Italy (20.9%), and Portugal (22.7%), and intermediate area of Italy (20.2%). These areas have higher than the national highest rate of elderly population of Italy (19.7%). Generally rural areas in Europe are experiencing higher rate of elderly population than intermediate or urban areas and aging is gradually addressing to the entire Europe.

Based on the projection, only modest recovery in the fertility rate is expected and it

will remain lower than the natural replacement rate of 2.1 births per woman; this would further accelerate aging in Europe. The average fertility rate in 2008 was 1.52 births per women and this would increase to 1.57 births by 2030, and 1.64 births by 2060. Among the all EU states, relatively higher fertility rate per women, above 1.8, is observed in France, Ireland, Sweden, Denmark, the UK, and Finland; these countries maintain stable fertility rate up to 2060, yet their fertility rate would not surpass the natural replacement rate at 2.1.

Even though fertility rate is projected to remain below the natural replacement rate, total population of Europe would still increase slightly by 2060. This is because the total population of Europe is fundamentally supported by stable inflow of migrants to European countries (European Commission, 2009). In other words, the size of net migration defines either positive or negative population growth of European countries. Total population of Europe was 495.4 million in 2008 and it would increase 5% by 2035 at 520.1 million people; this would be the peak in European population. Later total population would decline to 505.7 million by 2060, which represents about 3% population decline since 2035. At the same period, annual net inflow of immigration to EU states are assumed to be total of 59 million people and a large portion of them (46.2 million) would be concentrated in the Euro area. However, the immigration to Europe is predicted to decelerate slightly. There were 1,680,000 immigrants to Europe in 2008, yet this would contract to 980,000 by 2020, and to around 800,000 by 2060. Even though the total population of Europe would not become shrunk, its growth is substantially dependent on international flow of migration. Thus, it is imperative for European states to strategically ensure stable number of inward migration. This is particularly true as half of the EU member states are going to experience population decline in the near future (Bulgaria, the Czech Republic, Germany, Estonia, Greece, Italy, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovenia and Slovakia).

2.2 Demographic Trends and Projections of Japan

Along with its fastest population aging in the world, Japanese society is also facing the issue of population decline. Figure 2.1 shows the trends and projection of total population and the shares of three age groups of Japan from 1950 to 2055. The figures up to 2010 are based on the results of National Census and the future figures from 2015 to 2055 are adapted from the projections by National Institute of Population and Social Security Research. Total population has increased last 50 years and reached its peak in 2004 at 127.84 million people (MIC, 2011; MLIT, 2011). In 2005, the number of mortality (1,083,796 deaths) was 21,266 more than the number of fertility (1,062,530 births); population of Japan has turned into natural decrease and this was the first time to record a negative population growth in the history of Population Survey Report since its beginning in 1899 (MHLW, 2005).

The future projection shows continuous population decline up to 2055. By 2025, the total population will decrease 8.8 million and falls below 120 million in total. By 2050 it reaches below 100 million at 95.2 million people, and it continues to decrease to 89.9 million in 2055. This is about 30% of population shrinkage from the figure of 2010, at 128.1 million people.

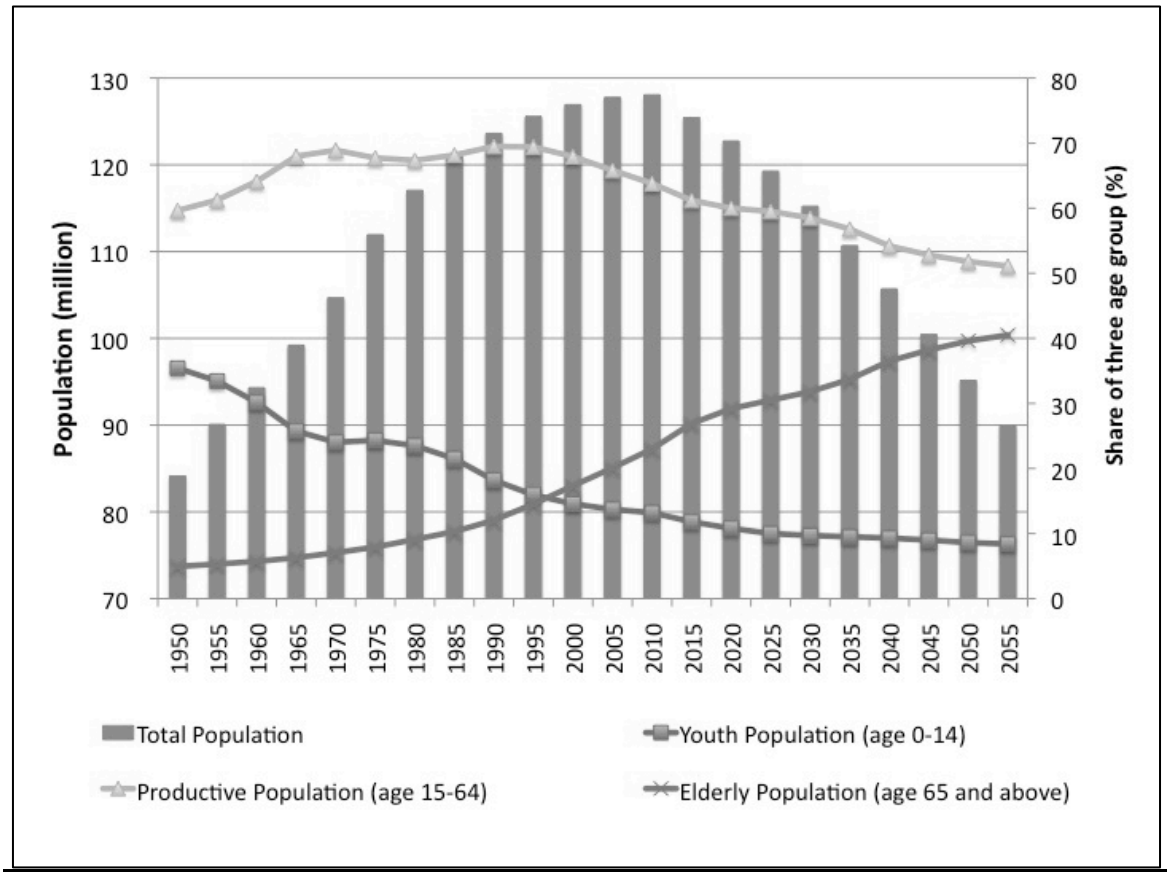


Figure 2.1. Trends and projection of total population and proportion of three age groups of Japan

Source: National Census 2010 and Population Projection by National Institute of Population and Social Security Research (Data extracted 2011.08.10)

As rapid decline of population is ongoing in Japan, what is more significant is the drastic change in the shares of three age groups that is also shown in Figure 2.1. Commonly age groups are divided into youth population (age 0-14), productive (or working) population (age 15-64), and elderly population (age 65 and above). These three age groups are going to change their shares in the population projection of Japan. The rate of youth population was highest in 1950 at 35.4%; there was an influence of the 1st baby boomers, a group of 8.06 million people born in between 1947 to 1949. In 1950, the rate of productive population was 59.6% and there was only 4.9% of elderly population. The rate of youth population was 35.5% in the same year, however it gradually declined and became lower than 20% by 1990, at 18.2%. At the same period of time, the rate of productive population

increased to 69.5%; this was the highest ratio ever. The rate of elderly population was kept below 10% until 1980 however it started to increase in 1990s. Currently, the shares of three age groups are 13.2% of youth, 63.8% of productive, and 23.0% of elderly population. As the rates of youth and productive population decline, the rate of elderly population is projected to increase. In 2055 the rate of elderly population would surpass 40%, youth population would become 8.4%, and productive population would be 51.1%. In present time there are 2.8 working population to support one senior resident, however this ratio would also drop to 1.3 in 2055 as the result of rapid aging of population.

In fact Japan is the fastest aging society in the world. Figure 2.2 shows the number of years taken for the ratio of elderly population age 65 and above increased from 7% of total population to 14% in the selected countries. Japan has recorded the fastest aging of society in the history while three European countries and Canada took around a half of century to more than one century for this demographic transition. This speed of aging can also be seen in the comparison of the rate of elderly population among selected countries (See figure 2.3).

Up to 1995, European countries had higher rate of elderly population than Japan. In 1950, it was 4.9% in Japan, and European countries were at around 8.0% to 10.0%. However it started to increase in 1970s and reached the same level as European countries in late 1990s. It has become the highest in 2010 at 23.1% while Germany has 22.7%, which is the highest rate among European countries. According to the projections by OECD, Germany (31.5%), Italy (33.6%), and Spain (35.7%) will surpass 30% in 2050 while France (26.2%), Sweden (23.6%), United Kingdom (24.1%) will remain around 25% in Europe. The United States will reach 20% in 2035, yet it stays around the same rate up to 2050.

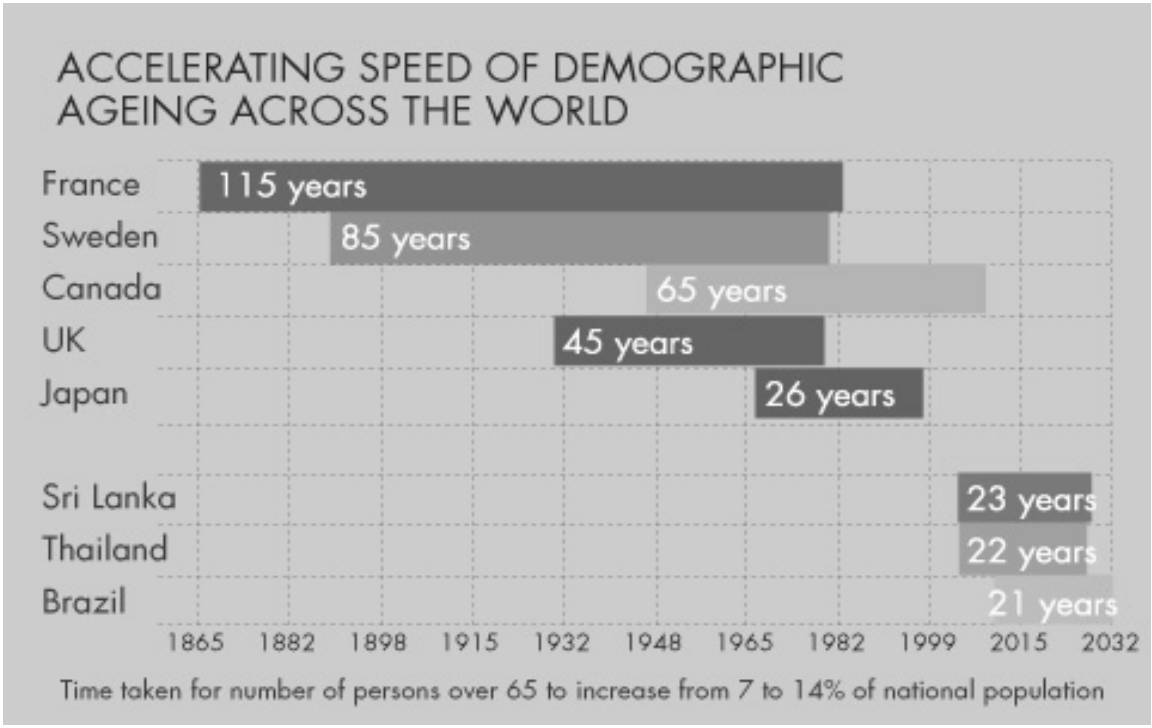


Figure 2.2. Time taken for number of persons over 65 to increase from 7 to 14% of national population

Source: The Wisdom Years on Ageing (http://wisdom.unu.edu/en/ageing-societies/ Retrieved 2011.11.05)

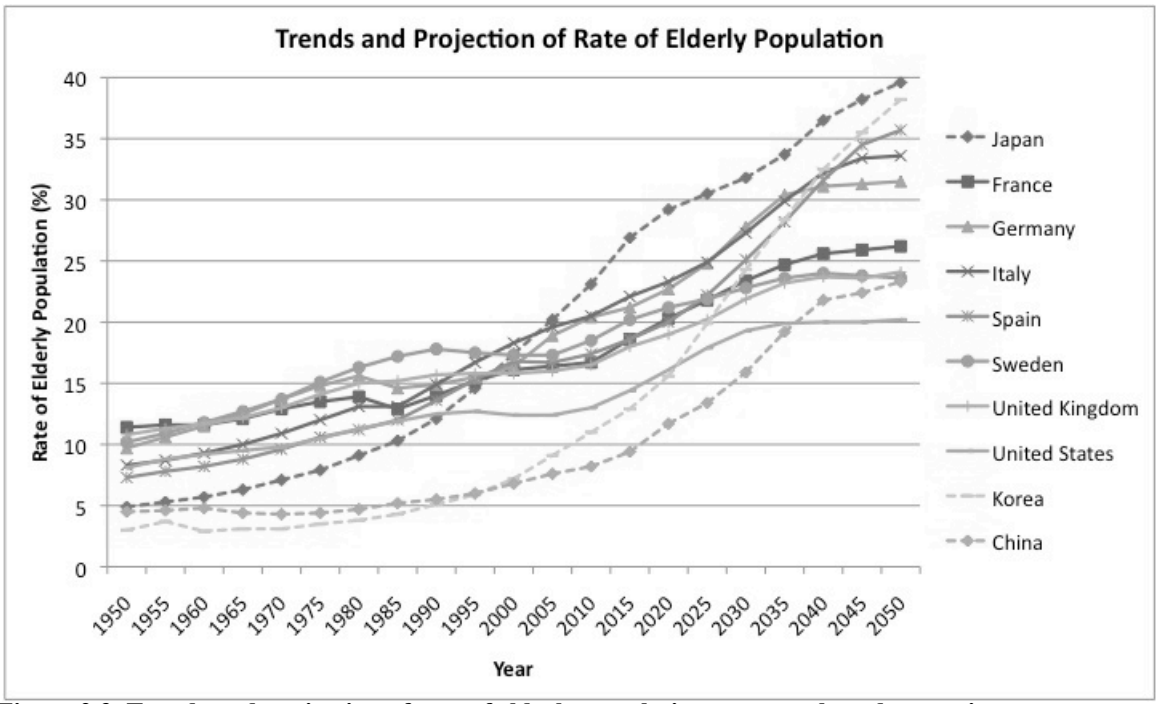


Figure 2.3. Trends and projection of rate of elderly population among selected countries

Source: OECD Statistics (Data extracted on 2011.08.10)

Similar to the situation of aging in Europe, aging and population decline are happening nationally but unevenly in Japan. Although the share of elderly population age 65 and above is going to increase in all regions, higher rates of the increases would be observed in hilly and mountainous areas than flatland and urban areas in Japan (See figure 2.4). Particularly in mountainous area, the rate of elderly population is projected to reach 40% in 2030 while that of urban would still remain below 30% (MAFF, 2005).

By prefectures, population decline was observed in 38 prefectures since last time census in 2005 (MIC, 2011). Particularly the highest rate of population decline occurred in Akita Prefecture at 5.2%, which is the site for the field survey in this study (See figure 2.5). Out of five prefectures at the highest population-declining rate four prefectures are from northern part of Tohoku region. On the contrary, positive population growth was observed mostly in megacities and their neighboring prefectures. Tokyo and Aichi, which consists only 2% of total land of Japan, will continue positive population growth while the rest of the prefectures are projected to experience population shrinkage.

Based on the long-term outlook by Ministry of Land, Infrastructure, Transport and Tourism (MLIT), 25.5% of population decline would be observed nationally by 2050. This rate is projected to be much higher in smaller municipalities. Cities and towns at the size of less than 50,000 residents, population would decline 41.1%. Those municipalities with the residents in 6,000 to 10,000 would experience 48.0% of population decline by 2050. In fact, more than 60% of residential area today would experience higher than 50% of population decline by 2050. This will create a great concern on land management of abandoned space, agricultural land, and natural resource in small municipalities. Simultaneously, the shares in the types of household would also be changed due to aging and declining of population. By 2050, more than 40% of the total household would be single-household and more than 50% of these households would become single-household of elderly person age 65 and above.

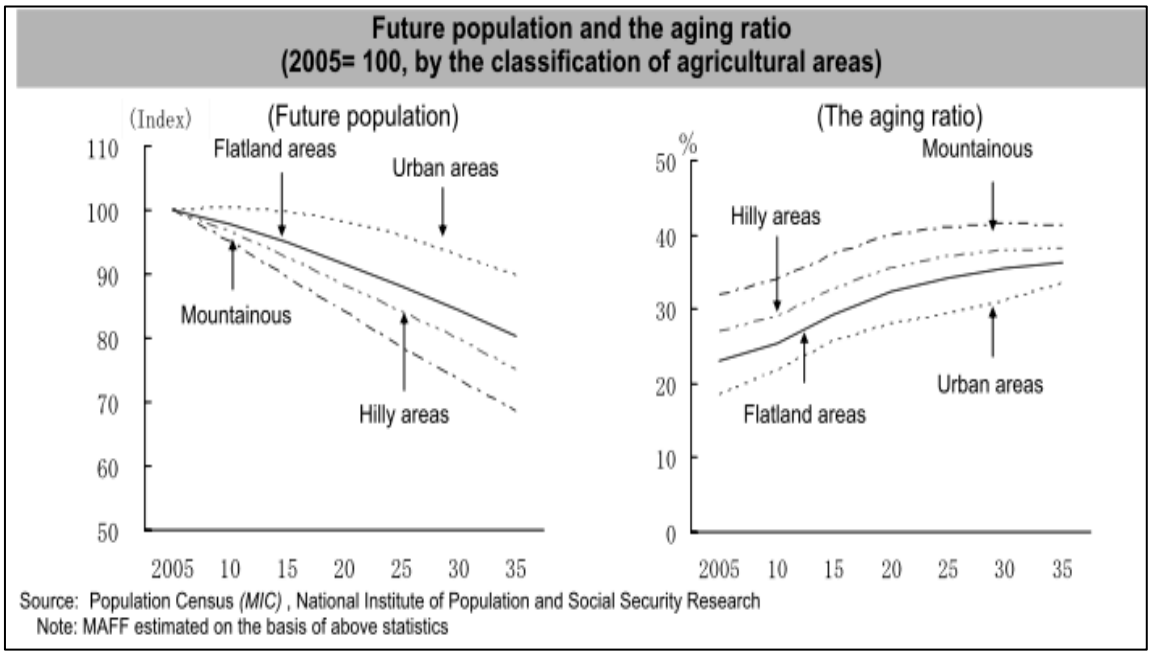


Figure 2.4. Future populations and the aging ratio

Source: Ministry of Agriculture, Forestry and Fisheries, Annual Report on Food, Agriculture and Rural Areas in Japan, (2008)

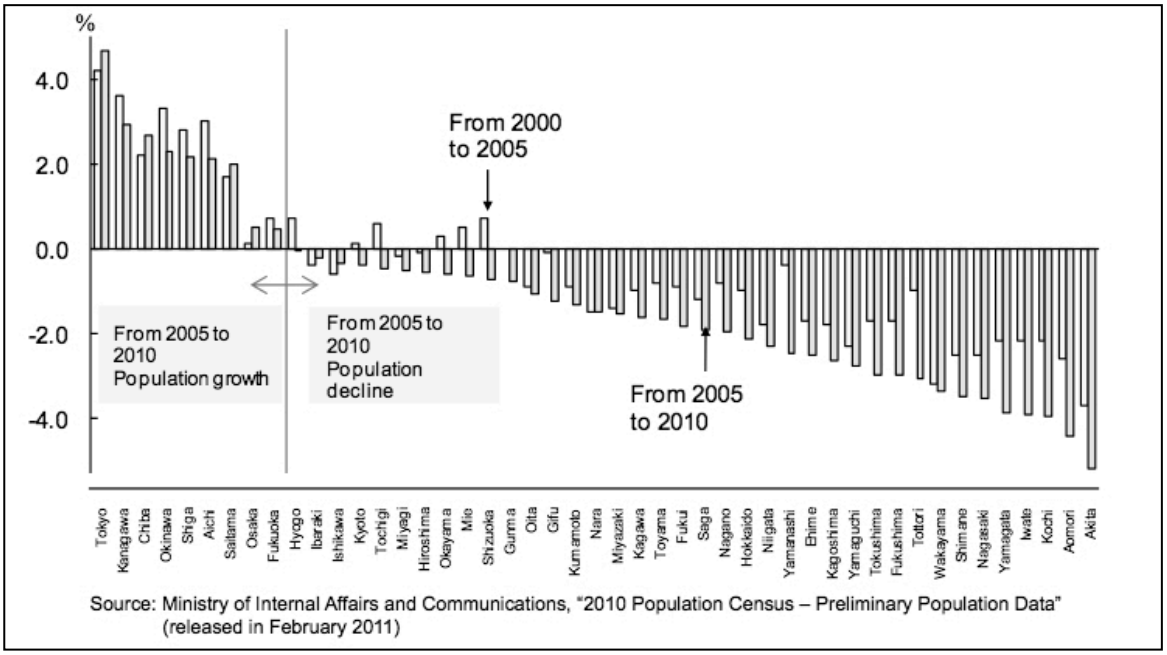


Figure 2.5. Prefecture-by-prefecture population changes

Source: Ministry of Internal Affairs and Communication, 2010 Population Census - Preliminary Population Data, (2010)

Same as the case of Europe, the main causes for population aging is also found in low fertility rate and continuous improvement in life expectancy at birth in Japan. Total fertility rate of Japan was 3.65 in 1950 and it remained above population replacement rate (2.1) until 1970 at 2.13. However, later it declined to 1.26 by 2005. Although it recovered to 1.39 by 2010, it is much lower than the natural replacement rate. Other developed countries and regions are also facing similar situation of low fertility rate, Hong Kong at 0.93, South Korea at 1.16, Singapore at 1.24, Germany at 1.34, Italy at 1.29, while France at 1.89, Sweden at 1.71, and United States at 2.04 maintain relatively higher rates.

While fertility rate dropped rapidly, life expectancy of Japanese has recorded one of the best improvements in last 50 years. In 1960, it was 67.8 years on national average; however it surpassed the figures of most European countries in 1980 at 76.1 years. Currently the average life expectancy of Japanese is 82.0 years, which is approximately 2.4 years longer than the other selected countries (See figure 2.6). Future projection of life

expectancy at birth of Japanese shows continuous increase to 2055. For male it would increase 4.03 years and become 83.67 years. For female it would surpass 90 years at 90.34 years, increase of 3.95 years (See figure 2.7). These increases in life expectancy would further accelerate aging of Japanese society.

Additionally, in the same period of the time, China and South Korea will experience drastic increase of the rate of elderly population that is starting around 2010. Particularly the rise of South Korea is predicted even at a faster pace than that of Japan and it would reach almost same figure of Japan in 2050 at 38.2%. China would reach the level of European countries at 23.3% by 2050. As the life expectancy of Japanese raised rapidly that of South Korea has recorded even more rapid increase. Life expectancy of South Korean people 9.9 years less than other selected countries in 1970 at 62.1 years in 2005 (See also Figure 2.6).

