

Construction Process of Regional Nucleus Facility and Small-scale Day Care Facilities Converted a Traditional Timber House and Abolished School in Rural Area - Case Study on Abu Town in Yamaguchi Prefecture -

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Abstract: This paper aims to clarify change in use characteristics of 2010 and 2015 and consider about change of cooperation system in Abu town, where a social welfare corporation manages a regional nucleus facility and some small-scale facilities. The results are as follows; 1) A day care facility with a special nursing home was established as a regional nucleus facility before 2000. After that, three small-scale facilities were established by a social welfare corporation that manages the regional nucleus facility. In addition, the corporation established a day care facility, and facility capacity of the regional nucleus facility was decreased from 30 to 15 people in 2015. 2) Many users with high degree of care used the regional nucleus facility, and many users with low degree of care used the small-scale facility in 2010. However, the number of the users with high degree of care increased in the small-scale facilities far from a regional nucleus facility in 2015. 3) The use sphere of the regional nucleus facility shared with only the farthest facility from the regional nucleus facility in 2010. And it shared with also the farther facility from the regional nucleus facility in 2015. Therefore, cooperation system among facilities is shifted from function sharing to use sphere sharing.

Keywords: Day care facility, Construction process, Use sphere, Interannual changes, Rural area

1. Introduction

Local governments of depopulation areas have the difficult issues of the correspondence to the increase in demand for medical welfare to support the life of the elderly due to the simultaneous progress of the decrease in population and aging and the maintenance of the service level under the conditions of the financial pressure. The regeneration of an area community that aimed at the population settlement and fulfillment of aged person welfare due to the existent building stock and use for talented people of the area is placed on an important issue.

As a method of solution of the issues, the establishment of small-scale welfare facilities used existing facilities and private houses is started, and there are the effects to establish them at small cost and to utilize as a welfare base of the area. The construction of an aged person welfare network by the connection of a nucleus facility and a small-scale facility is the effective method to cope with increase in demand of a future welfare service in depopulation areas.

In previous studies of the field of building and city planning, there are accumulations of the study such as clarifying the regionally of aged person welfare demand 1), considering service supply system by cooperation with regional resources 2), considering the issues of a home-visit care service by based

on management situation 3) and a service sphere and evaluating the accessibility of a day care and home-visit care service 4,5). But, there are few studies analyzing of share of facility function and use sphere and methods of cooperation system.

And previous studies of authors clarified the characteristics of facility users and the management form of day care facilities for the elderly and considered the effect and possibility of an aged person welfare network in Abu town, where the social welfare corporation that managed a day care facility with a special nursing home had started the small-scale facility establishment after 2000 and the aged person welfare network of the nucleus facility and the small-scale facilities had been built 6). And the results are as follows; 1) sharing of facility function that users can choose the facility depending on user's care level, 2) sharing of the use sphere that is possible to reduce the transportation time, 3) shortening of the transportation time by accepting users from the district that the small-scale facilities establish. And the aged person welfare network is probably effective. However, nursing-care insurance revision in 2015 affects the facility management and establishment, and the cooperation system has been changed since 2010 in Abu town.

As mentioned above, this paper aims to clarify change in use characteristics of 2010 and 2015 and consider about the change of cooperation system in Abu town.

2. Methods

This research adopts the following three methods.

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Table 1. Outline of the facilities established before 2010

| Facility Name | Kiyogahama (Before) | Engawa | Hidamari (Before) | Tanakasanchi |
|------------------------------------|---|--|--|--|
| Complex Facility | SNH, NH, GH, HV | - | - | - |
| Structure | RC One-story | Wooden Two-story | Wooden Two-story | Wooden Two-story |
| Gross Floor Area (m ²) | 605.7 | 283.5 | 129.4 | 119.6 |
| Establishment Date | 1998.4 | 2006.6 | 2008.6 | 2008.6 |
| Office Date | Mon.-Sat. | Tue.-Sun | Sun.-Fri | Mon.-Sat. |
| Office Hours | 8:30~18:00 | 8:30~18:00 | 8:30~17:00 | 8:30~17:00 |
| Service | Transportation Lunch, Bathing Activity Rehabilitation | Transportation Lunch, Bathing Activity | Transportation Lunch, Bathing Activity Care prevention | Transportation Lunch, Bathing Activity |
| Registrants (people) | 58 | 24 | 19 (17) | 26 |
| Staff (people) | 8 | 5 | 4 | 4 |

Legend: SNH: Special nursing home, NH: Nursing home, GH: Group home, HV: Home-visit care

Note: Figures in parentheses indicate users number of care prevention.