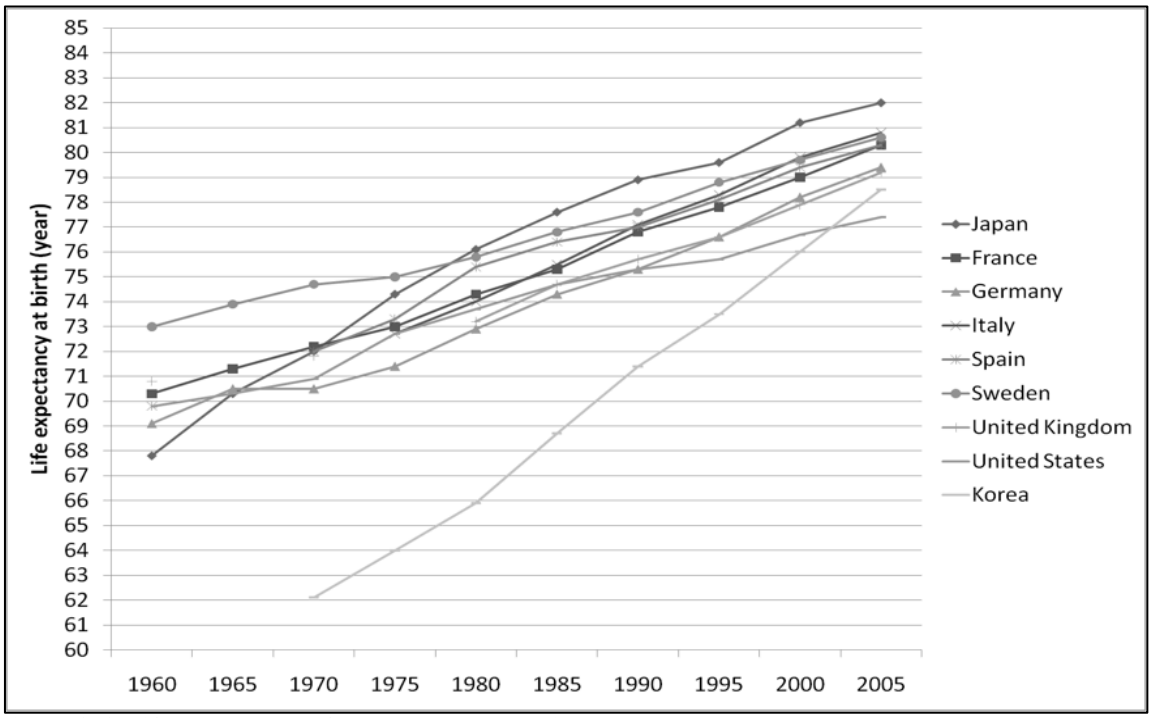
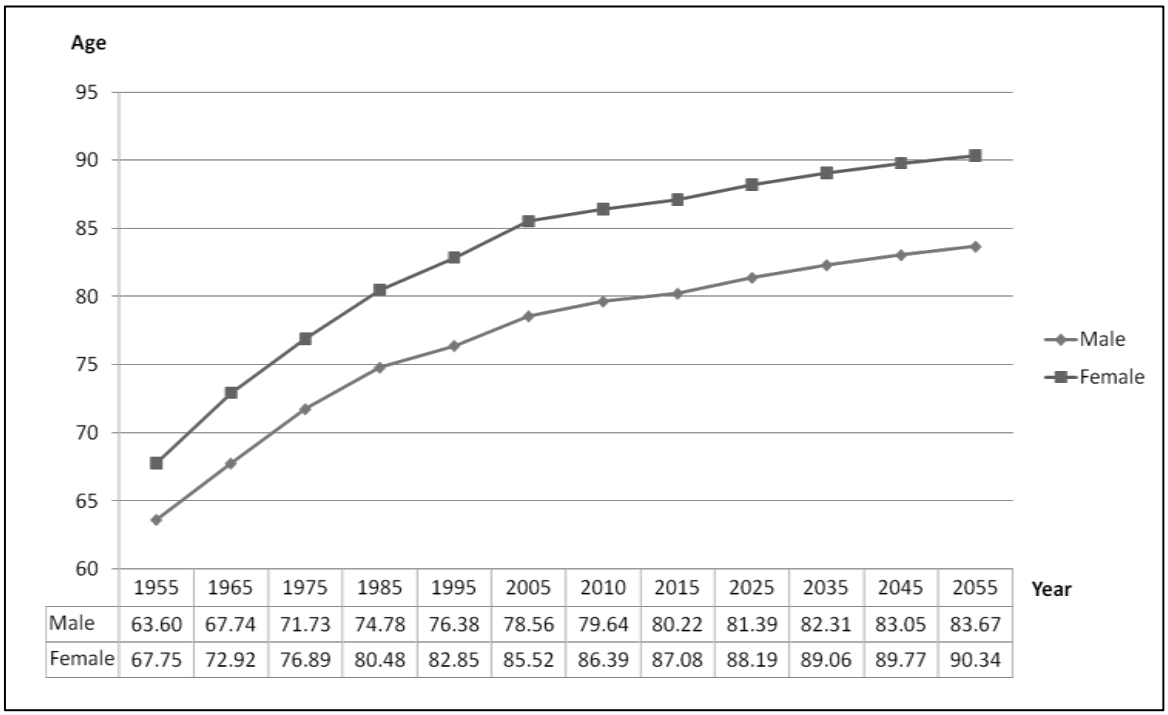


Figure 2.6. Life expectancy of the selected countries

Source: Based on OECD Statistics (Data extracted on 2011.08.10)

Note: The scale for life expectancy is modified above 60 years in order to illustrate the difference among the selected countries.



	1955	1965	1975	1985	1995	2005	2010	2015	2025	2035	2045	2055
Male	63.60	67.74	71.73	74.78	76.38	78.56	79.64	80.22	81.39	82.31	83.05	83.67
Female	67.75	72.92	76.89	80.48	82.85	85.52	86.39	87.08	88.19	89.06	89.77	90.34

Figure 2.7. Life expectancy of Japanese people

Source: Based on OECD Statistics (Data extracted on 2011.08.10)

Note: The scale for "Age" is modified above 60 years in order to illustrate the difference between the figure of male and the figure of female clearly. The scale of "Year" has the figure of 2010 to illustrate the current situation of life expectancy in Japan even though it contradicts to 10-years scaling.

2.3 Similarities and Differences in Demographic Trends between Europe and Japan

As it was illustrated in the comparison of demographic figures of Japan and Europe, there are some similarities and differences on trends and projections of population changes. First, Japanese society has turned into an aged society, in which higher than 14% of total population is elderly population age 65 and above, in the shortest period of time while European countries took more than a half or one century for the same transition in demography. This trend of Japanese demography in aging is a distinctive difference from European countries and it is also projected to happen in some of the middle-income countries in Asia.

Second, both in Japan and Europe, lower fertility rate than natural replacement rate (2.1), increasing life expectancy at birth, and retirement of baby-boom generation are the three major demographic aspects that accelerate aging of society (European Commission, 2009; Champion and Shepherd, 2006; Stockdale, 2006). Although the impact of baby-boom generation, particularly their large-scale retirement, could be temporal, the first two demographic aspects will remain as the fundamental cause for aging society.

Third, immigration has a significant role in slowing down or compensating natural decrease of population in Europe. Although the previous three demographic aspects are emerging in Europe, projected population growth of Europe to 2060 indicates a slight increase. This is mostly due to the constant inflow of international migration to Europe. In fact, total number of migrants determines whether if European countries can maintain positive population growth or not.

Forth, on the contrary, Japan has to deal with rapid population shrinkage together with population aging. This is due to low fertility rate and one of the longest life expectancy among the developed countries, 79.64 years for male and 86.39 years for female in 2010. Yet, more importantly, the difference in immigration policy from that of

Europe seems to have a larger impact. Traditionally Japanese government has a quite closed policy in immigration and it would be very unlikely to have some positive population growth due to the increase of immigrants in the near future.

Finally, both in Europe and Japan, aging and decline of population are expanding regionally or nationally, yet unevenly. In case of Europe, more than half of EU member states are predicted to experience slight decline of population. At the same time higher rate of elderly population is observed in predominantly rural areas than intermediate and urban areas in Europe. In case of Japan, population projection shows 30% of population decline by 2055 and severer population decline would be taking place in municipalities that have smaller than 50,000 populations, 40~50% decline from the current population size. In addition, higher rate of elderly population is also predicted in hilly and mountainous areas than other areas in Japan.

Chapter 3: Literature Review

3.1 Preliminary Studies on Rural Area in Europe

Along with a higher rate of elderly population age 65 and above, rural area in Europe have also been experiencing population decline, mostly due to the prior "exodus of young adults," to urban area (Amcoff & Westholm, 2007; Champion & Shepherd, 2006; Goll et al., 2010; Stockdale, 2006). The young population is a crucial human resource for rural area for various reasons. They are not only important for the reproduction cycle of the rural population, but also for maintaining the local economy and social vitality of rural areas (Muilu & Rusanen, 2003; Niedomysl & Amcoff, 2011).

Preliminary studies have addressed emerging issues in relation to aging and depopulation in rural areas; particularly much focus has been on economic performance and diverse types of migration to rural areas. Agarwal et al. (2009) examined the determinants of economic performance of 149 English rural Local Authority Districts (LADs) in multiple dimensions and clarified three key factors for higher levels of productivity of rural areas; those include: enterprises and investment, accessibility and road infrastructure, and skills and education (Agarwal, Rahman, & Errington, 2009). The first two factors are identified as crucial input for local economic capital, and the last factor is realized as another important input for human capital of a rural area. However, as they explained, "it is more problematic for policy to influence economic performance by overcoming problems associated with poor accessibility and peripherality" (Agarwal et al., 2009). Thus, it is more realistic and feasible to aim for the attainment of skills and education of local people in order to improve the local economy of rural areas.

These necessary skills and educational levels are, however, often not obtainable in rural areas and "only by leaving rural areas can young adults acquire the necessary skills to participate in endogenous development" of rural areas (Stockdale, 2006). This situation of

lacking opportunities in acquiring skills and education in rural areas has accelerated the outflow of young adults in Europe. Furthermore, some argue that it is, in fact, not necessarily a problem not providing opportunities for acquiring skills and education in rural areas. Yet it is more problematic not being able to provide job opportunities which are suitable for young adults who obtained higher levels of skills and education outside of home communities (Champion & Shepherd, 2006; Stockdale, 2006). The result of this situation is shown clearly in the few returns of young adults to rural areas today. Consequently, rural areas will face difficulty in maintaining basic services for residents due to a shortage of a working population in the near future (Amcoff & Westholm, 2007).

While out-migration of young population still continues (Champion & Shepherd, 2006; Stockdale, 2006), various types of in-migration to rural and non-metropolitan areas have been widely observed not only in Europe but also in many western countries. In 1960-70s, Berry (1977) considered this new, reverse way of migration compared to the conventional migration from rural areas to urban areas, as an indication of an ending urbanization in western countries and named it "counter-urbanization" (Berry, 1977). In recent years also, in addition to counter-urbanization, return-migration of former residents to destination rural communities, and international migration to non-metropolitan areas of rich western countries are the main subjects of migration studies in relation to rural areas (Amcoff, 2006; Bijker & Haartsen, 2011; Champion, 1989; Dahms, 1995; Graeme Hugo & Moren-Alegret, 2008; Jauhiainen, 2009; Klinthäll, 2006; Mitchell, 2004; Niedomysl & Amcoff, 2011). Although those in-migrants in rural area are often in early retirement and deciding to downsize to self-employment or less demanding jobs (Champion & Shepherd, 2006), their contribution to the rejuvenation of local economies is showing a significant potential. Their human capital endowments have been creating new links with non-local resources and markets based on their previous job experiences and developed networks

outside of rural communities (Kalantaridis, 2010). At the same time, it is also true that a very significant job input within rural communities is attained "as a result not only of the inflow of self-employed households, but also as a result of new service jobs created by other economically active migrants" (Stockdale, Findlay, & Short, 2000). While a possible shortage of labor force even in providing basic services is a concern in some cases (Amcoff & Westholm, 2007), these new trends of migration into rural areas can be considered as potential input for the regeneration of not only the local population but also the local economy in rural Europe.

In addition, the future return migration of retiring baby boomers recently has drawn much interest in rural Europe. Jauhiainen (2009) conducted a questionnaire survey with a group of baby boomers born between 1946 and 1955 in Finland. Although the result suggests that only 3% of the respondents expressed their wish to return, another 19% of respondents answered that they could live part-time in their home community in rural areas (Jauhiainen, 2009). Although it was one case study in Finland, this result suggests that it would be feasible to attract about 20% of the baby boomer generation in return-migration to rural areas. Those who expressed a willingness in return-migration raised "clean nature, peaceful environment, security, detached houses with beautiful setting, lower house costs and landscapes of home region" as what they seek in returning to their destination community (Jauhiainen, 2009). Besides environment-related aspects, some practical, welfare-based reasons are also raised as possible determinants of migration into rural areas, such as lower housing and living expenses (G. Hugo & Bell, 1998). Initially it seems crucial for rural areas to preserve attractive natural environments, including unique landscapes in home regions, to cultivate further counter- and return-migration movement. At the same time, welfare-related aspects of rural areas would be also valuable for potential migrant groups in cities to determine their migration to non-metropolitan or rural areas.

3.2 Preliminary Studies on Rural Area in Japan

Rural areas in Japan have been experiencing a continuous outflow of population, particularly that of young adults, since the 1960s. These demographic changes in rural areas can be explained in three historical stages in relation to the national economic situation (Ishizaka & Midorikawa, 2005). The first stage occurred during the economic boom in the 1960s. The rise of the national economy functioned as a strong pull of young adults from rural areas to urban areas. This resulted in a drastic, social population decrease in rural areas. The second stage involved the period after the first Oil Shock in 1973. The population flows from rural to urban areas slowed down due to the stabilization of national economic growth. Finally the third stage came in the late 1980s during Japan's bubble economy. A rapid growth of the national economy again functioned as a strong pull of young adults from rural areas to urban areas. Moreover, eventual economic stagnation in the late 1990s resulted in a relevant stagnation of local economies. This situation in local economies further accelerated the migration of young adults as well as middle-aged people from rural areas to urban areas for job opportunities. These continuous outflows of the young population in three stages resulted in an increase of the elderly population in rural areas. Consequently, the mortality rate has surpassed fertility and a natural decrease in population has replaced the social decrease of population due to the outflow of young adults from rural communities. These demographic changes now affect the living condition of residents in rural communities.

According to the report of Ministry of Land, Infrastructure, Transport and Tourism (2007), there were 62,273 residential communities in rural areas in Japan in 2007. Among them, 7,878 (12.7%) communities were in the category of "marginal community" in which more than 50% of the residents were in the elderly population age of 65 and above (MLIT, 2007). The report also projected that 423 communities would disappear in the next 10 years

and an additional 2,220 communities would later face disappearance. In 2008, there were 4,849 rural communities with fewer than 9 households (RDPC, 2008); these rural communities are particularly facing greater risk of disappearance. The gradual shrinkage and fading of these rural communities generate practical issues on property and resource management.

Preliminary studies on aging and depopulation in rural areas can be divided into two groups: statistics-based research and actual conditions-based research (Yoshida, 2011). Statistics-based research primarily studied general trends of aging and depopulation phenomena in rural areas. Generally, municipalities with smaller population sizes are experiencing continuous population decline as the aging of their remaining populations further proceeds. However, municipalities with relatively larger population sizes would maintain the same population size while only the share of elderly population age 65 and above increases (Nishioka, 2005). This is because, while urban areas are being successful to create a strong foundation of high value-added industry that can ensure a sustainable job supply for the population, depopulating areas are experiencing perpetual shortages of job opportunities for young adults (Yoshida, 2011). Consequently, young adults in rural areas are partly forced to seek employment opportunities in urban areas and this would result in the further shrinkage of rural populations. Later, smaller population size will generate lower score on the financial capability index, lower house prices, and lower sales in commerce and industry (Hara, 2007). The portion of taxpayers and tax amount per head also will become smaller in municipalities with smaller working populations (Ibid).

In addition to these shrinking factors in municipalities with smaller population sizes, on the community level, there are some other characteristics regarding smaller communities. Rural communities with smaller population sizes tend to be located in higher in altitudes and farther in distance from basic services, such as city hall offices, schools, and medical

clinics (RDPC, 2008). Sakuno (1994) also examined regional differences for the reason of depopulation by utilizing actual data. He claimed that the distance to city hall office is a significant driving factor for regional depopulation (Sakuno, 1994). Required traveling time to densely inhabited district (DID) areas is also identified as an influencing factor in the living conditions of rural areas (Hashizume, 2005). This is because the distance to DID areas implies accessibility to working places as well as schools.

While statistics-based research on rural areas examined the general trends of aging and depopulation, the second group of preliminary studies, conditions-based research, addressed the actual living conditions in rural communities. One of the most well known terms that describes the living conditions of rural communities is "marginal community," a term coined by Ohno (2005, 2008). Through his intensive field work in residential communities in mountainous areas, he defined a rural community in which more than 50% of its residents are elderly people age 65 and above, and which has difficulty in maintaining community autonomy and ceremonial occasions, as a marginal community (Ohno, 2005, 2008). He argues that human capital is vitally important to maintain cooperation among residents as well as living conditions in rural communities. However in marginal communities, there is a fatal shortage of a young population and it becomes difficult to sustain a decent quality of life as a residential community. As a result, marginal communities have to rely on the support provided by local governments. However, local governments themselves will simultaneously face disappearance due to a lack of financial resources and higher costs to sustain welfare for the aging population (Ibid). The term "marginal community" later gained popularity mostly due to its distinctive word choice of "marginal" and its simple definition by percentage. It appeared in media and academic papers around 2007 and continued to force public attention on the degradation of living conditions in rural communities (Odagiri, 2011).

There are some other studies in conditions-based research that raise different perspectives on marginal communities. Niinuma (2009) examined the living conditions of residents through a field survey and found the contribution of residents' children who live outside of the community, or out-migrated family members, supporting the living conditions of remaining residents. She argues that population decline and the aging of residents do not directly result in marginalization of a rural community (Niinuma, 2009). The contribution of children and out-migrated family members was further emphasized and they are both recognized as an important players in supporting rural communities (Ishizaka & Midorikawa, 2005; Kimura, 2011; Kumira, Matsumoto, & Ozsen, 2010; Ozsen, 2009).

While some successful cases in rural revitalization have gained certain popularity (Okamoto, n.d.; Yokoishi, 2007), it is argued that it is more realistic to involve children and out-migrated family members in supporting rural areas (Kimura, 2011). The type of support they provide to households is also different. Children and out-migrated family members tend to provide emotional support through chatting, phone calls, and paying close attention to the daily living of a household, rather than physical or financial support (Ishizaka & Midorikawa, 2005). In addition, issues related to a household's property is quite sensitive; the major reason for return-migration of children is related to family and property issues (Niinuma, 2009; Ozsen, 2009). Both types of support and responsibility can only be managed by children and out-migrated family members. Therefore, as the marginalization process of rural communities further proceeds, the role of children and out-migrated family members will become more and more significant.

Further examination of rural communities in recent conditions-based research, suggests that the definition of marginal community coined by Ohno (2005,2008) does not precisely describe the actual state of rural communities. In fact, the marginalization process of rural communities was further examined by several researchers, particularly Odagiri

(2009), who has developed a framework to explain the process of community marginalization in three stages (Odagiri, 2009, 2011). Originally this framework was created by Kasamatsu (2005) and mentioned earlier by Sakuno (2006). However, Odagiri (2009, 2011) applied his own theory of three steps of "hollowing phenomena" into the framework (Odagiri, 2009, 2011). He argues that during the marginalization process of rural communities, at first, a population decline would be observed (i.e., a hollowing of people), and secondly a decline of land utilization would be evident (i.e., hollowing of land), and finally community-based activities and the degree of community autonomy would gradually fade out (i.e., a hollowing of community). One important characteristic of this framework is that the decline in community function corresponds to the decline of population and the number of households in different behavior (See figure 3.1). As Odagiri (2009, 2011) emphasized that community functions, represented by community-based activities and times for community gatherings, would remain at the same level even though a decline of population and households occurs in the first stage of the process. Yet, once the degree of population and household decline reaches the transition point between the first and second stages, community functions will start a drastic decline and disappear within the same stage of the process. The state of the third stage describes the situation only of the existence of remaining residents and households. In this theory, the transition point from the first to the second stage is considered a "critical point" for rural communities to either revitalize or maintain the weakening community functions. Throughout the marginalization process, these three aspects of hollowing, which constitute people, land, and community, gradually become less in number, utilization, and vitality level, and consequently a rural community reaches the state of "marginal community" as Ohno (1991) defined.

Afterwards, Sakamoto (2003) applied statistical data to this framework to verify Odagiri's three types of hollowing theory in the marginalization process of rural

communities. He succeeded in illustrating the relationship between the decline in population and households, and the size of cultivated agricultural land in examining data from Kochi Prefecture (Sakamoto, 2003). However, the applied statistics were mostly limited to the macro-scale and agriculture-related data.

Therefore, further verification is needed with regard to applying smaller-scale, community-based data in order to explicate the developed framework of the community marginalization process. This will enable the elucidation of the shrinking process of rural communities, which is affected both by aging and population decline. However, as Odagiri himself mentions, there is the issue of available statistical data due to the implication of data collection by local governments, particularly after the large-scale amalgamations of cities and towns around 2005 (Odagiri, 2011). In some cases, statistical data had been collected by town-scale area definition, which was the smallest feasible definition of area; however, after the mergers of towns and cities, the definitions of area for statistical data collection were also integrated in some cases. This has caused a certain difficulty in access to small-scale, community-based data.

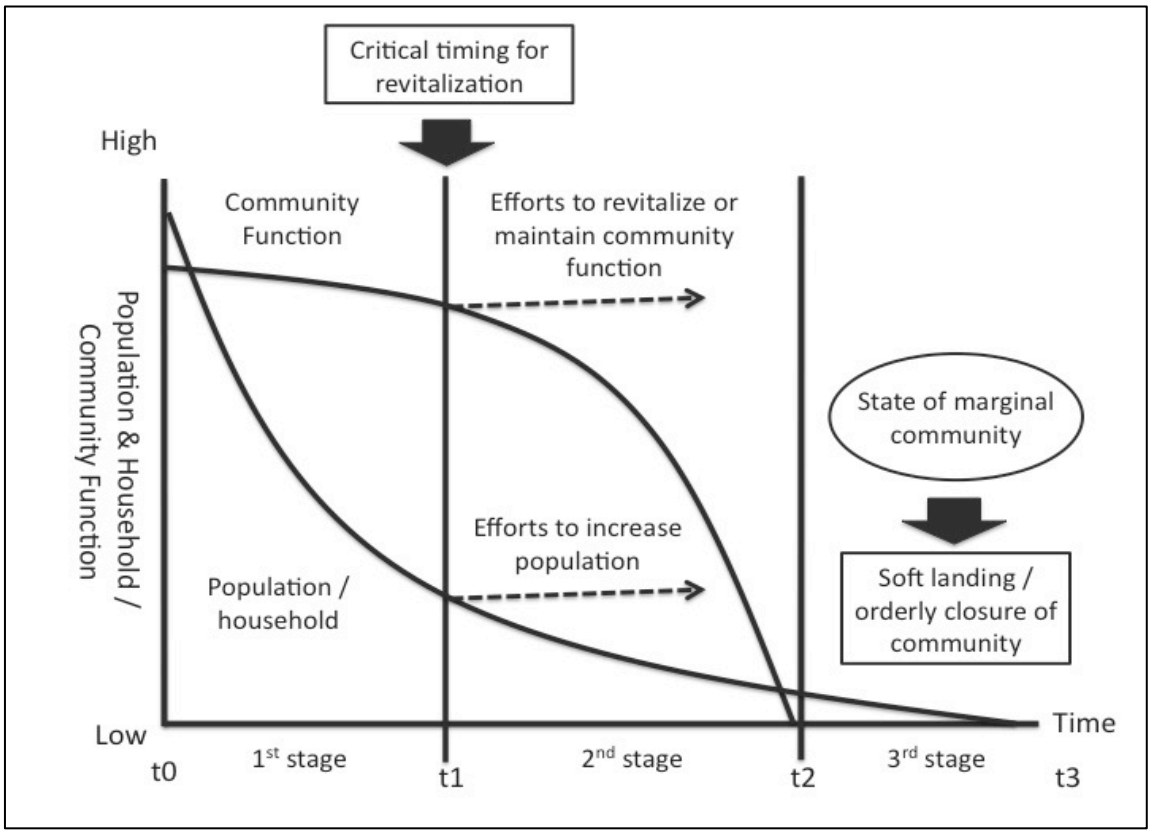


Figure 3.1. Marginalization process of rural community

Source: Based on Odagiri (2009), modified by author

Note: Vertical scale represents number of population and household, and degree of community function.

Despite the difficulty in data availability, it is still vital for local municipal governments to establish a methodology that can capture the living condition of residents in rural community. This is particularly important to conduct objective comparative analyses of rural communities as local governments set up various practical measures. Although there are some existing studies which have examined the living conditions of residents in rural communities (Niinuma, 2009; Noguchi et al., 2010; Takegawa, 2010; Tamasato, 2009) and similar studies on the national and prefectural scales (Fujii et al., 2009; RDPC, 2008; Sakuno, 2006), further examination of the marginalization process of rural communities has not yet been sufficiently addressed.

While the discussion on the framework of marginalization process aims to elucidate the details of the "process," possible treatment of marginal community is also an equally important topic for rural communities. At the third stage of the marginal process, it becomes more critical to maximize the welfare of remaining residents rather than to discuss the possibility of community revitalization; this type of approach is called a "welfare-based approach"[ii] (Niinuma, 2009; Sakuno, 2006). In particular, Sakuno (2006) clearly states that there would be no successful outcome in the implication of regional revitalization to communities that are already in the state of marginal community. Therefore a welfare-based approach should be practiced to secure a quality living of remaining residents in rural communities (Sakuno, 2006). He also proposes the "orderly closure"[iii] of a community once it reaches the point of marginalization as a residential community (Ibid). The details of this soft-landing of marginal communities have not yet been well discussed; however, this is another crucial topic as most rural areas face rapid aging and further depopulation in the near future.

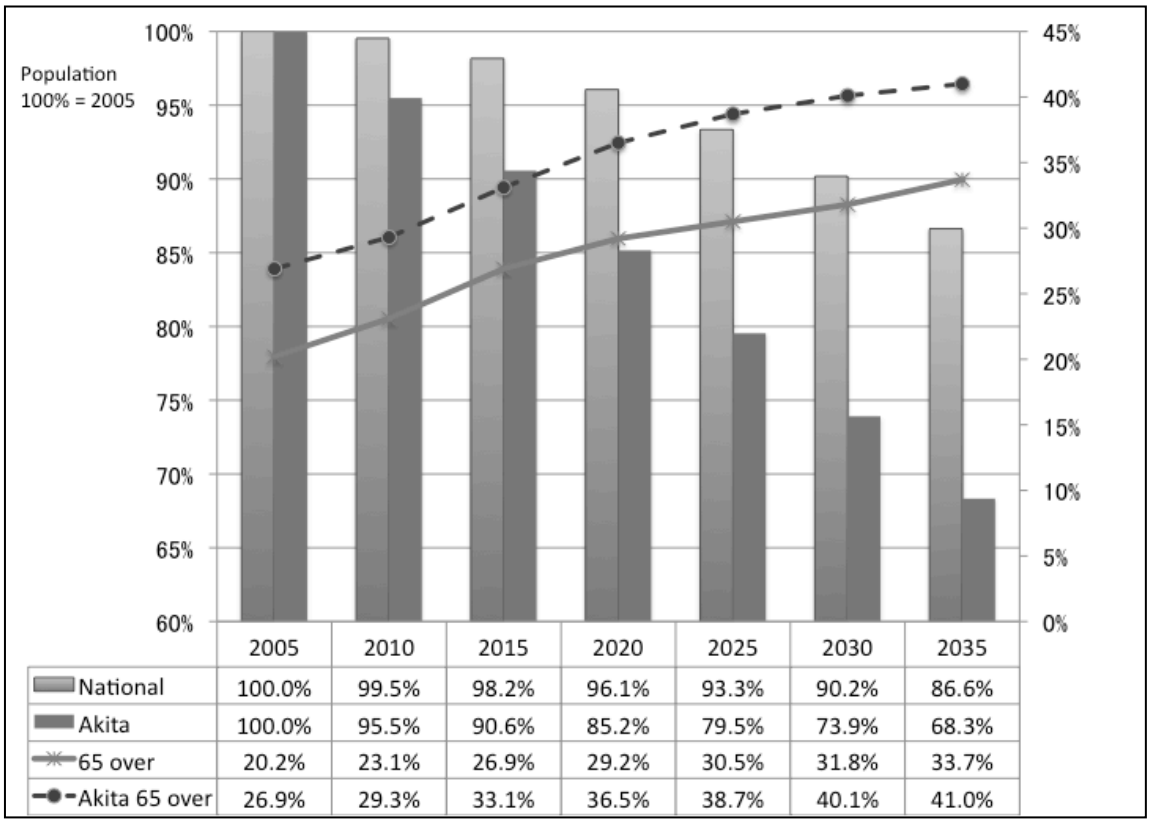
Ultimately it would be valuable for local governments to have an integrated methodology to evaluate the state of each rural community methodically. That is because, as local governments organize and implement regional revitalization plans, government officers first need to examine appropriate targets and kinds of actions needed to allocate the budget. For those areas in which revitalization plans are seemingly less successful, it is recommended to enhance the welfare of local residents (Niinuma, 2009; Sakuno, 2006). Either way, it is necessary for local governments to first examine the current state of rural communities using a comprehensive methodology. This is an essential procedure to select target communities and also to develop a set of strategic approaches towards them.

Chapter 4: Materials and Methods

This section of the thesis introduces five rural communities for the field survey and explains the scheme of its implementation. The field survey is composed of a questionnaire-based household survey and an interview survey from the chairperson of neighbors' association in each community. In order to implement the designed field survey, a total of five residential communities were selected in Yurihonjo City, in Akita Prefecture.

4.1 Aging and Population Decline in Akita Prefecture

Akita prefecture has both the highest rate of population decline and proportion of elderly population age 65 and above in Japan (MIC, 2011; MLIT, 2011). Currently the proportion of elderly population is 29.3%, which is 6.2% higher than the national rate. It is projected to reach 41.0% in 2035 (see figure 4.1); the national average rate of elderly population will not reach the same percentage until 2055. Additionally, the population of Akita has decreased 5.2%, that is, a decline of 60,000 people from 1,146,000, within the five years between 2005 and 2010 (MIC, 2011). As population decline and ageing of the remaining population continues further, Akita will experience 31.7% (363,000 people) by 2035, while the national rate will remain 13.4% (See figure 4.1). Therefore, Akita can be considered as an advanced study area for an ageing society.



	2005	2010	2015	2020	2025	2030	2035
National	100.0%	99.5%	98.2%	96.1%	93.3%	90.2%	86.6%
Akita	100.0%	95.5%	90.6%	85.2%	79.5%	73.9%	68.3%
65 over	20.2%	23.1%	26.9%	29.2%	30.5%	31.8%	33.7%
Akita 65 over	26.9%	29.3%	33.1%	36.5%	38.7%	40.1%	41.0%

Figure 4.1. Trends and projection of population, Japan and Akita Prefecture

Source: Based on National Institute of Population and Social Security (Data extracted 2011.08.10)

4.2 Yuirihonjo City: Study Area for Field Survey

Yurihonjo City is one of the 25 municipalities in Akita, located in the southern part of the prefecture. It shares its southern border with Yamagata Prefecture over Mount Chokai, which is higher than 2,200 meters in altitude, and its northern border with the prefecture's capital city, Akita City. In Akita Prefecture, Yurihonjo City is the largest municipality in area size; it is 1,209.08 km² that comprises 1/10 of the total area of the prefecture. It is composed of three geographical areas: an inter-mountainous area spread from Mount Chokai in the east, a watershed region of the Koyoshi River located in the center, and a flat region in the coastal area facing the Japan Sea. Approximately 74.8% of the land is covered by forest (905 km²), 12.0% is used for agriculture (146 km²), and the rest, 2.0%, is used for residential areas (25 km²).

Yurihonjo City was established as a result of a municipal amalgamation in 2005. Until then, there were one city, Honjo City, and seven neighboring towns, namely: Nishime, Iwaki, Ouchi, Higashiyuri, Yuri, Yashima, and Chokai. After becoming Yurihonjo City, the former Honjo City district was officially designated as a new city central (See figure 4.2). The head office of the city government was also allocated in this district. The other areas of the seven former towns are maintained as administrative areas and the former town halls in each district are kept as branch offices of the city government.

From the north, the Iwaki, Honjo, and Nishime districts are located in the coastal region of the city that faces the Japan Sea. Iwaki shares its northern border with Akita City and residents travel to Akita City not only for basic services, such as medical clinics, grocery shopping, and other errands, but also for work and school. On the south of Yurihonjo City, the Nishime district shares its border with its neighboring city, Nikaho City. However, residents in Nishime have easier access to the Honjo area, which is the city's central district, than the residents of Nikaho.

The Yuri and Yashima districts are in the middle of the coastal and inter-mountainous regions. Yuri is next to the Honjo area and the traveling distance is around 10km. In the case of the Yashima district, its western area is partly in the Chokai highland; thus, the travelling distance to the city central is longer than that of Yuri, at 25km.

Ouchi, Higashiyuri, and Chokai are the three districts located in the inter-mountainous areas of the city. These districts are far in distance from the city central, between 25 to 30km, except for the western part of Ouchi district. These three districts have smaller populations as well as higher rates of elderly populations compared to the other districts in the coastal area of the city.

The western part of the Ouchi district is on the periphery of the flat region of the Honjo district. The traveling distance to the city central is also shorter than from the eastern part of Ouchi, at around 7~10km. In this region of Ouchi, the majority of residents travel to the city central on a regular base for work, school, and medical clinics. On the one hand, this area can be considered as a part of the central area of the city. However on the contrary, the eastern area of Ouchi is in the inter-mountainous area and the traveling distance to the city central is longer than 25km, which takes about 50 minutes by car. Residents in this region often travel across the eastern border of the city and travel to neighboring cities for work, school, and grocery shopping and other daily errands.

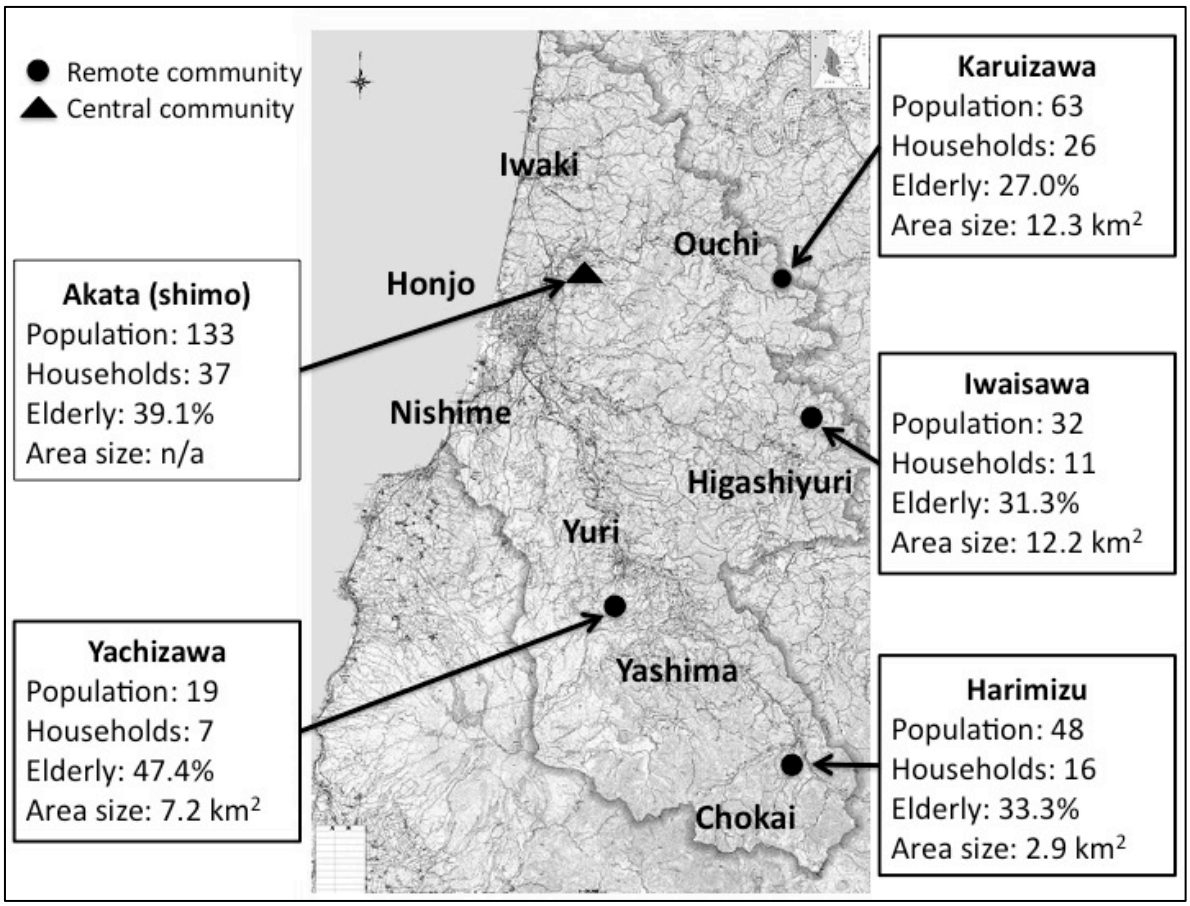


Figure 4.2. Map of Yurihonjo city with the location of 8 districts, and five target rural communities
Source: Based on a map provided by Yurihonjo City Hall (2011)

The total population of Yurihonjo city is currently 85,392 with 28,639 households, which is the 4th largest among the 25 municipalities in Akita. Since the last National Census in 2005, the population has declined in all 8 districts. The total population also declined by 4,326 residents, from 89,555 in 2005. As for the long-term trend, population decline is happening mostly in six districts located in the inner part of the city.

Positive population growth has been observed in the Honjo and Nishime districts compared to the population in 1955 (See figure 4.3). Particularly in the 1970~80s, the population of Nishime raised markedly. Quite to the contrary, the remaining six districts have followed the national trend of population decline in rural areas from the 1960s to the 1990s (Ishizaka & Midorikawa, 2005). After 1975, these population-declining districts also spread into two groups. Population decline has continued at the same rate up to the present in the Higashiyuri and Chokai districts, while the population trend in the other four districts, Iwaki, Yuri, Ouchi, and Yashima, showed a slight recovery in the 1980s. In addition, the population of the Iwaki district, which is located closer to Akita City, recovered a larger proportion than other districts in the late 1990s.

The changes in the proportion of elderly population age 65 and above have also showed similar behaviors in demographic changes since 1955 (See Figure 4.4). Since 1980, the Nishime and Honjo districts have shown smaller portions of growth compared to the remaining six districts; these two districts remained below 30%, while the rest of the six districts spread between 30 to 40%. At the same time, only he Higashiyuri district surpassed 35%, while the rest of the five districts in the higher rate group fall between 30 to 35%. There is more than a 10% difference between Honjo and Higashiyuri.

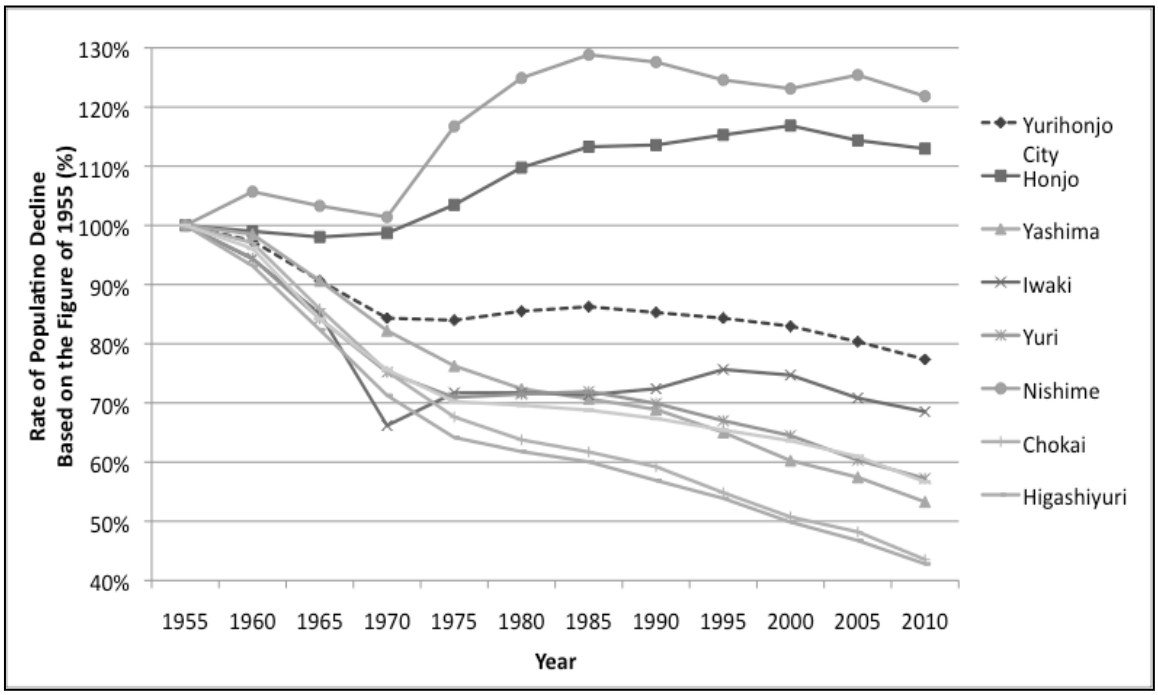


Figure 4.3. Trends of population changes in 8 districts since 1955

Source: Based on National Census of 1955 to 2010, created by author (Data extracted 2011.10.10)

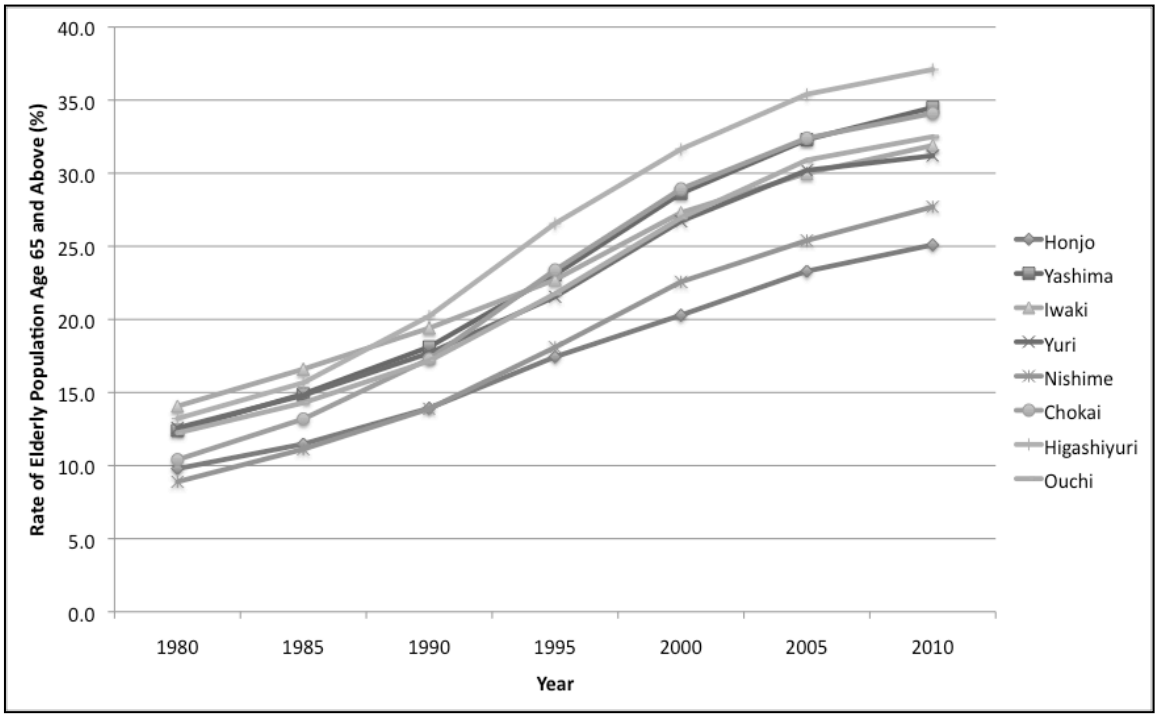


Figure 4.4. Trends of the rate of elderly population age 65 and above in 8 districts of Yurihonjo City

Source: Based on National Census of 1955 to 2010, created by author (Data extracted 2011.10.10)

4.2.1 Uneven Trends of Aging and Population Decline in Yurihonjo City

These differences on the trends of population decline and the proportion of elderly population in Yurihonjo City seem to have a relationship to the distance from the city central area as also noted in some prior research on rural areas (Hashizume, 2005; Sakuno, 2006). The Yashima, Higashiyuri and Chokai districts are located at a farther distance than 25km from the city central while the rest of the regions are below 20km. The population declining rate since 1955 has reached higher than 30% in these three districts in the peripheries, and the rate of the elderly population also exceeds 35% (See figure 4.5). Although the population-declining rate was also high in the Ouchi and Yuri districts, their rate of elderly population remained below 35% (See figure 4.6). This suggests that the Higashiyuri, Chokai, and Yashima districts have relatively higher rates in ageing and declining of population.

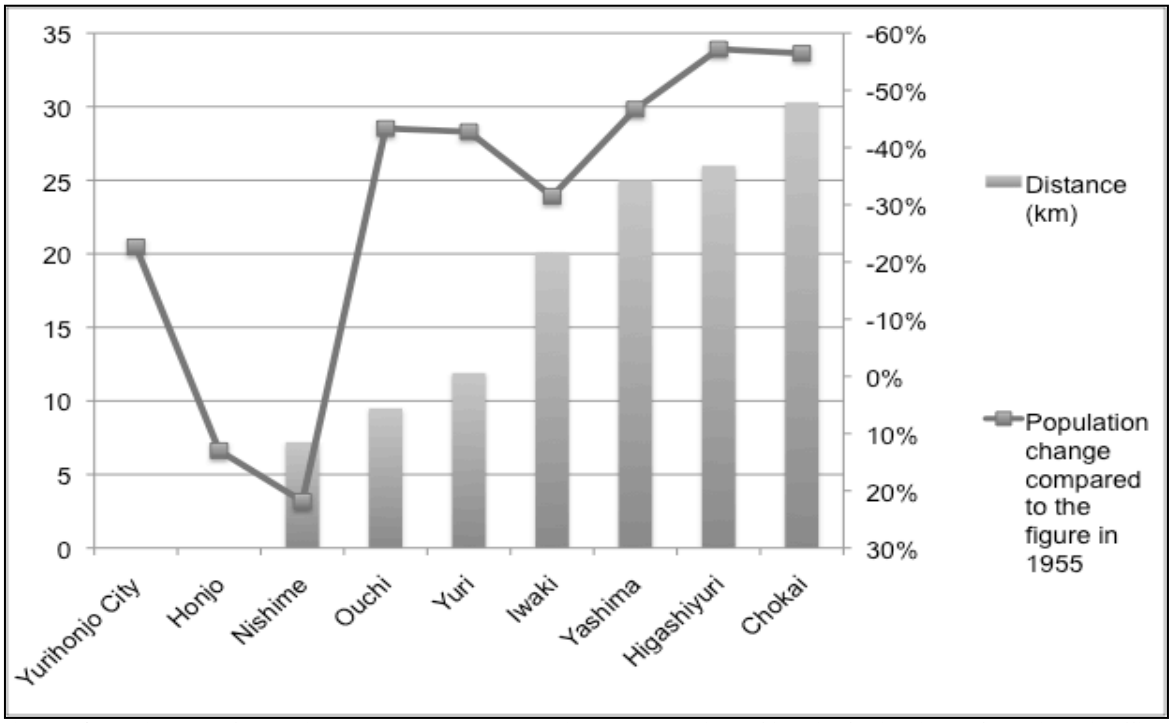


Figure 4.5. Distance from city central and population change since 1955 in 8 districts of Yurihonjo City

Source: Statistics of Yurihonjo City, created by author (Data extracted 2011.10.11)

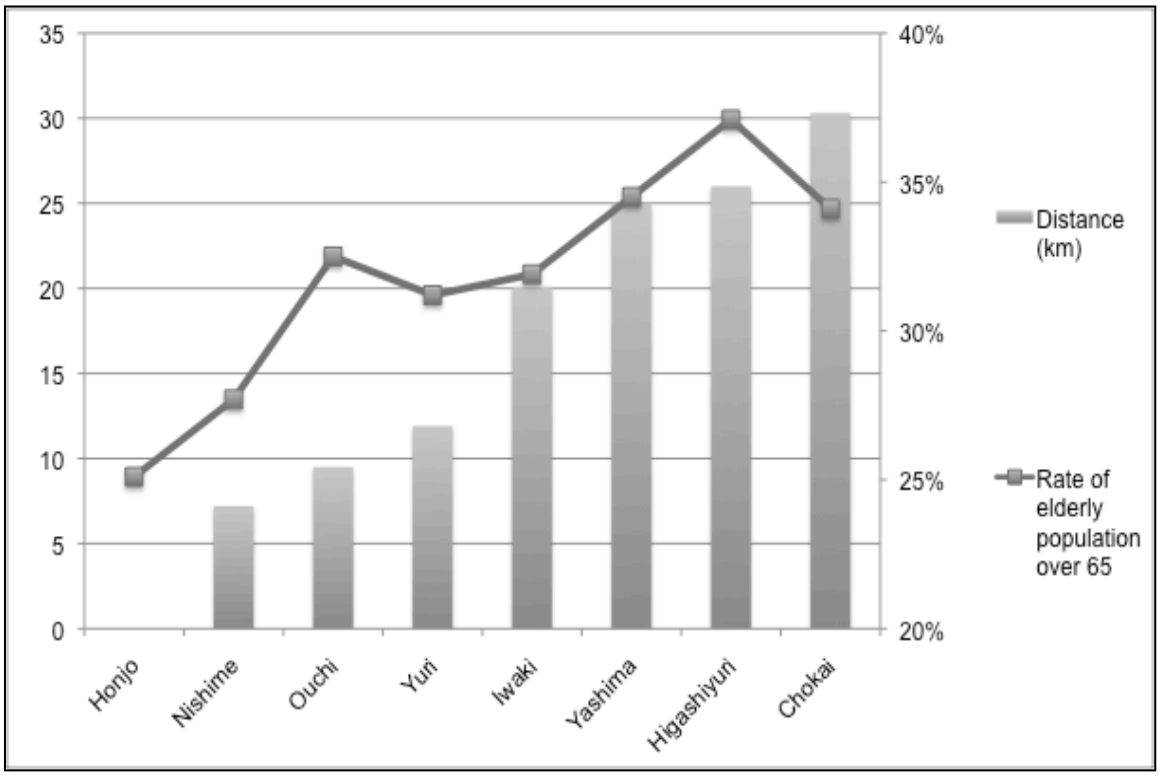


Figure 4.6 Distance and rate of elderly population age 65 and above in 8 districts of Yurihonjo City

Source: Statistics of Yurihonjo City, created by author (Data extracted 2011.10.11)

4.2.2 Selection of the Five Rural Communities for Field Survey

For the implementation of the field survey, a total of five rural communities were selected. From the remote areas of the city, four communities were selected, namely Karuizawa, Iwaisawa, Harimizu, Yachizawa The 5th community was selected from an area relatively closer to the city's central area. The first group, the four communities in remote areas, will be referred to as "remote community" and the last community will be referred by its own name, "Akata" in the following sections of this thesis. These five communities were selected for the field survey based on three conditions.

The first condition was the location of the community. The first four communities were selected from remote areas and the last community was selected from an area close to the city central. This makes it possible to conduct a comparative analysis of the results in a field survey. The definition of a remote area is set by the "Act on Special Financial Measures for Comprehensive Development of Public Facilities for Distant Areas" created in 1962[1]. Under this act, each residential community is assessed based on accessibility to basic services such as public transportation, postal and banking services, and the branch office of the city government. Based on accumulated scores, the locations of Karuizawa, Iwaisawa, Harimizu and Yachizawa are categorized as remote areas.

The second condition involved the districts in which these four communities in remote areas are located. The selected four communities in remote areas are in the Ouchi, Higashiyuri, Chokai and Yashima districts, which are located in the inner part of the city. In this region, both population decline and ageing rates are higher than in the other districts (See table 4.1). Thus, those districts in the inner part of the city can be considered more appropriate areas for the purpose of this study. Although the Yuri district also has a higher

[1] "Act on Special Financial Measures for Comprehensive Development of Public Facilities for Distant Areas" Act No. 88 of 1962. This law ordains special financial measures to set upon systematic and comprehensive development of public facilities for municipalities in which selected distant areas exist. This law aims to redress significant disparity in living standards and cultural levels of residents between distant areas and other areas (See http://law.e-gov.go.jp/htmldata/S37/S37HO088.html.).

rate of elderly population as well as population declining rate than the other districts in the coastal area, accessibility to basic services in the Yuri district is relatively better than the rest of four districts in the inner region. In fact, there are only two residential communities located in remote areas in the Yuri district, while the other districts in the inner part of the city each has more than four.

Table 4.1. Population declining and aging in 8 districts of Yurihonjo City
Source: Based on statistics of Yurihonjo City, created by author (Data extracted 2011.10.11)

	Coastal Region			Inland Region				
	Honjo	Nishime	Iwaki	Yuri	Ouchi	Yashima	Higashiyuri	Chokai
Rate of population change since 1955	13.0%	21.8%	-31.5%	-42.8%	-43.3%	-46.7%	-57.2%	-56.5%
Rate of elderly population over 65	25.1%	27.7%	31.9%	31.2%	32.5%	34.5%	37.1%	34.1%

The third condition was the size of the population and the number of households. There are 23 residential communities located in remote areas in Yurihonjo City. Out of them, there are 11 communities that have a smaller population size than 100 residents. In recent years, the city government has been conducting regional revitalization projects, which aim to address emerging issues as well as the declining social atmosphere due to the continuous outflow of the young population and the ageing of the population in rural communities. These projects have been implemented in relatively large communities among all rural communities within the city. Therefore, the initial interest of the city government in this joint survey of rural communities was to obtain information on the living condition of residents in smaller communities than those communities they had already addressed. Through their prior experience of regional revitalization projects, it was also suggested to choose communities smaller than 100 residents and 30 households. Thus, it was decided to choose one community from each of four districts in the inner part of the city out of those 11 communities in remote areas which have fewer than 100 residents and

30 households. These four communities were carefully selected after direct observations of all 11 communities as well as discussions with city government officials.

Finally, in order to do a comparative analysis on living conditions of residents, one residential community, the Akata community, was also selected from the central area of the city. The Akata community is also located in the Ouchi district, one of the four inland districts with a higher rate of population decline and ageing. However, the community is located on the western edge of the Ouchi district and in relatively closer distance to the city central area, approximately 7km to the DID region. The entire community of Akata spreads from the inter-mountainous area on the east to the flat area on the west. From the inter-mountainous area, there are three sub-divided areas called Kami, Naka, and Shimo in the Akata community. Each of the sub-divided areas has around 20 to 30 households and they all belong to the Akata community. However, the living condition in each area, particularly that of access to basic services, is quite different. In order to illustrate the difference of the living condition between remote and central areas of the city, the Shimo area of Akata community was selected as the 5th target community for this field survey. The Shimo area of Akata has 37 households and 133 residents. There is about a 6km distance from the Kami to the Shimo area. In this study, the Shimo area of Akata is referred to as "Akata community" to represent a rural community in close proximity to the central area of the city.

4.2.3 Details of Target Communities

The following section will describe the target five residential communities both in the remote and central areas of Yurihonjo City. Figure 4.2 shows the locations of five rural communities and their basic information.

Karuizawa Community

The Karuizawa community is located on the eastern periphery of the Ouchi district, along Route 105. The traveling distance to city central is approximately 30km. There are 73 residents of 26 households currently living in Karuizawa. The rate of elderly population is 31.5%, which is relatively lower than in other communities.

There is no available public transportation service within Karuizawa community. It takes 10 minutes to the closest bus stop and 22 minutes to a train station, respectively, by car. There is a school bus service, which takes 10 minutes to both primary and junior-high schools. The closest high school is all located in the Honjo district and it takes more than 30 minutes to reach by car. Residents of Karuizawa normally travel across the city border to Diasen City for grocery shopping. It is approximately an 8 km distance, or 15 minutes by car. To the closest medical clinic it takes about 8 minutes by car; however, since it is a small clinic, many of the residents travel to city central for larger hospitals. There is no available care facility or nursing home around the community.

Most residents of Karuizawa community travel outside of the Ouchi districts for their jobs. The main destinations are the Nishime and Higashiyuri districts within the city, and the Nangai area of Daisen City over the eastern boarder of the city, and Yuwa, Kawabe, Akita, the Tuchizaki areas of Akita City over the northern border of the city. Higashiyuri and the Nangai area of Daisen City are the neighboring areas of Karuizawa, about an 8~10 km distance, and to other places it takes between 50 to 90 minutes by car.

As for community-based activities, residents still cooperatively maintain cleanups around the community centre and the main road that goes through the community. However, a large portion of agricultural land is currently not cultivated. More than 70% of the agricultural land is abandoned. About 30% of that land is mowed; however, the rest is completely abandoned.

The main concerns of residents are lack of successors, maintenance of abandoned houses, and care for elderly households. It is becoming a serious issue among residents to consider the management of various properties, such as forests, agricultural land, and houses due to a lack of successors in the community. There are already two families who moved to the central area of the city in Karuizawa and their houses were left empty in community. Although both houses are taken care of by family members of those households, it is probable that there will be some completely abandoned houses in the near future. This is of particular concern for the case of elderly households. Currently there are four households with elderly couples and two households with an elderly person living alone. Those households tend to have less access to transportation means and also find it difficult to maintain their property.

Iwaisawa Community

Iwaisawa community is in Oikata area of Higashiyuri district. The traveling distance to city central is 30.3km, which is about 1 hour drive by car. However, there are various services available in Oikata area such as branch office of city hall, grocery shops, medical clinics, banks, and postal office. The traveling distance is about 5 km from the community, yet Iwaisawa is located in inner part of the region over a small tunnel from Oikata side. Since this tunnel is the only access route to outside community, it becomes crucial to maintain this access road especially in winter time.

There are 30 residents of 11 households in Iwaisawa community, and 12 residents

(40.0%) are older than 65 years old. Currently there are 2 households of elderly couple and 1 household of elderly person living alone. Annual meeting of neighbors' association is only occasion that all residents gather in a year. Mowing around the community centre as well as the main road are maintained by residents, however there is no other community-based activity in Iwaisawa. There used to be several seasonal festivals in community but once Iwaisawa branch school was closed in 1978 they were gradually faded out.

Currently the main concern of residents is the access to outside of community, more specifically to Oikata area. In the interview survey, one of the respondents said that as long as the access to Oikata is secured, living condition in Iwaisawa is comfortable. In fact, residents expressed their favor in natural environment of the community. Yet, once elderly residents become incapable to drive by themselves, it would be difficult to maintain current living condition in the community.

Harimizu Community

The Harimizu community is located in a small valley in the Chokai district. This community is the farthest distance from the city central area among all target communities. It is approximately 50 km and it takes about 90 minutes by car. The entire area is the inner part of Mount Chokai and all houses are built along the main road (See figure X). One of the fountainheads for the region's water supply is located in its neighboring area within Mount Chokai and its water pipe facility is set in the Harimizu community. Due to the less agricultural practice of residents as well as the abandonment of persimmon and chestnut trees, in recent years residents started to encounter wild animals, such as deer, raccoons, and bears occasionally within residential areas. Often they come down to residential areas to eat farm products.

Currently there are 16 households with 48 residents in the Harimizu community.

The rate of elderly population is 33.3%. There are four elderly couples and three elderly persons living alone in single households. In addition, there are three abandoned houses within the community. Family members and relatives of out-migrated households are maintain all of them.

As was mentioned, the Harimizu community is in the Chokai district, which is in about 50 km from the city central. Therefore, access to daily services is vitally important in this area, particularly in those communities like Harimizu, which is located in the inter-mountainous region of the district. There is no available public transportation in the community. It takes 7 minutes to the closest bus stop by car. There is a school bus service available from the half way to primary and junior-high schools in 4.5km and 20 km respectively. The traveling distance to the closest high school is about 30 km. Medical clinics, banking and postal services, and grocery shops are at a 5 km distance. However, residents have to travel to the city central area occasionally for larger hospitals.

Residents of Harimizu gather four times for meetings of neighbors' association to discuss seasonal events and chores in the community. They maintain several community-based activities, such as clean-up of water channels, mowing in the community, and a few local festivals.

The main concerns of residents are lack of job opportunities within the district, educational opportunities for children, and access to hospitals and grocery shops, especially in the winter. The above-mentioned three out-migrated households were seeking better jobs, educational opportunities for their children, and living with their family members who live outside of the community.

Yachizawa Community

The Yachizawa community is located at the foot of the Chokai highland that spreads to the western part of the Yashima district. Yachizawa is the smallest as well as the most aged community among the five target communities. There are currently seven households with 21 residents. However, one family is now living in the Honjo district and visits Yachizawa once or twice per month. More than half of the residents, 12 residents (57.1%), belong to the elderly population group in this community. There are three households with elderly couples, yet there is no household with an elderly person living alone. Although the share of elderly population is among the highest, the degree of community-based activities is quite similar to the other communities. They mow once or twice every year around the community centre, a shrine, and the community watershed.

Accessibility to basic services is the main challenge of the Yachizawa community. The distance to public transportation, schools, the branch office of city hall, a gas station, and grocery shops are all farther than 10km. Therefore, transportation means is indispensable for residents' daily lives. The travelling distance to city central is 25 km; however, due to the road conditions, it takes about 75 minutes by car. Besides these access issues, residents are concerned with snowfall in the region, particularly removing snow from the rooftops of houses is difficult work for elderly residents.

Akata Community (Shimo Area)

The Akata community is located in the Ouchi district, the same as the Karuizawa community; however, it is on the western edge of the district and a 7~10 km distance to city central. The entire community of Akata is subdivided into three areas: Kami, Naka, and Shimo, from the inner part of the district to the west. The total population of entire Akata is 393 with 112 households. Each sub-divided area has around 20 to 30 households, yet living

conditions in each area, particularly that of access to basic services, are quite different. The total distance from Kami to Shimo is approximately 6 km; thus the Shimo area has relatively easier access to city central compared to the Naka and Kami areas. In this study, the Shimo area of Akata is referred to as the "Akata" community as a representative residential community in the central area of the city.

Currently there are 133 residents in 37 households living in Akata. The proportion of elderly population is higher than in other communities in remote areas, except for Yachizawa, at 39.1%. There are eight households with elderly couples; however, there are no elderly residents living alone. There are five abandoned houses and residents of the community manage them and some family members come from the Honjo district also to take care of the houses.

There is a public bus service available within the community; it stops at any place within the community for users. This fixed bus service also functions as a school bus for primary school students. It is 3.7 km to a primary school located at the western edge of the Akata community. Junior-high and high schools are located in the city central area, which is about 10 km away. Many of the residents work and shop daily in the city central area. Access to a large hospital is also at the same destination. Therefore, much of the daily life of residents in Akata is dependent on services in the Honjo district.

Compared to the other four communities, Akata has a variety of community-based events and activities. They have monthly gatherings of committee members and an annual meeting of a neighbors' association. Besides mowing grass around the main road and community facilities, they are also doing cleanups and community based-cultivation of abandoned land to maintain the living condition of community. In addition, there are various traditional events, such as festivals for local temples, rituals for local shrines, and traditional performing arts for Bon season in August.

Besides their active state in community-based events and activities, the main concern of residents in Akata is the lack of successors to handle those activities. The majority of the working population in Akata is employed in the Honjo area. Despite its proximity to the city central, an outflow of young adults has also been gradually evident in Akata. Therefore, the chairperson of the neighbors' association mentioned that they are trying to generate a sense of belonging to the community through various community-based events and activities.

4.3 Design of Field Survey

The field survey was designed in two sections: 1) a questionnaire-based survey to households and, 2) an interview survey with the chairperson of the neighbors' association in each community. The questionnaire-based survey to each household aimed to illustrate the difference in living conditions of residents in two groups of residential communities:, four communities in remote areas and one community in the central area of the city . The interview survey, on the contrary, was to gain general information on the living environment in each community. More general questions about each community, such as seasonal activities of neighbors association, common destinations for basic services, and the number of abandoned houses and their management condition in each community, were asked in the interview survey. The result of the interview survey was referred to as necessary to analyze the results of questionnaire-based survey. Additionally, the interview survey also asked general opinions on the present state of each community from the perspective of the chairperson. The questions asked in each interview survey were based on a prepared question sheet designed for this part of the survey. Therefore, the general content of each interview in all five communities were kept comparable.

This field survey was jointly implemented with the local government of Yurihonjo

City. Particularly, the Department of Regional Revitalization, which was newly established in 2010, kindly accepted my proposal for the field survey. The city government has realized the magnitude of ongoing depopulation and related aging of remaining residents, particularly within the area of former six towns in the inner parts of the city; these six districts have been experiencing a higher depopulation rate as well as a higher proportion of elderly population age 65 and above. In order to address this issue, Yurihonjo City set a new scheme for city development in March 2010. The city government is trying to create a synergy in city development plans among the original eight districts by utilizing the characteristics of each district. This is to create a livable environment for the future and also, in particular, to put a brake on the ongoing population decline in the entire city.

However this initiative has not been quite successful to slow down the depopulation of the city. While the city government was trying to develop plans for city development, one of the challenges in the planning was to capture the needs and expectations of the residents through local governance. Thus, since 2005, the city government has established a special council in each district to collect information from local residents on their basic needs. One of the current initiatives of Yurihonjo City is the collaboration with local universities. Particularly, the city government is jointly implementing regional revitalization projects with the Center for Regional Sustainability Initiatives (CRESI) at Akita International University. The currently ongoing joint project is designed as a 3-year project and started in 2009. Professors and university students are forming several teams and visit nine residential communities once or twice every two to three months. These teams are organizing a series of workshops in each community to encourage discussion among residents on current issues and challenges in the community, identify how residents want their community to be in the next five to ten years, and finally set the outcomes of the discussions into actual action plans.

As the result of these workshops, local residents have started various activities, such as community-based cultivation of buckwheat in abandoned agricultural land, revival of the local Bon-dance event after many years, and food product development by using their locally produced apples. Although there are difficulties in encouraging discussions among local residents in some cases, generally these revitalization projects have been successful to encourage local residents to discuss local issues by themselves and have increased residents' awareness of the necessity of revitalization initiatives in their community.

Besides the fact those series of collaboration projects with local universities were successful to cultivate residents' awareness for regional revitalization, as mentioned, those selected nine residential communities were all relatively larger in population as well as in number of households; all of them are larger than 100 residents in 30 households. There are many other smaller residential communities in Yurihonjo City and generally these communities are more fragile to depopulation and aging related issues. Therefore, in this survey, the city government was interested in determining the living conditions of residents in smaller rural communities.

4.3.1 Application of Sustainable Development Indicators (SDIs)

In order to capture the living condition of residents in rural communities, this study applied the idea of setting variables based on categories and sub-categories from Sustainable Development Indicators (SDIs) to the questionnaire for the field survey. This process makes it possible to have a wider perspective on capturing living conditions of residents. At the same time, it allows analyzing the findings from actual variables in each category; this enables the interpretation of findings on larger scales. Although there are several preliminary studies focused on the living conditions of residents in rural communities (Niinuma, 2009; Noguchi et al., 2010; Takegawa, 2010; Tamasato, 2009) and

also on national and prefectural scales (Fujii, Tarumi, & Fujiwara, 2009; RDPC, 2008; Sakuno, 2006), the application of categories and sub-categories has not yet been examined in the study of rural communities.

The initial purpose of SDIs is to capture the state of countries in their progress in sustainable development. An international initiative for comprehensive action for sustainable development was called in 1992 at the Rio de Janeiro Earth Summit. One of the agreed upon actions was to create indicators of sustainable development on national, regional, and international levels (UNEP, 1992). This agreement was articulated in Chapter 40 of Agenda 21. It also emphasized the "harmonization of efforts to develop sustainable development indicators" at any levels (United Nations, 2007). Prior to this action on the inter-governmental level, the most well-known definition of sustainable development was coined by the World Commission on Environment and Development, also known as the Brundtland Commission, in *Our Common Future* in 1987: 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987). In recent years, an international initiative on sustainable development was founded in the UN Millennium Development Goals (MDGs) adopted in 2000. The actions for MDGs encouraged all countries to incorporate the notion of sustainable development in national policies.

Despite the extreme popularity of the idea of measuring sustainability among countries, the definition of "sustainability" remains elusive (Carter, 2001; Shimon & Morse, 2008). However, still the examination of those national SDIs would help to identify fundamental aspects for sustainable development. Tasaki et al, (2010) conducted an intensive review of existing national SDIs, covered 1,790 indicators from 28 countries, and identified a total of 77 common subcategories in social, environmental, economic, and institutional categories (Tasaki, Kameyama, Hashimoto, Yuichi, & Harasawa, 2010).

Although these 77 subcategories were originally deducted from national scale SDIs, the wide coverage of them ensures the gauging of the well-being of society. In fact, a report of the Commission on the Measurement of Economic Performance and Social Progress (also known as the Stiglitz' Report) also emphasized the significance of aggregated indicators to capture the multidimensionality of well-being (See table 4.2: Stiglitz, Sen, & Fitoussi, 2010). Those identified 77 sub-categories in Tasaki et al (2010) overlap greatly with the raised eight dimensions of well-being in the Stiglitz' Report. Therefore, these sub-categories and multidimensionality of well-being can jointly function as a rigid foundation for the development of surveys, particularly those which aim to gauge the people's well-being.

Based on the identified sub-categories from the review of SDIs and additional preliminary studies on well-being, six categories, "Environment", "Transportation and Access", "Employment and Education", "Health", "Community life", and "Human resources and Tradition", were applied to Question 11 of the questionnaire, which asked residents to do a self-evaluation on their living conditions (See table 4.3). In order to apply the original ideas in 77 sub-categories and eight dimensions of well-being, adequate interpretations were required. For example, some of the sub-categories in the social and economic categories in Tasaki et al (2010) were integrated in the "Environment and education" category in the questionnaire in this field survey. At the same time, "Political activities including work" and "Social connections and relationships" in the Stiglitz' Report were reflected in the "Community life" category in the questionnaire. The interpretation of "Political activities including work" is in fact greatly related to residents' involvement in decision-making in community gathering and participation in community-based activities in rural community. The rest of the categories and studied factors in Question 11 were also developed through interpretations of original categories from SDIs to the local contexts.

Table 4.2. Identified key dimensions that shape people's well-being

Source: Report by the Commission on the Measurement of Economic Performance and Social Progress, also known as Stiglitz Report, 2009

	Key dimensions that shape people's well-being
1	Material living standards (income, consumption and welath)
2	Health
3	Education
4	Personal activities including work
5	Political voice and governance
6	Social connections and relationships
7	Environment (present and future conditions)
8	Insecurity, of an economic as well as a physical nature

Table 4.3. Factors for self-evaluation on Question 11 in household questionnaire survey

	Category	Key word	Factor
1	Environment	Nature	Community is in good natural environment.
2		Water	Water supply and sewerage systems are not sufficiently equipped.
3		Living environment	Community keeps good living environment.
4		Road	Basic infrastructure, such as road construction, is not sufficient.
5	Transportation & access	Transportation	Public transportation service, such as bus service, is not sufficient.
6		Grocery	Often feel inconvenience in access to grocery or general shops.
7	Employment & education	Commute	Often feel inconvenience in commute to work or school.
8		Income	Often feel income is not sufficient to keep current living condition.
9		Education	Often feel inconvenience or inequality in education for children.
10	Health	Medication	Often feel inconvenience in access to medical clinic.
11		Welfare	Often feel inconvenience in access to care house for elderly.
12	Community life	Community	Community keeps good atmosphere among residents.
13		Neighbours	Residents are generally kind.
14		Socialising in community	Often hesitate or become nerves to socialize with neighbours.
15		Community-based activities	It is generally enjoyable to join community-based activities.
16	Human resouce &	Tradition	Community is generally active in festivals and rituals.
17		Lack of successors	Often feel anxiety on lack of young population and successors.
18		Nothing	There is nothing particularly to worry about now.

4.3.2 Implementation of Field Survey

The development of the questionnaire as well as a question list in the interview survey was also jointly conducted with the local government of Yurihonjo City. Throughout a series of discussions on designing the questionnaire, those ideas from SDIs and multidimensionality of well-beings were examined by the local officers. This process made the complete format of questionnaire more suitable both in content as well as expressions for eventual survey implications.

The proposal for the field survey was made in June 2010, and discussion with the officers of Yurihonjo City government started in July. The implementation of the survey took place in September and October. The respondent rate was 100% in the Akata, Harimizu, and Karuizawa communities, 92.3% in Karuizawa, and 85.7% in the Yachizawa community. The overall respondent rate was 95.6% (covered 94 households out of 97). The collected data was analyzed with the Statistical Program for Social Science (SPSS) to illustrate the differences in living conditions between the two groups of rural communities. Additionally, all results from the field survey were examined with local officers of Yurihonjo City. This process ensured more appropriate interpretation of results based on the knowledge of city hall officers.

Chapter 5: Results

In order to illustrate the possible changes in the living conditions of residents as further marginalization of rural communities occurs, this section will make a series of comparative analyses on the following categories: 1) Transportation and grocery, 2) Farming type, 3) Visits, role, and future return of out-migrated family members, 4) Communication among residents, 5) Self-evaluation of living conditions, 6) Future concerns, and 7) Residents' willingness to stay in the same residence. These analyses will be conducted using the result of the questionnaire survey in four communities in remote areas and one community in the central area of the city. The first group, four communities in remote areas, will be referred as "remote community". And the last community, 1 community in central area of the city, will be referred by its own name, "Akata", in this section. In this study, the Akata community is considered as the representative residential community with a relatively larger population size as well as a closer location to the central area of the city. Any numbers or percentages shown as figures of remote communities are either average or aggregated figures of four communities in remote areas. This process was applied to capture the trend of remote communities.

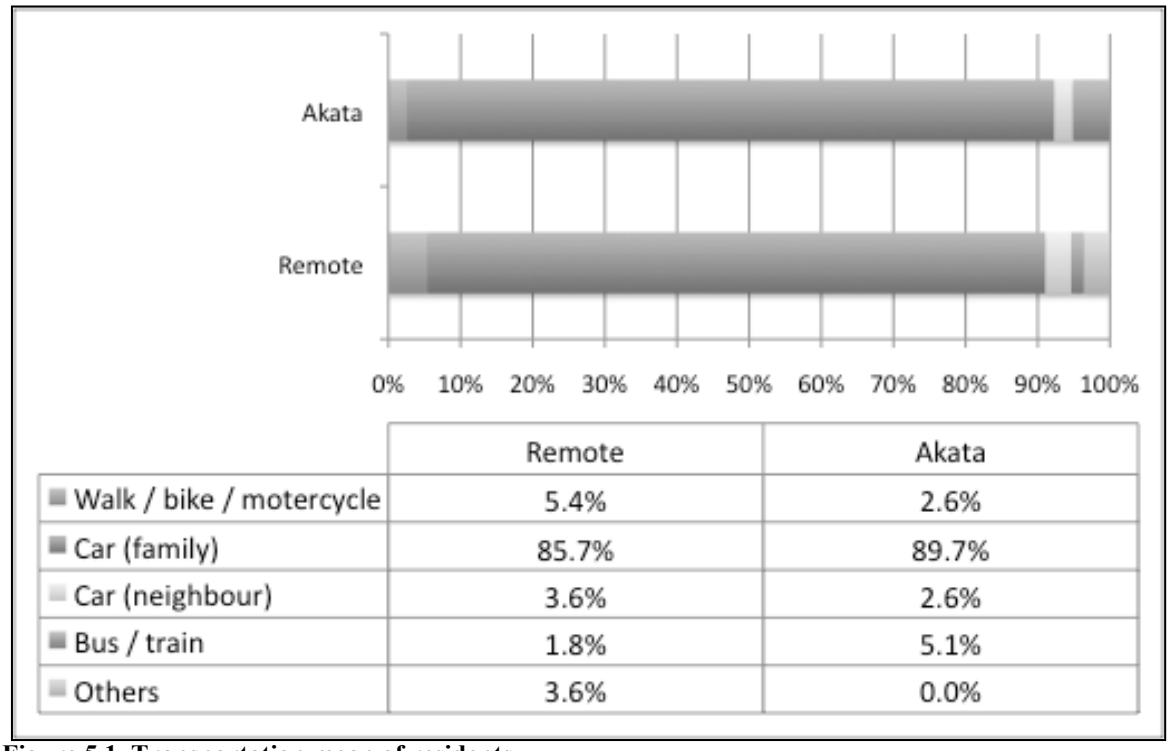
5.1 Transportation and Grocery

Question 5 of the questionnaire asked about the main transportation means of households. Both in Akata and remote communities, "car driven by a member of household" was the main transportation means of households (See figure 5.1). More than 85% of the households in remote communities and 89% of households in Akata responded in this way about their main transportation means.

There was no available public transportation within walking distance in remote

communities while the residents of Akata have access to a public bus service within the community. The distance to public transportation, either bus stop or train station, in remote communities was 4 to 11 km. In the case of Akata, public bus service is available anywhere within the community; the public bus stops anywhere within the Akata community they find a user. However, even though there is an available public bus service in Akata, still only 5.1% of households responded that it was their main transportation means. The chairperson of the neighbors' association of the Akata community explained in the interview survey that this is because the current bus line is set for students to go to school; therefore, the current bus schedule is quite inconvenient for most of the other residents. He admitted that there are some senior residents in need of public transportation service. Yet, existing bus lines are about to face closure due to their low utilization rates.

Through the interview surveys in remote communities, the chairpersons of each community also expressed their anxiety about the future situation of transportation means once residents become unable to drive due to their aging. Particularly the representative residents in the Iwaisawa community mentioned that various basic services that residents need to access on a daily bases, such as branch office of city hall, post office and banks, and health clinics, are all gathered nearby the closest grocery shop at a 5 km distance from the community. In fact, they said this place is quite convenient because residents can obtain various services in one location. However, they also expressed anxiety about the time when some of the residents would become too old to drive by themselves. Commonly, transportation was expressed as one of the greatest concerns among residents in remote communities.



	Remote	Akata
Walk / bike / motercycle	5.4%	2.6%
Car (family)	85.7%	89.7%
Car (neighbour)	3.6%	2.6%
Bus / train	1.8%	5.1%
Others	3.6%	0.0%

Figure 5.1. Transportation mean of residents

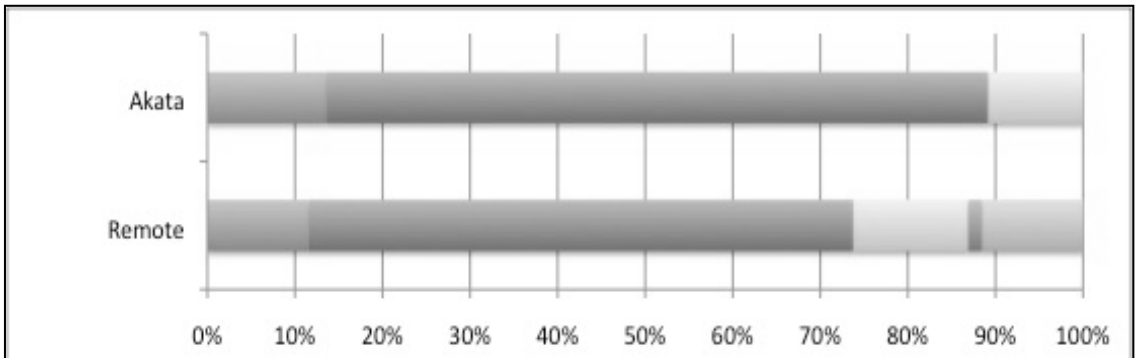
Note: The order of options shown in the graph is same as that of table.

Question 6 of the questionnaire asked about frequency of grocery shopping of each household. In the case of Akata, 89.2% of households responded that they do grocery shopping more than two to three times per week. Although the percentage is slightly less, still 73.8% of households in remote communities also do grocery shopping at the same frequency (See figure 5.2).

Question 7 asked who takes care of grocery shopping for each household. In remote communities, 82% of household responded "self-support," which means any member of household does it, and in Akata 91.9% of households also responded to the same answer in the same way (See figure 5.3).

The major distance of grocery shopping is in between 5 to 11 km from each community in remote areas. In the case of Akata, there is a small grocery store within the community; however, many of the households travel to stores in the city's central area, which are at a 7 to 10 km distance from the community. This is not only because of the

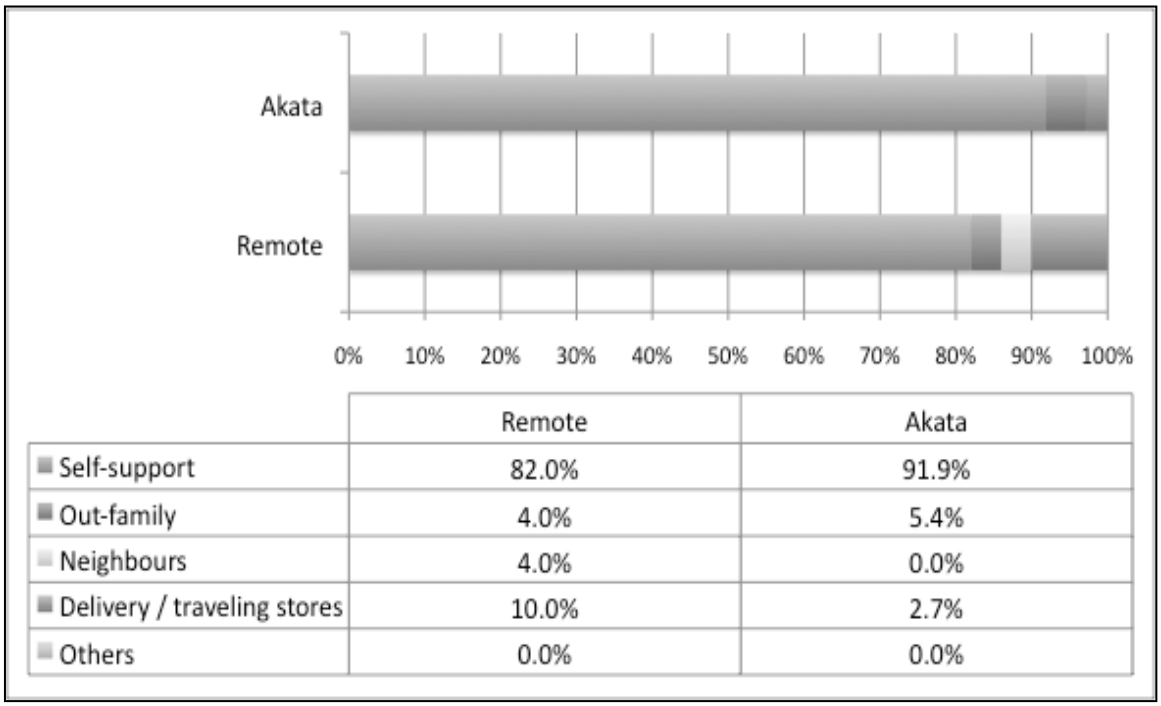
variety of product choices and cheaper prices but also the major destination of residents' working places: 36.4% of the working population of Akata commutes to the city central area.



	Remote	Akata
Everyday	11.5%	13.5%
2-3 t/week	62.3%	75.7%
2-3 t/month	13.1%	10.8%
non	1.6%	0.0%
others	11.5%	0.0%

Figure 5.2. Frequency on grocery shopping of residents

Note: The order of options shown in the graph is same as that of table.



	Remote	Akata
Self-support	82.0%	91.9%
Out-family	4.0%	5.4%
Neighbours	4.0%	0.0%
Delivery / traveling stores	10.0%	2.7%
Others	0.0%	0.0%

Figure 5.3. Mean of grocery shopping of residents

Note: The order of options shown in the graph is same as that of table.

5.2 Farming Type

Question 4 of the questionnaire asked respondents to identify the type of agriculture that each household is currently practicing. There are 19 farming households (33.3% of total households), three full-time and 16 part-time farmers, in remote communities. In the case of Akata, there are 17 farming households (45.9% of total households), four full-time and 13 part-time farmers.

Besides these two farming types, Question 4 also asked if each household practices a "self-consumption" type of agriculture. This type of farming represents a smaller scale of cultivation which is only for self-consumption of the household. There is only one household (0.02%) doing this type of farming in Akata while there are 15 households in remote communities (26.3%). In order to examine this difference of farming type, a chi-square test of independence was performed. The result showed a statistically significant difference in "self-consumption" type of farming between remote areas and the Akata community ($x^2 = 8.857$, df = 1, P = 0.002919386). Therefore, it suggests there are more households practicing self-consumption farming in remote communities than in Akata.

5.3 Visits and Roles of Out-migrated Family Members

Question 9 of the questionnaire asked if the household has any members of its family who have out-migrated from the community and currently live outside the community. There are 18 households (48.6% of all 37 households) in Akata and 34 households (59.6% of all 57 households) in remote communities with out-migrated family members (See figure 5.4).

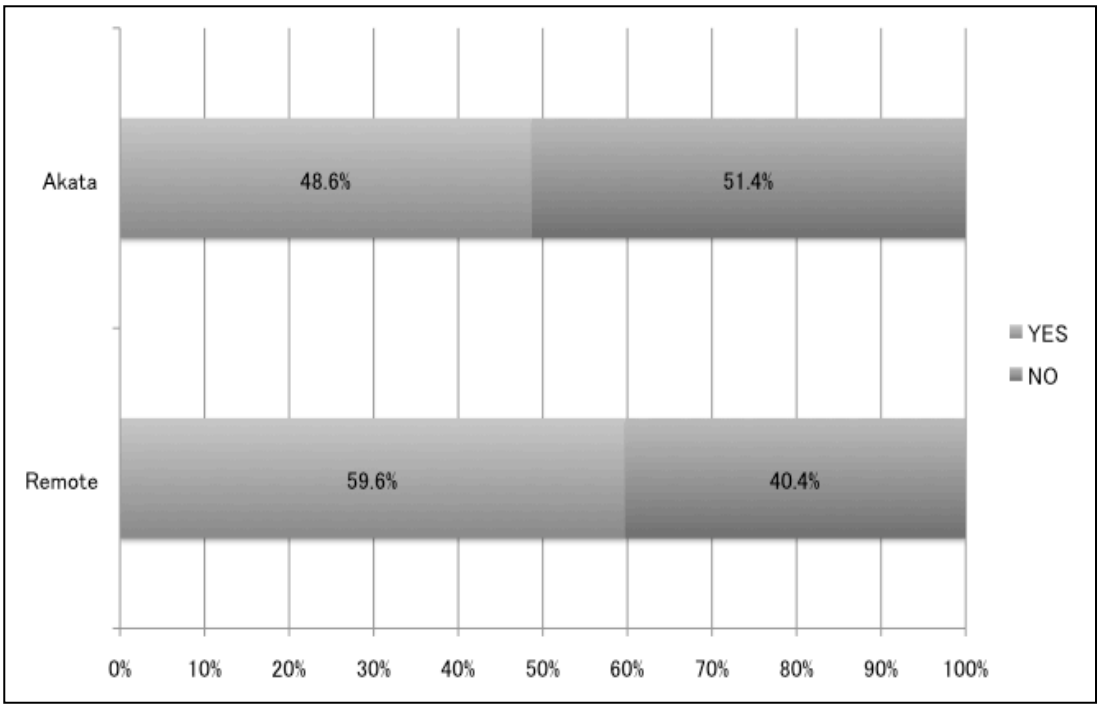


Figure 5.4. Ratio of household with out-migrated children or family members

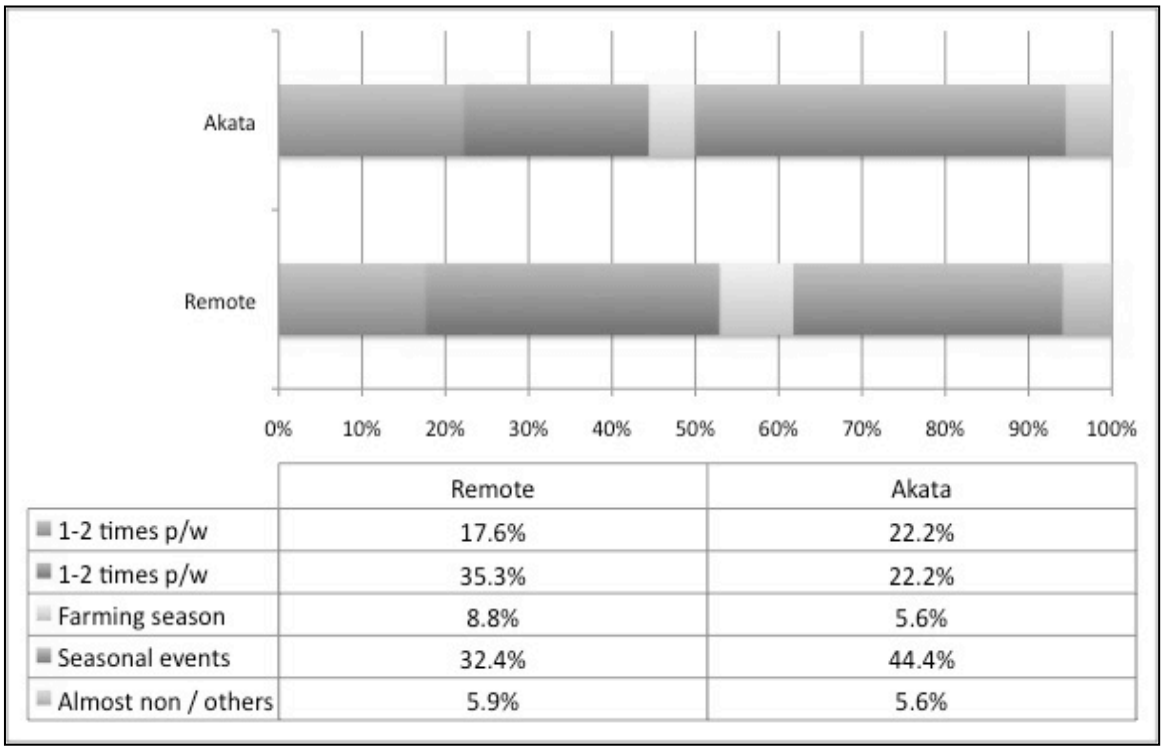
Note: The order of options shown in the graph is same as that of table.

To those households with out-migrated family members, question 9-2 to 9-4 asked their frequency of visits, roles, and possible future return migration to the community.

Question 9-2 asked the frequency of out-migrated family's visits to the community. In remote communities, "1-2 times per week" had the highest share at 35.3%, while "Seasonal events" was the highest in the Akata community at 44.4% (See figure 5.5). The difference between elderly and non-elderly households is also illustrated in Figure X:

50.0% of non-elderly households answered “Seasonal occasions,” while 38.9% responded “1-2 times per week” and 22.2% responded “1-2 times per month” in the case of elderly households.

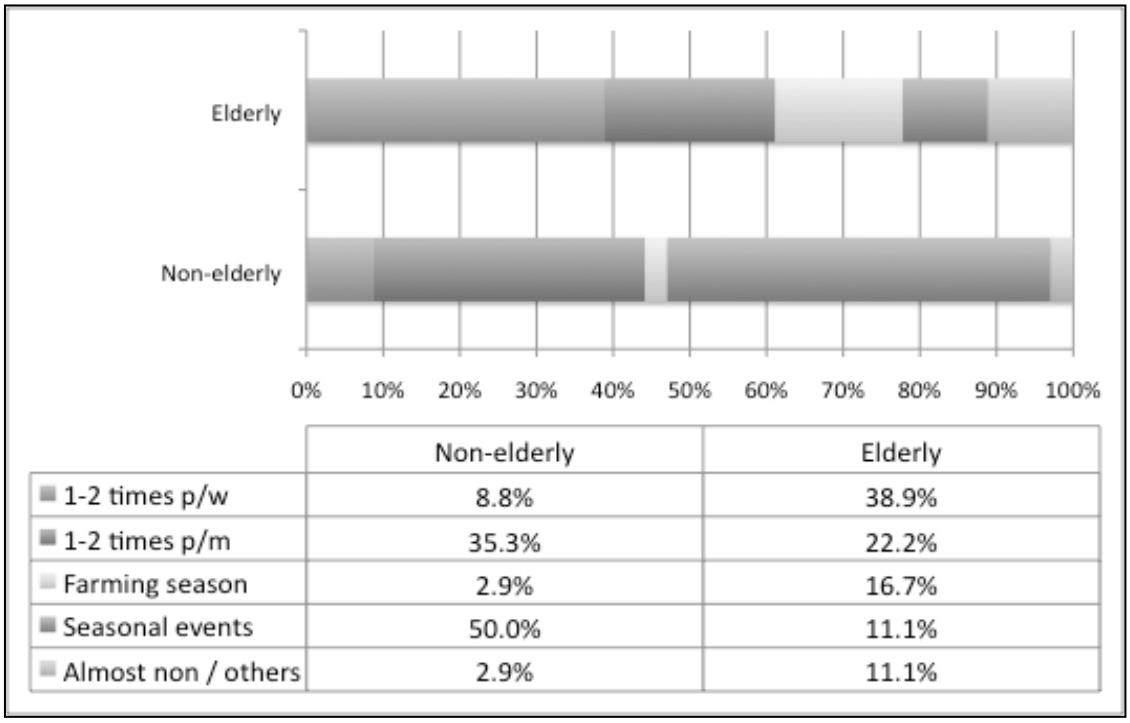
In order to examine these results, a series of residual analyses were performed between region and provided answer options on the questionnaires. In addition, the same procedure was conducted between elderly and non-elderly households. The results suggest that there is no significant difference between region and all options of visit. However, the results of residual analyses between elderly / non-elderly households and provided answer options on the questionnaires suggest that the relation between elderly / non-elderly households and two types of variables was significant. The visit of out-migrated family members of elderly households is more frequent than those of non-elderly households in the frequency of more than 1~2 times per week (adjusted residual score = 2.6, significantly greater at >1.96). On the contrary, out-migrated family members of non-elderly households mainly travel to communities for seasonal gathering and other occasions, (adjusted residual score = 2.1, significantly greater at >1.96).



	Remote	Akata
1-2 times p/w	17.6%	22.2%
1-2 times p/w	35.3%	22.2%
Farming season	8.8%	5.6%
Seasonal events	32.4%	44.4%
Almost non / others	5.9%	5.6%

Figure 5.5. Frequency of visit in remote and Akata community

Note: The order of options shown in the graph is same as that of table.



	Non-elderly	Elderly
1-2 times p/w	8.8%	38.9%
1-2 times p/m	35.3%	22.2%
Farming season	2.9%	16.7%
Seasonal events	50.0%	11.1%
Almost non / others	2.9%	11.1%

Figure 5.6. Frequency of visit in elderly and non-elderly households

Note: The order of options shown in the graph is same as that of table.

Question 9-3 asked about the role of out-migrated family members. A series of residual analyses was performed to examine the differences between remote and Akata communities, and also between elderly and non-elderly households. The results suggest that there is no significant difference on any answer options of the questionnaire between remote and the Akata communities. However, the residual analysis between elderly and non-elderly households suggests that the support in farming was significantly more of an issue for elderly households (adjusted residual score = 3.0, significantly greater at >1.96).

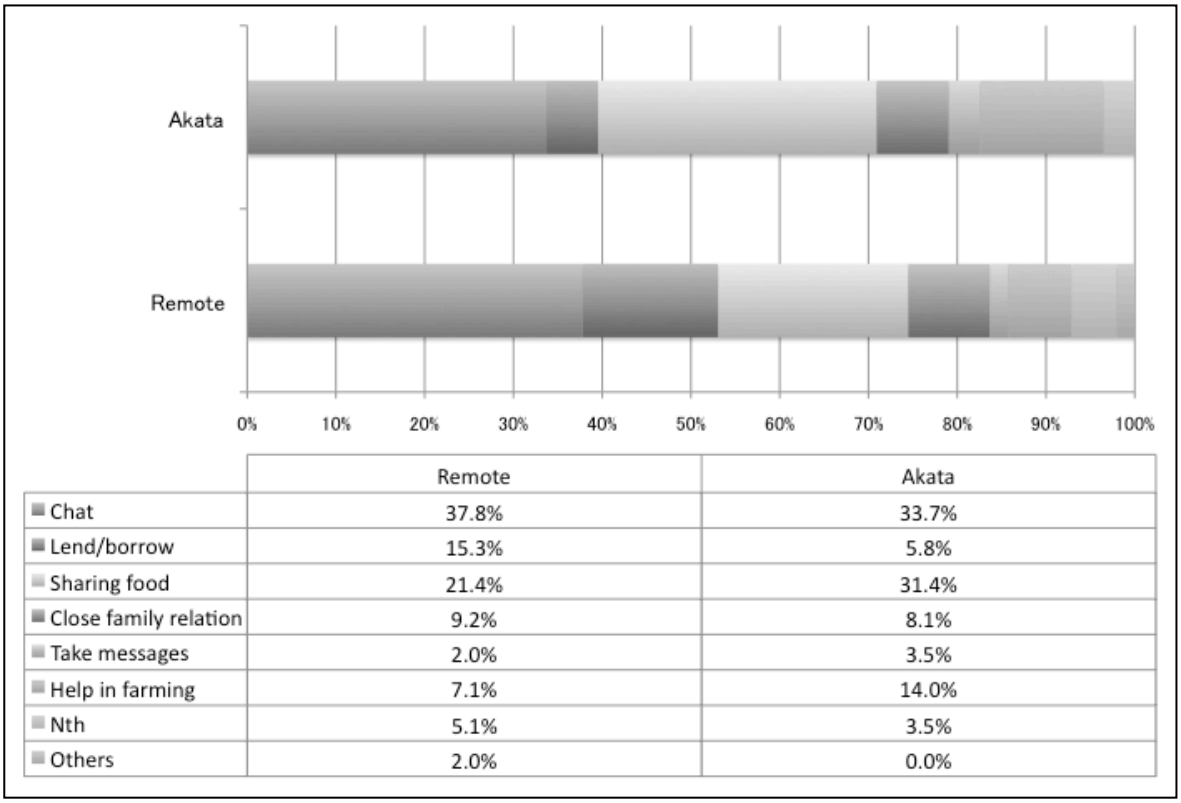
5.4 Communication Among Residents

Question 10 asked about the types of communication among residents. Both in remote and Akata communities, the major interactions among residents were chatting, lending and borrowing of items, and sharing food. These three options include 70.9% of communication in Akata as well as that of 74.5% in remote communities. 14.0% of respondents marked "providing support in farming" in Akata while only 7.1% in remote communities (See figure 5.7).

In order to examine the relationship between region and types of communication among residents, an independent-samples t-test was performed by giving scores to each type of communication based on the required effort (Chat = 1, Lend/borrow = 2, Sharing food = 3, Close family relation = 5, Take messages = 3, Help in farming = 4, Nothing = 0, Others = 1 point for each action). There were no significant differences in the scores in communication between residents in remote communities (M=4.29, SD=3.92) or residents in the Akata community (M=5.62, SD3.79) conditions: t(91)=-1.34, p=0.182.

As the results of the interview survey demonstrate, the Akata community has more times and kinds of community-based events and activities than remote communities. However, this result of the t-test suggests that even though community-based events and

activities are declining in number and more maintenance-oriented rather than keeping local traditions, such as seasonal events and religious rituals, the types of communication among residents are maintained in the same status.



	Remote	Akata
Chat	37.8%	33.7%
Lend/borrow	15.3%	5.8%
Sharing food	21.4%	31.4%
Close family relation	9.2%	8.1%
Take messages	2.0%	3.5%
Help in farming	7.1%	14.0%
Nth	5.1%	3.5%
Others	2.0%	0.0%

Figure 5.7. Types of communication in remote and Akata community

Note: The order of options shown in the graph is same as that of table.

5.5 Self-evaluation on Living Condition

Question 11 of the questionnaire asked each household to evaluate the living conditions of the community on a 5-scale point on 18 factors. These 18 factors were further divided into six categories: Environment, Transportation and Access, Employment and Education, Health, Community life, and Human resource and Tradition (See table 5.1). The middle score is considered as "moderate" and scored as "0". If a response was any option in a negative direction, it was scored as either "-1" or "-2" accordingly. If a response was any

option in a positive direction, it was scored as either "+1" or "+2" . Therefore, any mean score in minus represents a negative evaluation of respondents on their living conditions.

A series of independent-samples t-tests were performed to examine the significance of the difference on the appeared scores on the self-evaluation. The results demonstrated a significant difference on the scores of "water," "road," "transport," "commute," "grocery," "medication," "welfare," "education," "income," "living Environment," and "tradition" (See table 5.2).

As table 5.3 shows, negative mean scores with statistically significant differences were observed "water," "road," "transport," "commute," "grocery," "medication," "welfare," "education," "income," and "tradition". A relatively lower dissatisfaction was shown on "water," "grocery," and "road" factors, while a higher degree of dissatisfaction was expressed on the remaining seven factors (See figure 5.8).

Table 5.1 Selected factors for self-evaluation on living condition

	Category	Key word	Factor
1	Environment	Nature	Community is in good natural environment.
2		Water	Water supply and sewerage systems are not sufficiently equipped.
3		Living environment	Community keeps good living environment.
4		Road	Basic infrastructure, such as road construction, is not sufficient.
5	Transportation & access	Transportation	Public transportation service, such as bus service, is not sufficient.
6		Grocery	Often feel inconvenience in access to grocery or general shops.
7	Employment & education	Commute	Often feel inconvenience in commute to work or school.
8		Income	Often feel income is not sufficient to keep current living condition.
9		Education	Often feel inconvenience or inequality in education for children.
10	Health	Medication	Often feel inconvenience in access to medical clinic.
11		Welfare	Often feel inconvenience in access to care house for elderly.
12	Community life	Community	Community keeps good atmosphere among residents.
13		Neighbours	Residents are generally kind.
14		Socialising in community	Often hesitate or become nerves to socialize with neighbours.
15		Community-based activities	It is generally enjoyable to join community-based activities.
16	Human resouce &	Tradition	Community is generally active in festivals and rituals.
17		Lack of successors	Often feel anxiety on lack of young population and successors.
18		Nothing	There is nothing particularly to worry about now.

Table 5.2 Result of independent-samples t-test of Question 11

Note: factors highlighted darker are both significant at the p < 0.05 and their mean scores are minus. Factors highlighted lighter are significant at <0.05, yet their mean scores are plus.

Independent Samples Test										
		Levene's Test for quality of Variance		t-test Equality of Means						
									95% Confidence	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Differenec	Std. Error Difference	Lower	Upper
Water	Equal varians assumed	.652	.422	-6.071	92	.000	-1.339	.221	-1.777	-.901
	Equal varians not assumed			-6.333	86.992	.000	-1.339	.211	-1.759	-.919
Road	Equal varians assumed	.302	.584	-4.007	92	.000	-.913	.228	-1.366	-.461
	Equal varians not assumed			-4.080	81.605	.000	-.913	.224	-1.358	-.468
Transport	Equal varians assumed	1.542	.217	-4.357	92	.000	-.956	.219	-1.392	-.520
	Equal varians not assumed			-4.497	84.795	.000	-.956	.213	-1.379	-.533
Commute	Equal varians assumed	.489	.486	-3.972	92	.000	-.879	.221	-1.319	-.439
	Equal varians not assumed			-4.057	82.360	.000	-.879	.217	-1.310	-.448
Grocery	Equal varians assumed	3.530	.063	-3.063	92	.003	-.590	.193	-.973	-.208
	Equal varians not assumed			-2.975	69.489	.004	-.590	.198	-.986	-.195
Medication	Equal varians assumed	.053	.818	-3.783	92	.000	-.836	.221	-1.275	-.397
	Equal varians not assumed			-3.859	82.051	.000	-.836	.217	-1.267	-.405
Welfare	Equal varians assumed	1.427	.235	-4.597	92	.000	-.838	.182	-1.201	-.476
	Equal varians not assumed			-4.696	82.411	.000	-.838	.179	-1.193	-.483
Education for children	Equal varians assumed	.216	.643	-3.933	92	.000	-.770	.196	-1.158	-.381
	Equal varians not assumed			-3.981	80.151	.000	-.770	.193	-1.154	-.385
Income	Equal varians assumed	.791	.376	-2.154	92	.034	-.482	.224	-.926	-.038
	Equal varians not assumed			-2.149	76.379	.035	-.482	.224	-.928	-.035
Nature	Equal varians assumed	2.394	.125	-1.643	92	.104	-.284	.173	-.628	.059
	Equal varians not assumed			-1.700	85.340	.093	-.284	.167	-.617	.048
Living Environment	Equal varians assumed	2.507	.117	-2.085	92	.040	-.373	.179	-.729	-.018
	Equal varians not assumed			-2.039	71.185	.045	-.373	.183	-.738	-.008
Community	Equal varians assumed	.066	.798	-1.121	92	.265	-.191	.170	-.528	.147
	Equal varians not assumed			-1.181	88.755	.241	-.191	.161	-.511	.130
Neighbours	Equal varians assumed	.145	.704	-2.066	92	.042	-.312	.151	-.613	-.012
	Equal varians not assumed			-2.179	88.961	.032	-.312	.143	-.597	-.028
Socialising in community	Equal varians assumed	1.271	.262	-.718	92	.475	-.140	.195	-.529	.248
	Equal varians not assumed			-.748	86.720	.457	-.140	.188	-.513	.233
Ommunity-based activities	Equal varians assumed	.177	.675	-1.033	92	.304	-.165	.160	-.482	.152
	Equal varians not assumed			-1.084	88.011	.282	-.165	.152	-.468	.138
Tradtion	Equal varians assumed	.669	.415	-7.631	92	.000	-1.190	.156	-1.499	-.880
	Equal varians not assumed			-7.804	82.662	.000	-1.190	.152	-1.493	-.886
Lack of successors	Equal varians assumed	1.140	.288	1.148	92	.254	.220	.192	-.161	.601
	Equal varians not assumed			1.139	75.055	.258	.220	.193	-.165	.605

Table 5.3. Results of t-test on Question 11

Note: Darker highlights indicate mean scores in both significant at <0.05 and minus, while lighter highlights indicate mean scores in significant at the p <0.05 yet plus.

Group Statistics

	Region	N	Mean	Std. deviation	Std. Error Mean
Water	Remote	57	-.12	1.119	.148
	Central	37	1.22	.917	.151
Road	Remote	57	-.21	1.114	.148
	Central	37	.70	1.024	.168
Transport	Remote	57	-.63	1.096	.145
	Central	37	.32	.944	.155
Commute	Remote	57	-.47	1.087	.144
	Central	37	.41	.985	.162
Grocery	Remote	57	-.16	.862	.114
	Central	37	.43	.987	.162
Medication	Remote	57	-.40	1.083	.143
	Central	37	.43	.987	.162
Welfare	Remote	57	-.65	.896	.119
	Central	37	.19	.811	.133
Education for children	Remote	57	-.53	.947	.125
	Central	37	.24	.895	.147
Income	Remote	57	-.51	1.054	.140
	Central	37	-.03	1.067	.175
Nature	Remote	57	.53	.868	.115
	Central	37	.81	.739	.122
Living Environment	Remote	57	.14	.811	.107
	Central	37	.51	.901	.148
Community	Remote	57	.05	.875	.116
	Central	37	.24	.683	.112
Neighbours	Remote	57	.23	.780	.103
	Central	37	.54	.605	.100
Socialising in community	Remote	57	-.14	.990	.131
	Central	37	.00	.816	.134
Community-based	Remote	57	.11	.817	.108
	Central	37	.27	.652	.107
Tradtion	Remote	57	-.65	.767	.102
	Central	37	.54	.691	.114
Lack of successors	Remote	57	-.81	.895	.119
	Central	37	-1.03	.928	.152

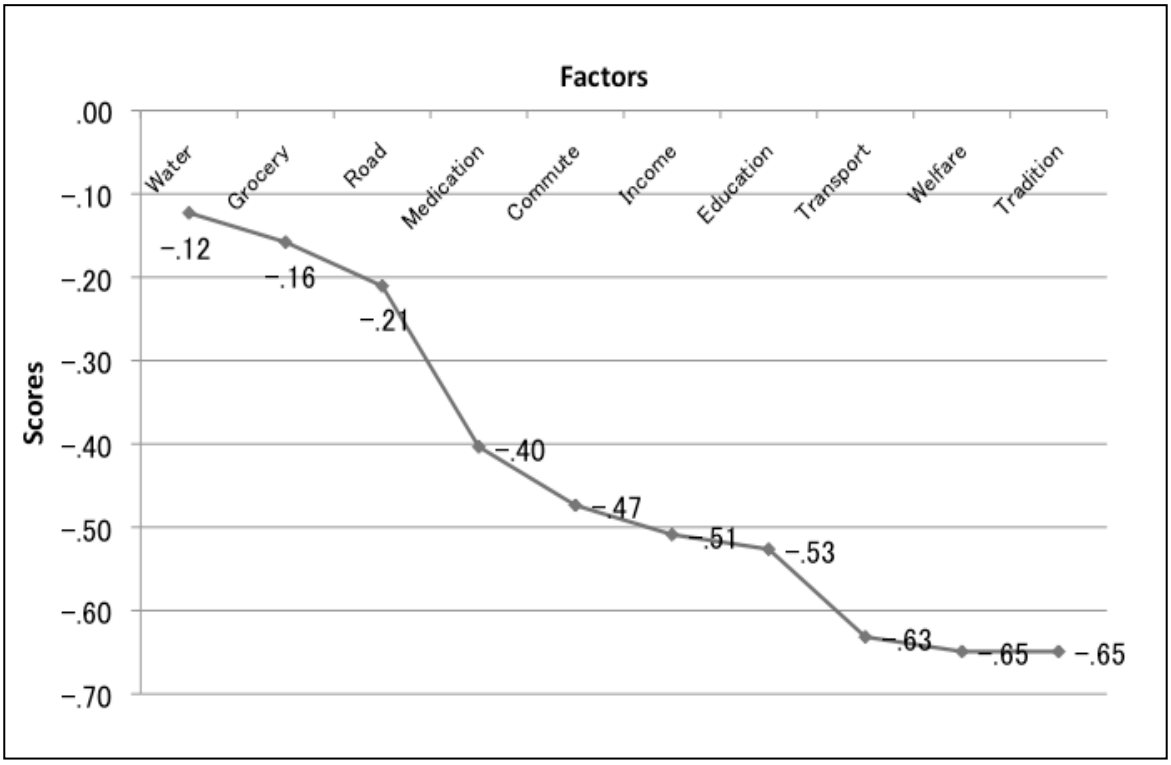


Figure 5.8. Degree of dissatisfaction on 10 factors in remote community

Note: Statistically significant differences were shown in the results of independent t-tests between the results of remote and Akata community on the selected 10 factors (significant at <0.05). Each score shown in the graph is the mean score of each factor in remote community.

Figure 5.9 shows the comparison of mean scores on 17 factors of Question 11. The central circle, in orange color, shows the line of "0" score that represents a "moderate" evaluation by each household. Any scores exceeding this orange line to the outside are minus scores, which represent negative evaluations of each factor. On the contrary, any plus scores will stay inside the orange circle. Scores of the Akata community are on the red line and those of remote communities are depicted on the blue line. As shown in Figure 5.9, except for the score for "Lack of successors," all other scores of Akata remained within the circle. While lack of successors was commonly identified as a crucial factor on evaluation, significantly less evaluation was identified in Transportation & access, Employment & education, Health, and Human resource and tradition in remote communities.

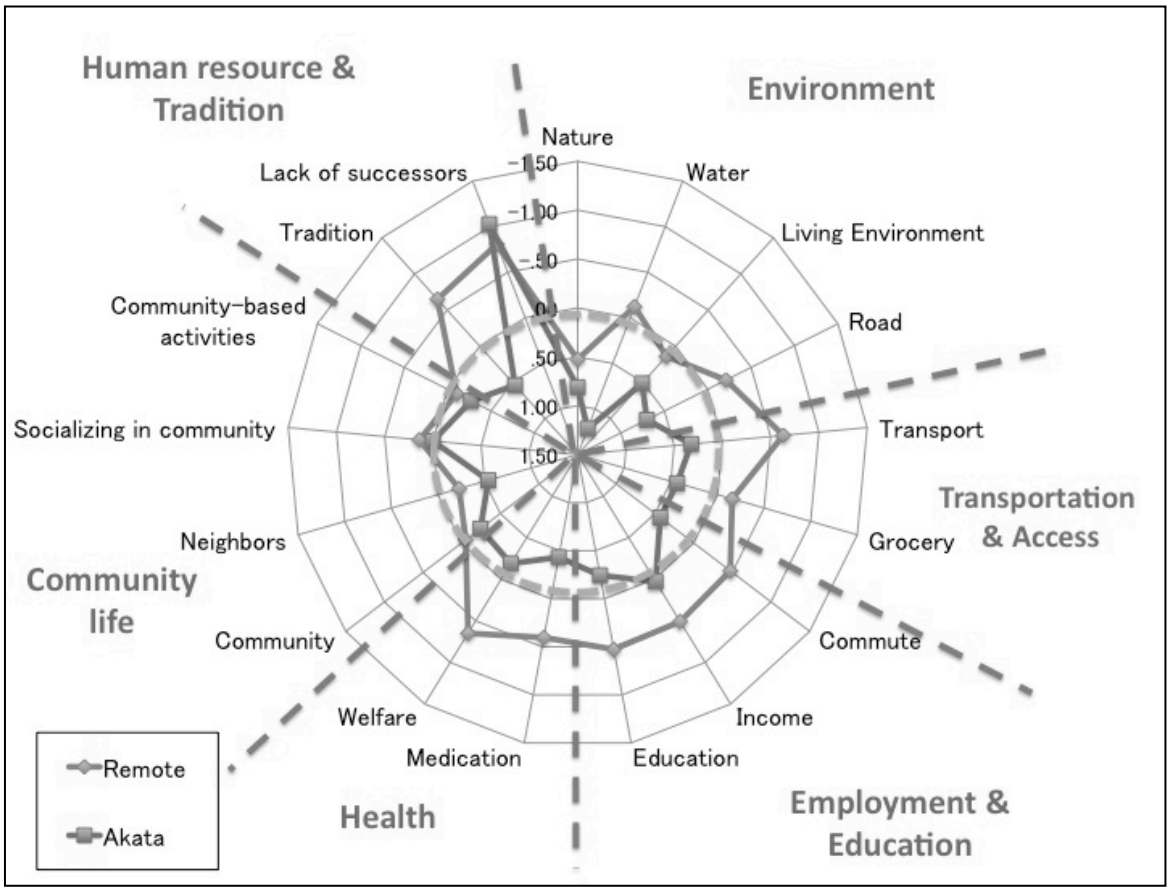


Figure 5.9. Comparative analyses on Question 11 between remote and Akata community

Note: The dot-line circle on ".00" score indicates the "moderate" level of evaluation by residents. If a score stays inside of this circle, it means residents expressed satisfactory level of self-evaluation on the factor. If a score exceeds the circle, it means residents expressed dissatisfaction on the factor.

5.6 Future Concerns of Residents

Question 12 also asked respondents to make a 5-scale point evaluation based on the degree of their concerns on selected 15 factors (See table 5.4). Each of the evaluation scores was given a point based on its interpretation. Any answer which refers to the greatest degree of concern was given "5" and, contrarily, any answer which expresses the least degree of concern was given "1."

Figure 11 shows the scores on selected 14 factors. Each score was modified as a percentage score. The results suggest that both in remote and Akata communities, "Driving," "Property," "Health," "transportation" are the common and also the greatest concerns for the future of each community. However, in the case of the Akata community, "Revitalization," "Young population," and "Tradition" also resulted in higher scores than other factors. In order to examine the differences on each score of remote and Akata communities, a series of independent-samples t-tests were performed. There were significant differences on maintaining local tradition (M=3.46, SD=1.07, conditions; t(89.784)=-3.835, p=0.000), increasing young population (M=3.65, SD=1.11, conditions; t(90.903)=-2.177, P=0.032), and implementation of community revitalization (M=3.76, SD=0.925, conditions; t(91.554)=-3.181, p=0.002). These results indicate that residents of remote communities feel a greater degree of concern about practical factors that affect future living conditions while residents of the Akata community are more concerned about the sustainability of the whole community, not only in its physical aspects but also in human resource and community-based aspects.

Table 5.4 Selected factors in Question 12

	Factors
1	Publich transportation service
2	Access to grocery shops
3	Health
4	Driving
5	Management of private property
6	Delivery service
7	Management of abandoned house
8	Local traditions and festivals
9	Management of abandoned land
10	Support in general
11	Support in farming
12	Young population
13	Revitalization
14	Migration
15	Nth particularly

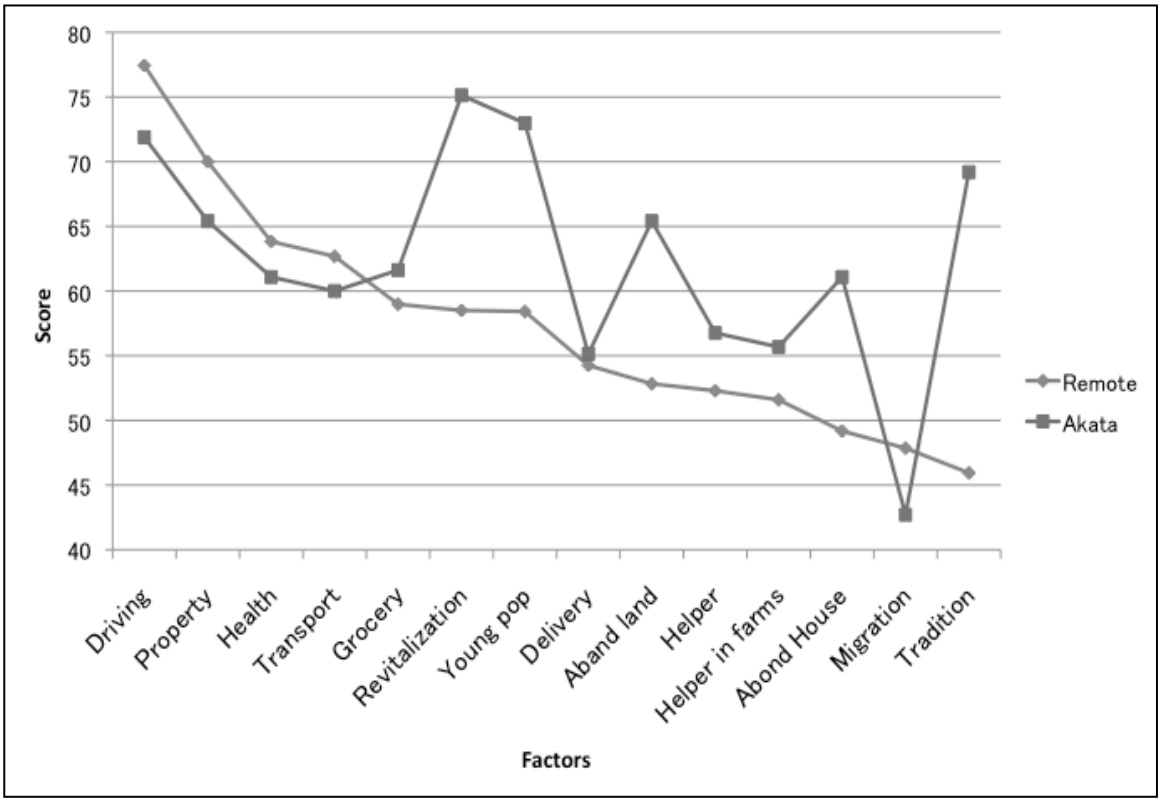


Figure 5.10. Scores on selected 14 factors in Question 12

Note: The scale of "Score" starts from 40 in order to illustrate the difference between remote and Akata community. Each score was accumulated after accumulation and normalization on percentage. The selected 14 factors were sorted in descending order based on the scores of remote community.

Table 5.5 Independent samples test for future concern of residents

Note: Highlights were the factors that have shown statistically significant difference between remote and Akata community (significant at the p<0.05).

Independent Samples Test

		Levene's Test for quality of Variance		t-test Equality of Means						
									95% Confidence	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Differenec	Std. Error Difference	Lower	Upper
Transport	Equal varians assumed	12.223	.001	.991	92	.324	.281	.283	-.282	.843
	Equal varians not assumed			1.101	91.236	.274	.281	.255	-.226	.787
Grocery	Equal varians assumed	4.948	.029	.209	92	.835	.059	.283	-.503	.622
	Equal varians not assumed			.227	91.917	.821	.059	.261	-.459	.577
Health	Equal varians assumed	9.985	.002	.362	92	.718	.104	.287	-.465	.673
	Equal varians not assumed			.404	90.961	.687	.104	.257	-.407	.615
Driving	Equal varians assumed	.108	.744	1.084	92	.281	.300	.277	-.250	.850
	Equal varians not assumed			1.126	86.248	.263	.300	.266	-.229	.830
Property	Equal varians assumed	4.352	.040	.574	92	.567	.168	.293	-.414	.750
	Equal varians not assumed			.610	89.910	.544	.168	.276	-.380	.717
Delivery	Equal varians assumed	3.031	.085	.120	92	.905	.033	.273	-.510	.576
	Equal varians not assumed			.129	91.458	.898	.033	.254	-.471	.537
Abondoned house	Equal varians assumed	1.695	.196	-1.364	92	.176	-.387	.284	-.952	.177
	Equal varians not assumed			-1.424	87.175	.158	-.387	.272	-.928	.153
Tradition	Equal varians assumed	4.617	.034	-3.616	92	.000	-.986	.273	-1.527	-.444
	Equal varians not assumed			-3.835	89.784	.000	-.986	.257	-1.496	-.475
Abandoned land	Equal varians assumed	3.479	.065	-1.719	92	.089	-.516	.300	-1.112	.080
	Equal varians not assumed			-1.816	89.223	.073	-.516	.284	-1.080	.048
Helper in general	Equal varians assumed	1.717	.193	-.372	92	.711	-.101	.271	-.640	.438
	Equal varians not assumed			-.389	87.500	.698	-.101	.260	-.617	.415
Helper in farms	Equal varians assumed	1.182	.280	-.508	92	.613	-.135	.265	-.662	.392
	Equal varians not assumed			-.525	85.276	.601	-.135	.256	-.644	.375
Young pop	Equal varians assumed	4.569	.035	-2.034	92	.045	-.596	.293	-1.178	-.014
	Equal varians not assumed			-2.177	90.903	.032	-.596	.274	-1.140	-.052
Revitalization	Equal varians assumed	5.759	.018	-2.875	92	.005	-.809	.282	-1.369	-.250
	Equal varians not assumed			-3.181	91.554	.002	-.809	.254	-1.315	-.304
Migration	Equal varians assumed	6.316	.014	1.178	92	.242	.339	.287	-.232	.909
	Equal varians not assumed			1.270	91.538	.207	.339	.267	-.191	.868
Nth particularly	Equal varians assumed	7.773	.006	.108	92	.914	.034	.315	-.591	.660
	Equal varians not assumed			.117	91.652	.907	.034	.292	-.545	.613

Table 5.6 Degree of future concern on selected factors in Question 12

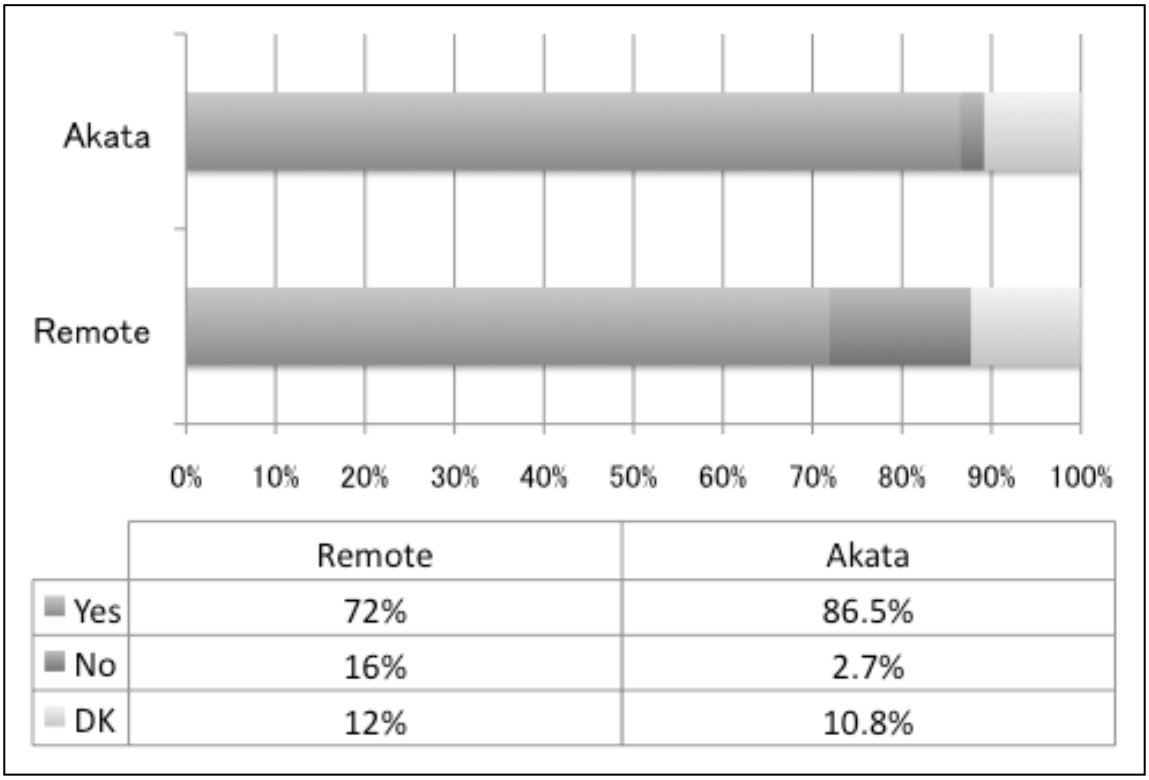
Note: Highlights were the factors that have shown statistically significant difference between remote and Akata community (significant at the p<0.05).

Group Statistics

	Region	N	Mean	Std. deviation	Std. Error Mean
Transport	Remote	57	3.28	1.556	.206
	Central	37	3.00	.913	.150
Grocery	Remote	57	3.14	1.517	.201
	Central	37	3.08	1.010	.166
Health	Remote	57	3.16	1.579	.209
	Central	37	3.05	.911	.150
Driving	Remote	57	3.89	1.398	.185
	Central	37	3.59	1.166	.192
Property	Remote	57	3.44	1.524	.202
	Central	37	3.27	1.146	.188
Delivery	Remote	57	2.79	1.448	.192
	Central	37	2.76	1.011	.166
Abondoned house	Remote	57	2.67	1.443	.191
	Central	37	3.05	1.177	.194
Tradition	Remote	57	2.47	1.416	.187
	Central	37	3.46	1.070	.176
Abandoned land	Remote	57	2.75	1.550	.205
	Central	37	3.27	1.194	.196
Helper in general	Remote	57	2.74	1.383	.183
	Central	37	2.84	1.118	.184
Helper in farms	Remote	57	2.65	1.329	.176
	Central	37	2.78	1.134	.186
Young pop	Remote	57	3.05	1.540	.204
	Central	37	3.65	1.111	.183
Revitalization	Remote	57	2.95	1.540	.204
	Central	37	3.76	.925	.152
Migration	Remote	57	2.47	1.525	.202
	Central	37	2.14	1.058	.174
Nth particularly	Remote	57	2.74	1.675	.222
	Central	37	2.70	1.151	.189

5.7 Willingness to Stay in Community

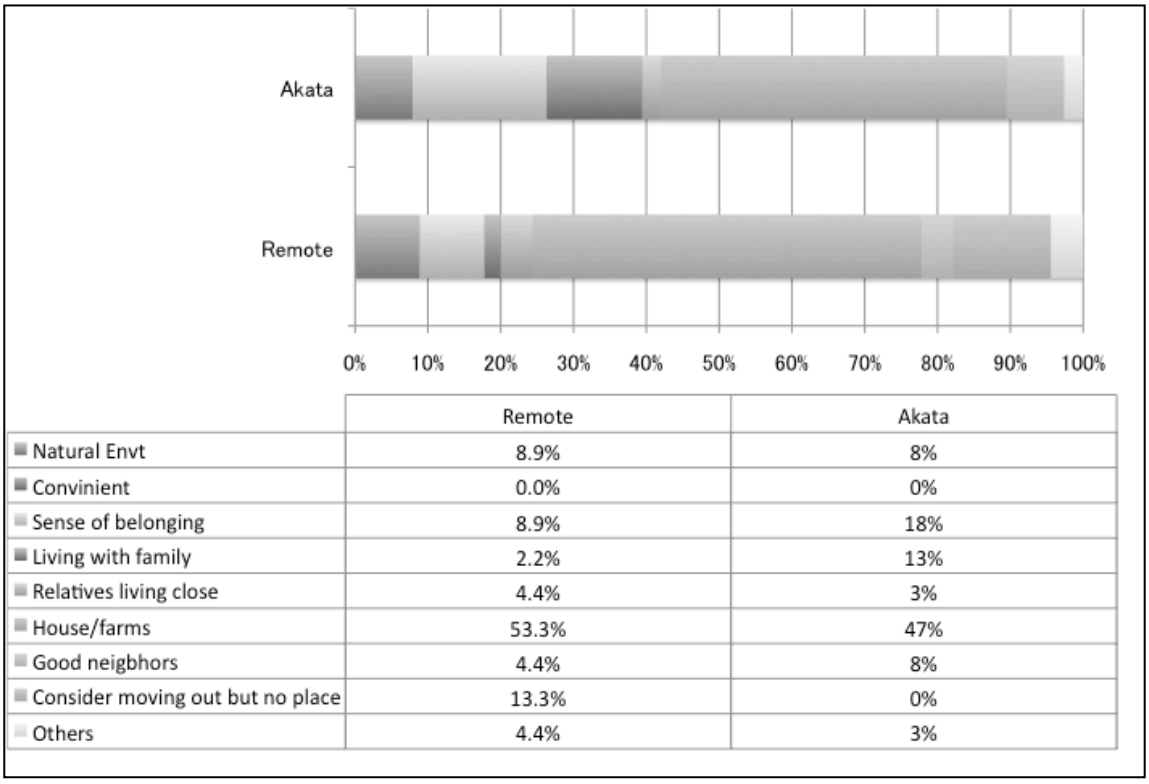
Question 13 asked about residents' willingness to stay in their community. In Akata, 86.5% of respondents replied "yes" while in remote communities respondents replied slightly lower at 72% (See figure 5.11). Following Question 14 respondents were asked the reason for a "yes" response. The majority of respondents raised management of properties, such as house and agricultural land, as the main reason for staying in the community; 53.3% in remote communities and 47.0% in the Akata community chose this option. At the same time, the result of Question 14 also demonstrated that 13.3% of respondents in remote communities are considering out-migration, yet they do not have possible destinations to do so. In the case of Akata, none of the respondents chose this option. In order to examine if those respondents in remote communities have significant differences on this option, a chi-square test of independence was performed between region and respondents who remarked a willingness to stay continuously in their community (Question 5.12). The result suggests that the difference is statistically significant, x^2=4.949, df=1, p=0.026 (significant at $p < .05$). Therefore, there were respondents who expressed consideration of out-migration significantly more in remote communities. As was shown in the results of Question 11 and 12, residents of remote communities have more direct dissatisfaction as well as concern about living conditions of the community while residents of Akata expressed concerns on more social welfare-related aspects, such as education for children, income, and access to care facilities for the elderly. This difference on shared concern in each community was also reflected in the residents' willingness to stay in each community.



	Remote	Akata
Yes	72%	86.5%
No	16%	2.7%
DK	12%	10.8%

Figure 5.11. Willingness to stay in community

Note: The order of options shown in the graph is same as that of table.



	Remote	Akata
Natural Envt	8.9%	8%
Convinient	0.0%	0%
Sense of belonging	8.9%	18%
Living with family	2.2%	13%
Relatives living close	4.4%	3%
House/farms	53.3%	47%
Good neigbhors	4.4%	8%
Consider moving out but no place	13.3%	0%
Others	4.4%	3%

Figure 5.12. Reasons for answering "yes" in Question 13

Note: The order of options shown in the graph is same as that of table.

Chapter 6 Discussion

The constant outflow of the young population since 1960s has caused a gradual population decline as well as left an aging remaining population in rural areas of Japan (Ishizaka & Midorikawa, 2005). As it is projected, this population trend will continue in small-size cities: municipalities with populations smaller than 50,000 people will experience a 40~50% population decline by 2055. Simultaneously, this process increases the proportion of an aging population that remains (MLIT, 2011). As a consequence, these demographic trends in rural area have generated the decline of living conditions in some rural communities. This phenomenon was first realized by the term, marginal community, that indicated a rural community in which more than 50% of its residents are elderly population, age 65 and above (Ohno, 1991, 1992, 2008). The preliminary studies of rural communities examined the process of marginal community-ization and have developed a framework to capture the corresponding behavior between population decline and the state of community functions in rural communities (See figure 3.1: Kasamatsu, 2008; Odagiri, 2009, 2011; Sakamoto, 2003; Sakuno, 2006). This framework suggests that there are various deciding factors during population decline in rural communities. While further depopulation occurs in rural areas, those declining aspects in residents' daily lives need to be identified in detail to develop effective measures to address and remedy the situation.

This is particularly an important matter for local governments, as they are responsible for ensuring the adequate living conditions of residents in rural communities. Furthermore, this examination of residents' living conditions is valuable when the government needs to assess the adequacy of an individual community for either community revitalization or a welfare-based approach. As has been suggested and shown, once the degree of depopulation and the aging of remaining residents in a rural community passes a

certain point in the marginalization process, a welfare-based approach is recommended (Niinuma, 2009; Sakuno, 2006). Therefore, this study examined the developed framework of the marginalization process with the application of acquired data through a field survey to identify the actual factors in which deteriorations are observed. In other words, this study aimed to investigate and discuss the actual changes that residents experience in the marginalization process of rural communities.

The field survey was conducted to analyze the living condition of residents between four rural communities in remote are and one community in central area in Yurihonjo City, in Akita Prefecture. Those communities in remote area are jointly referred as "remote" community and the one community in central area is referred by its name, "Akata" community. By comparing the results of remote and Akata community, this research aims to illustrate the actual changes during marginalization process of rural community.

The results of comparative analyses between remote and Akata community suggested that differences appeared on 1) farming type, 2) self-evaluation on living environment, 3) future concerns of residents, and 4) residents' willingness to stay in the same community. These appeared differences are considered as the declining aspects in the marginalization process of rural community. The following section is going to discuss those findings from the field survey and illustrate the state of studied communities within the framework of marginalization process.

6.1 Content Changes on Household's Activities and the Role of Out-migrated Family Members

The results of field survey on farming type prevailed that households in remote community practice more cultivation for self-consumption purpose of household than Akata community ($x^2 = 8.857$, df = 1, P = 0.002919386). The result of an independent t-test

suggests that significantly more households in remote community are engaged in agricultural practice that aims to produce what household consumes rather than the agricultural practice as for source of income. At the same time, although the statistical significance was now observed by region, the result of a residual analysis prevailed that the number of elderly household answered "support in farming" as the role of their out-migrated family members was greater than that of non-elderly household (adjusted residual score = 3.0, significantly greater at >1.96). On the contrary, non-elderly household answered, "joining seasonal gathering" as the role of their out-migrated family members (adjusted residual score = 2.1, significantly greater at >1.96). Even though the field survey was not able to capture the physical decline in the size of cultivated land, the results illustrated the changes on agricultural practice as well as the role of out-migrated family members to households in community. This result implies that various activities in rural community may gradually change their contents during marginalization process rather than their immediate disappearances. At the same time it is also suggested that the involvements of out-migrated family members may change their forms as aging remaining population farther proceeds. Macro scale statistical data on agriculture may only be able to capture this change in farming type in the change in total cultivation area size (Sakamoto, 2003), however not in the content of residents' agricultural practice. Thus, it is recommended to apply a methodology that can capture the changes on the content of household's activities as well as the involvement of out-migrated family members.

6.2 Self-evaluation on Living Condition, Future Concerns of Residents, and Willingness to Stay in the Same Community

The result of self-evaluation of living conditions indicated that residents in remote communities have low levels of dissatisfaction about factors in basic infrastructure such as

"water" and "road," and a high level of dissatisfaction with factors in "Transportation and Access", "Education and Employment", and "Health" categories (See figure 5.10). This result suggests that generally residents of remote community have greater concern on factors related to living environment of community. However, quite contrarily, the result of Akata community showed that all factors were in satisfactory level except "lack of successors" factor as shown in Figure 5.9. In fact, "lack of successors" also appeared with high level of dissatisfaction in the result of remote community. Although it was not possible to illustrate the degree of population outflow due to lack of the demographical data, this implies that outflow of young population is a shared concern among rural communities regardless their locations.

The result of future concerns in remote and the Akata communities also suggested a difference between two groups of rural communities. Both in remote and Akata communities, "driving," "property", "health", and "transportation" were identified as common future concerns. However, residents of Akata expressed an even higher level of concern on "revitalization", "young population" and "tradition" factors than those previous four factors. This result indicates that the main concern of residents in remote communities is more on practical factors to sustain current living conditions of individual households, while residents of Akata are more concerned about the sustainability of the entire community. In other words, although the outflow of young population is realized as a common issue, residents of Akata expressed their demand on community's revitalization.

These results in self-evaluation and future concerns seem to be closely related to the residents' willingness to stay in the same community. The result of a chi-square test of independence between region and respondents who remarked willingness to stay continuously in their community suggests that there are significantly more residents who are considering out-migration but not possessing specific place to migrate or out-migrate

family members to live together, x^2=4.949, df=1, p=0.026 (significant at $p < 0.05$). As residents in remote communities expressed greater concerns about practical factors related to sustaining living conditions, it is suggested that, as the marginalization process of rural communities once reaches a certain point, residents become more concerned about practical living conditions of individual households. This result suggests that the desire for out-migration, even for seasonal migration, to somewhere with better access to basic services is a reasonable option for those households in a marginalizing community. It is particularly important for those elderly residents who are living alone in rural communities.

6.3 Analysis within the Framework of Marginalization Process of Rural Community

As it was illustrated the results of field study prevailed several differences in living condition of residents between remote and Akata community. These identified differences can be understood on the basis of the changes that residents face in the marginalization process of rural communities. Based on different population sizes, they can represent two positions in the framework of the marginalization process. Due to its larger population size, the state of the Akata community is assumed to be at an early stage, while the state of remote communities is assumed to be in later (or even late) stages in the framework.

Even though original population size and degree of population outflow are varied among communities, the results of comparative analyses between remote and Akata communities still can provide some insights on the marginalization process. This is because none of the rural communities in this study originally had significant deteriorations in their living conditions, at least not at the current state of residents' self-admitted dissatisfaction and concerns. In addition, although the physical distance from each community to main destinations for basic services is also diverse among communities, residents' main transportation means was still dominantly "a car driven by a member of household" as

shown in Figure 5.1 and also traveling distance was around 5~10 km as the result of field survey explained. Therefore, those differences in distance also do not necessarily deny the placement of these two groups of rural communities within the framework.

The result of comparative analysis within the framework of marginalization process could explain that the turning point from 1st to 2nd stage within the process, which is the critical point for regional revitalization (Odagiri, 2009, 2011). Residents of Akata community raised their concerns on factors relating to the sustainability of entire community while residents of remote community expressed their greater concerns on practical factors related to living condition of individual households. This result indicates that regional revitalization plans are more adequate to sustain current living condition of residents in Akata community. On the contrary, although the results of this study cannot determine exact points of the four communities in remote area within the framework of marginalization process, welfare-base approach seems to be more adequate based on the their results of self-evaluation and future concerns.

As it was explained earlier, this study was not able to depict the exact positions of studied five rural communities within the framework of marginalization process. In order to do so, it is necessary to have both exact population size of individual community and data of selected variables that represent living condition of residents in a certain length of time-scale. However, as it was also mentioned by Odagiri (2011), those data is often not available due to the kinds and scales of data collection by local governments. Additionally, the selected variables for this study are much more diverse as well as qualitative than the conventional types of data that a local government normally records. In order to overcome this difficulty in data availability, it is recommended to have multiple groups of rural communities according to their population sizes. This process will ensure to illustrate the differences in residents' living condition among different sizes of rural communities within

the framework of marginalization process. Once the line of population decline is illustrated, the degradation in community function could also be depicted based on comparative analyses of multiple groups of rural communities.

6.4 New Theme for Future Research

As was illustrated, the continuous outflow of population has generated not only aging of remaining populations but also degradation in living conditions of residents in rural communities. Especially the situation is more severe in those marginal communities. This situation suggests that the welfare-based approach, which addresses the basic needs of residents to maintain the current living conditions of residents, needs to be included in approaches to rural communities by today's local governance (Niinuma, 2009; Sakuno, 2006). However, at the same time this type of approach will also eventually have to face the threat of community disappearances. It is assumed that disappearance of rural communities will start spreading from hilly and mountainous areas of rural areas in which the proportion of the elderly population is higher than in other regions (MAFF, 2010). Although it is a realistic case to observe some disappearances or orderly closures of rural communities due to continuous population decline and aging of residents, it is still imperative to explore some feasible countermeasures to the future expansion of marginal communities in rural areas.

In addition, this examination of possible countermeasures is also important as the same scheme of marginalization phenomenon is assumed to be happening in prefectural and regional scales. Since rural communities have early experience of social changes rooted in aging and decline of population (Champion & Shepherd, 2006), examination of their marginalization process and development of countermeasures provide significant insights to the emerging issues in other regions as well as other scales. As it was mentioned earlier,

this process of examination would also be significant for some of the middle-income countries that soon will face aging and decline of population as the result of decrease in fertility rate, increase in life expectancy, and migration of population from rural to urban area; it is particularly so for those countries in smaller number of immigration as well as women in employment after becoming mothers (The Economist, 2010).

The original cause of population decline and aging of residents in rural area of Japan is identified in continuous outflow of young population from rural to urban area (Ishizaka & Midorikawa, 2005). This migration trend implies the existence of urbanization on the other side of the various declining phenomena in rural area. This fact suggests that urban-rural interaction needs to be further examined in order to set effective measurements to the current situation of rural community. In other words, it is imperative to hold a wider perspective to grasp the existence of urban area over the current issues in rural community. In fact, the role of urban-rural interaction has been realized in sustainable development as well as employment dynamics (Okpala, 2003; Terluin & Post, 2001). Furthermore, Dabson (2007) identified 11 key factors in urban-rural interdependence for prosperity of each area (Dabson, 2007). Among them, he raised some factors that address the basic needs and services of urban area such as food supply, energy supply, workforce supply, and waste management service. Simultaneously urban area, as returns, provides job opportunities, special services such as specialized medical facilities, and resource of investment to rural areas. This perspective on urban-rural relationship suggests that the current situation of rural area, which is affected by population decline as well as aging of population, can be interpreted as a consequence of an unbalanced urban-rural interaction in the past. The employment opportunity in urban area has been functioning as a strong pull of young population from rural area since 1960s and it has generated the degradation of living condition in present rural community. Thus, it is suggested to address the emerging issues

based on aging and population decline with the application of a wider perception, more specifically the application of urban-rural interdependence perspective, in today's local governance. New types of urban-rural interaction, particularly those address the basic needs of urban area; need to be strategically created from the rural area side as an essential perspective in their regional revitalization projects for shrinking rural communities. The actual scheme in the development of countermeasures for the current situation of rural area as well as examination on the interaction of two systems, urban and rural area, need to be further discussed in future researches.

Chapter 7: Conclusion

This research aimed to analyze the actual changes that residents of rural community experience in the marginalization process of rural communities. Marginalization process is represented by depopulation as well as decline in community-based autonomy and various activities, which are referred as community function in the developed conceptual framework of marginalization process. In other words, this research aims to identify the declining factors during the marginalization process of rural community from the perspective of residents' living condition through a field survey.

For the implementation of field survey five rural communities were selected: four from remote area and one from central are of the city. Those four communities in remote area, referred as "remote" community, are located in inland districts of the city in which higher proportion of elderly population and population declining rate are observed. In addition, the locations of these four communities are all in remote area that has longer geographical distance to selected basic services[iv]. On the contrary, the one community in the central area of the city and has better access to various basic services, referred by its name "Akata" community. By comparing the results of remote and Akata community, this study aimed to illustrate the difference of the two as well as declining factors in the marginalization process of rural community.

The results of field survey demonstrated the significant differences between remote and Akata community on four aspects, 1) farming type, 2) self-evaluation on living environment, 3) future concerns of residents, and 4) residents' willingness to stay in the same community. The main difference was illustrated in the results of self-evaluation and future concerns of residents; residents of remote community expressed higher degree of dissatisfaction and concern on practical aspects of daily life that directly affect the living

condition of individual households, whereas more concern on the sustainability of entire community was expressed by the residents of Akata community.

The result of this research also suggests possible changes within the content of household's activities in marginalization process of rural community from the identified change on farming type in remote community. The result prevailed that there are significantly more households who practice agriculture for self-consumption purpose of household in remote community. This point implies that what is really happening in marginalization process is the shrinkage and transformation of various activities rather than their immediate disappearances.

The applied methodology proved its capability to examine kinds and degree of residents' evaluation and concerns on the living environment of rural community. Thus, further implementation of field survey in the same methodology with multiple community groups based on their population size will capture the differences on living condition among different sizes of communities. This examination will enable to depict more detailed declines in living condition within the framework of marginalization process. Results of this examination on rural community will help local government to select adequate measures to each situation of rural community. As a result, both regional revitalization and welfare-based approaches to rural community will be implemented more systematically.

Furthermore the discussion of this study illustrated the significance of a wider perspective, more specifically urban-rural interaction, in today's local governance. Although it will be inevitable to observe some disappearances or orderly closures of marginalizing communities, further examination of urban-rural interaction will create a new potential in regional revitalization. This perspective is particularly important as same scheme of marginalization process is predicted to happen in prefectural and regional scales in the near future. By addressing basic needs of urban area, it will be possible to

strategically establish a balanced urban-rural interdependence that can sustain local economy of rural areas. Thus, future researches should perform a series of comparative analysis on the impact of aging society, particularly with the focus on urban-rural interaction, especially that of interdependence. These researches will prevail the detailed impacts of aging society with the notion of urban-rural interaction. That will provide some insights to lead a society to a sustainable state while physical shrinkage of population takes place.

ENDNOTE

[i] Originally "*genkaishuraku*" in Japanese. This term has not yet officially translated by Professor Ohono into English. Alternative translation by meaning can be "marginal settlement, "marginal hamlet" or "dying community/settlement." Similar expressions such as "peripheral" or "remote" are also used in studies on rural community. Yet, in this thesis, "marginal community" is used to refer Ohno's definition of "*genkaishuraku*" and "remote" is used to refer "geographically distant " areas.

[ii] Originally it is *fukushiteki* approach in Japanese. This term has not yet officially been translated into English by either Niinuma or Sakuno. The author wrote the English translation, "welfare-based".

[iii] Originally it is *chitsujo aru tettai* in Japanese. This term has not yet officially been translated into English by Professor Sakuno. The author wrote the English translation, "orderly closure".

[iv] The definition of remote area is set by "Act on Special Finance Measures for Comprehensive Development of Public Facilities for Distant Areas" Act No. 88 of 1962. For the details, refer to "iv" of ENDNOTE.

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APENDIX A Questionnaire from for interview survey to the chairperson of each community

1.Please answer to the following questions about residents and households in your community.

1-1. What is the population of community?	
1-2. How many households are there?	
1-3. How many elderly residents who are age 65 and above are living in community?	
1-4. How many elderly households are there?	
1-5. How many single elderly households are there?	

2. Please answer to the following questions about abandoned houses in your community.

2-1. How many abandoned houses are there?	
2-2. Who are taking care of those abandoned houses? Please answer the details for each abandoned house.	

APENDIX A (continued)

3. Please answer to the following questions about transportation and access in your community.

3-1. How far is the distance from your community to the closest public transportation service such as bus stop or train station?	
3-2. How far is the distance to primary and junior-high schools?	
3-3. How far is the distance to high schools?	
3-4. How far is the distance to the city hall office?	
3-5. How far is the distance to the main destination for grocery shopping?	
3-6. How far is the distance to the closest gas station?	
3-7. Is there a school bus service?	

APENDIX A (continued)

4. Please answer to the following questions about seasonal events, community based activities, and annual gatherings of community.

4-1. Is there any seasonal events or community-based activities that many residents participate? （e.g., cleanups, mowing around the main road, summer festivals, traditional performing arts, etc..)	
4-2. Is there any seasonal events or activities jointly held with neighboring communities?	
4-3. How often do you have gatherings of neighbors' association in a year?	
4-4. What kind of topics is discussed in the gatherings of neighbors' association?	

APENDIX A (continued)

5. Please answer to the following questions about road and basic infrastructure in your community.

5-1. Do you find any inconvenience with road and transportation?	
5-2. Do you find any inconvenience with water supply and sewerage system?	
5-3. Do residents feel any inconvenience with anything else in everyday life in your community?	

6. Please answer to the following questions about resource and land management.

6-1. Is there any forest owned and managed jointly with residents? Please describe the details of activities if there is any.	
6-2. Is there any agricultural land owned and managed jointly with residents? Please describe the details of activities if there is any.	
6-3. Is there any resource owned and managed jointly with residents? Please describe the details of activities if there is any.	
6-4. Is there any abandoned agricultural land in community?	
6-5. What is the current condition of those abandoned agricultural land?	
6-6. Is there any damages in farming caused by natural animals?	

APENDIX A (continued)

7. Please answer to the following questions about medical care and care services in your community.

7-1. How far is the distance to the medical clinic or hospital that residents normally use?	
7-2. Is there an available visiting medical check service?	
7-3. Is there anything residents generally feel inconvenience or anxiety about medical and acre services?	

8. Please answer to the following question about job and working places of residents in your community.

8-1. Where are the main destinations of residents for their jobs?

9. Please answer to the following questions about the residents who have out-migrated from your community in recent years.

9-1. Was there any household who moved out from community in last 10 years? If there was any, what was their main reason?	
9-2. Where did they moved out to? (If there was any)	

APENDIX A (continued)

10. Please answer to the following questions about communication among residents in your community.

10-1. What type of communication do you observe among residents? Please check all types of communication you observed from the provided options below.

1. Chat 2.Lending and borrowing items 3.Sharing food 4.Close family relationship 5. Take messages while gone 6. Supporting farming 7. Nothing 8.Others（ ）

10-2. Is there any communication with residents in neighboring communities? If there is any, please check all types of communication you observed from the provided options below.

1. Chat 2.Lending and borrowing items 3.Sharing food 4.Close family relationship 5. Take messages while gone 6. Supporting farming 7. Nothing 8.Others（ ）

10-3. If there is any communication with outside of community, where is this communication taking place? Please check all locations from he provided options below.

1. Iwaki district 2. Ouchi district 3. Yashima district 4. Honjo district 5. Yuri district 6. Chokai district 7. Nishime district 8. Higashiyuri district 9. Nikaho City 10. Akita City 11. Others（ ）

11. Please answer the following questions about daily life in your community.

11-1. Is there anything that residents feel inconvenience in their daily life?	
11-2. Is there anything that may become inconvenient or residents may feel anxiety in the future?	

APENDIX B Questionnaire for household survey

Question 1. How many people are living in your household? Please answer the number and their age group by writing numbers in boxes shown below.

a. Age 9 and below ( ) b. Age 10~19 ( ) c. Age 20~29 ( )
d. Age 30~39 ( ) e.Age 40~49 ( ) f. Age 50~59 ( )
g. Age 60~64 ( ) h. Age 65~74 ( ) i. Age 75 and above ( )

Question 2. How many members of your family are in employment?

( )

Question 3. Where are their working place? Please check the all options that fits to your family members.

1. Iwaki district 2. Ouchi district 3. Yashima district 4. Honjo district
5. Yuri district 6. Chokai district 7. Nishime district 8. Higashiyuri district
9. Nikaho City 10. Akita City 11. Others（ ）

Question 4. Do you or any member of your family practice farming? Please check the most appropriate description from the options.

1. Full-time farmer
2. Part-time farmer
3. Out-migrated family members cultivate the farm of household
4. Asking relatives to take care of the farms
5. Asking somebody else to take care of the farms
6. Neither full-time nor part-time but practicing farming for self-consumption purpose
7. Non-farmer

APENDIX B (continued)

Question 5. What is the main transportation mean of household? Please circle the number of most appropriate description from the options.

1. Walk 2. Bicycle 3. Motorcycle

4. Car driven by a member of family

5. Car driven by a neighbor

6. Bus 7. Train 8. Taxi 9.Others ( )

Question 6. How often do you go out for grocery shopping? Please circle the number of most appropriate description from the options.

1. Almost everyday
2. 2-3 times per week
3. 2-3 times per month
4. Almost non
5. Others ( )

Question 7. How do you normally do your grocery shopping? Please circle the number of most appropriate description from the options.

1. Any member of family does it for household
2. Out-migrated family member does it for household
3. Out-migrated family member takes to grocery shops
4. Neighbors take to grocery shops
5. Using delivery service
6. Using traveling stores
7. Others ( )

APENDIX B (continued)

Question 8. Where do you normally do grocery shopping? Please circle the number of most appropriate description from the options.

1. In community 2. Iwaki district 3. Ouchi district

4. Yashima district 5. Honjo district 6. Yuri district

7. Chokai district 8. Nishime district 9. Higashiyuri district

10. Nikaho City 11. Akita City 12. Others（ ）

APENDIX B (continued)

Question 9. Do you have any out-migrated family members

1. Yes → Please answer Question 9
2. No → Please move to Question 10

Question 9-1. Where do your out-migrated family members live?

1. Iwaki district 2. Ouchi district 3. Yashima district 4. Honjo district

5. Yuri district 6. Chokai district 7. Nishime district 8. Higashiyuri district

9. Nikaho City 10. Akita City

11. Other prefecture ( )

12. Others ( )

Question 9-2. How often do your out-migrated family members visit household? Please circle the number of most appropriate description from the options.

1. Almost everyday
2. 1-2 times per week
3. 1-2 times per month
4. Farming season or other busy occasions
5. Seasonal gatherings or a few times per year
6. Almost non
7. Others ( )

APENDIX B (continued)

Question 9-3. What is the role of your out-migrated family members? Or how do they spend time when they visit household?

1. They do grocery shopping for household
2. They take to shopping or other errands.
3. They do house work or other things at house
4. They provide support in management of forest and water pipes in community
5. They provide support in farming
6. They provide support in farming in the busy season
7. They gather in seasonal events
8. Others（ ）

Question 9-4. Will the out-migrated family members return to community in the future?

1. Yes, in 5 years
2. Yes, in 10 years
3. Yes, sometime in the future
4. No, due to work
5. No, due to house
6. Not full retun, but will visit community often
7. Do not know / have not talked yet
8. Others（ ）

APENDIX B (continued)

Question 10. What type of communication do you have with your neighbors?

1. Chat 2.Lending and borrowing items 3.Sharing food
4.Close family relationship 5. Take messages while gone 6. Supporting farming
7. Nothing 8.Others（ ）

APENDIX B (continued)

Question 11. Answer to the following questions about living condition in your community. Please make self-evaluation on each topic on the table below in 5-scale point.

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
1. Community is in good natural environment.	1	2	3	4	5
2. Water supply and sewerage systems are not sufficiently equipped.	1	2	3	4	5
3. Community keeps good living environment.	1	2	3	4	5
4. Basic infrastructure, such as road construction, is not sufficient.	1	2	3	4	5
5. Public transportation service, such as bus service, is not sufficient.	1	2	3	4	5
6. Often feel inconvenience in access to grocery or general shops.	1	2	3	4	5
7. Often feel inconvenience in commute to work or school.	1	2	3	4	5
8. Often feel income is not sufficient to keep current living condition.	1	2	3	4	5
9. Often feel inconvenience or inequality in education for children.	1	2	3	4	5

10. Often feel inconvenience in access to medical clinic.	1	2	3	4	5
11. Often feel inconvenience in access to care house for elderly.	1	2	3	4	5
12. Community keeps good atmosphere among residents.	1	2	3	4	5
13. Residents are generally kind.	1	2	3	4	5
14. Often hesitate or become nerves to socialize with neighbors.	1	2	3	4	5
15. It is generally enjoyable to join community-based activities.	1	2	3	4	5
16. Community is generally active in festivals and rituals.	1	2	3	4	5
17. Often feel anxiety on lack of young population and successors.	1	2	3	4	5
18. There is nothing particularly to worry about now.	1	2	3	4	5
19. Overall, this community is in a good living condition.	1	2	3	4	5

APENDIX B (continued)

Question 12. Answer the questions about your future concerns.

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
1. Public transportation service	1	2	3	4	5
2. Access to grocery shops	1	2	3	4	5
3. Worried about health	1	2	3	4	5
4. Worried about driving	1	2	3	4	5
5. Worried about management of private property	1	2	3	4	5
6. Need better delivery service	1	2	3	4	5
7. Management of abandoned house	1	2	3	4	5
8. Local traditions and festivals	1	2	3	4	5
9. Management of abandoned land	1	2	3	4	5
10. Need support in general	1	2	3	4	5
11. Need support in farming	1	2	3	4	5
12. Would like to increase young population	1	2	3	4	5
13. Would like to actively participate in regional revitalization	1	2	3	4	5
14. Would like to out-migrate	1	2	3	4	5
15. Nth particularly	1	2	3	4	5
16. If there is anything you would like to say about living condition in your community, please leave your comment in this box.					

APENDIX B (continued)

Question 13 Do you wish to stay in your community?

1. Yes → Please move to question 14
2. No → Please move to question 15
3. Do not know → This is the end of questionnaire.

Question 14. What is the reason for answering "Yes" in Question 13? Please circle the number of most appropriate description from the options.

1. Good natural environment
2. Convenient to live
3. Sense of belonging
4. Living with family members now
5. Relatives are living close now
6. House and agricultural land
7. Good neighbors
8. I would consider out-migration if I have a place to move
9. Others（ ）

Question 15. What is the reason for answering "No" in Question 13? Please circle the number of most appropriate description from the options.

1. Inconvenience to live
2. Not so comfortable with community's atmosphere
3. I would like to live with family members who live outside
4. I would be single household if I continue to stay in community
5. Economic reason
6. Sick or health-related reason
7. It is becoming difficult to manage own property
8. Others ( )