1. Data collection and hearing survey about facility establishment process

The condition of building the network has been clarified by survey on establishment process and outline of the regional nucleus facility and the small-scale facilities.

2. Data collection of the registrant's basic information

The sharing situations of the facility function and the use sphere have been clarified by comparing the user's information between the regional nucleus facility and the small-scale facilities.

3. Investigation of transportation service

The effect of the aged person welfare network has been clarified by analyzing relationship between use sphere and transportation time.

These investigations were performed from Oct. 2009 to June 2010 and from Oct. 2015 to May 2016.

3. Supply process of day care facilities in Abu town

3.1 Supply process of day care facilities before 2010

Figure 1 shows the location of day care facilities in Abu town and table 1 shows the outline of the facilities established before 2000. The day care facility "Kiyogahama", a nursing home and a home-visit care center were established in accordance with the introduction of the health coverage system in 1998. And a special nursing home was established in 2000, so the level of the aged person welfare facility improved in the amount and quality rapidly. In addition, a group home was established in 2005, and the regional nucleus facility has reached in shouldering the role as the wide area welfare base.

New management organization "Abu social welfare corporation" was established in 2000 to carry out the effective practical use of these facilities, and it is placed as the special organization that shoulders the aged person welfare service of the town.

After the regional nucleus facility establishment was completed, the small-scale facility establishment was started. Abu welfare corporation established "Engawa" that the farmer house was reused in Fukga area in 2006. After that, "Hidamari" and "Tanakasanchi" reused a wooden house were established in the central parts of Utago and Nago area in 2008. As the result, the aged person welfare network of the small-scale facilities

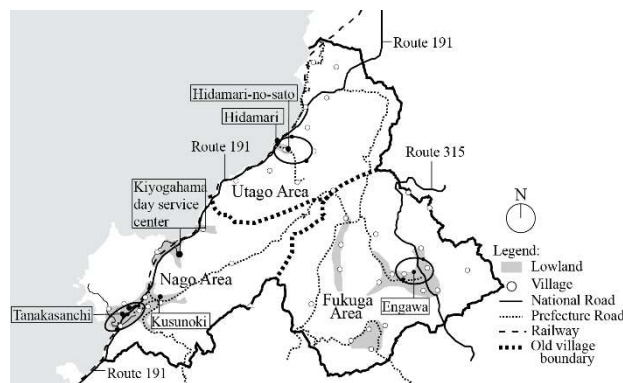


Fig.1. Location of day care facilities in Abu town

had been built in the central area of old 3 town and villages before the merger in the Showa era.

3.2 Supply process of day care facilities after 2010

Table 2 shows the outline of the facilities established after 2010. The local government and residents consulted about the method of using an abolished school in Utago area in 2009, and decided to use for an aged person welfare facility. So, Abu welfare corporation established "Hidamarinosato" in 2010. In Utago area, "Hidamari" had already been established, but it moved to "Hidamarinosato", because it was narrow. And a group home was added, because the group home in the regional nucleus facility had many waiting elderly people. In addition, a facility for livelihood support was also added for the elderly who left the hospital or lives in the snowy area.

Table 2. Outline of the facilities established after 2010

| Facility Name | Kiyogahama (After) | Hidamarinosato (After) | Kusunoki |
|------------------------------------|---|--|--|
| Complex Facility | SNH, NH, GH, HV | GH, LS | - |
| Structure | RC One-story | RC Two-story | Wooden One-story |
| Gross Floor Area (m ²) | 605.7 | 84.4 | 119.6 |
| Establishment Date | 1998.4(2015.4-) | 2010.4 | 2015.4 |
| Office Date | Mon.-Sat. | Sun.-Fri. | Mon.-Sat. |
| Office Hours | 8:30~18:00 | 8:30~17:00 | 8:30~17:00 |
| Service | Transportation Lunch, Bathing Activity Rehabilitation | Transportation Lunch, Bathing Activity Care prevention | Transportation Lunch, Bathing Activity |
| Registrants (people) | 58 | 32 (8) | 26 |
| Staff (people) | 8 | 4 (2) | 5 |

Legend: SNH: Special nursing home, NH: Nursing home, GH: Group home, HV: Home-visit care, LS: Facility for livelihood supporting

Note: Figures in parentheses indicate users number of care prevention.

The request of the resident to use a vacant house triggered off the establishment "Kusunoki" in 2015. And Abu town had an issue about home care after left the hospital, so Abu welfare corporation considered to accept them. Therefore, the facility capacity of "Kiyogahama" reduced from 30 people to 15 people and the facility was changed to the facility accepting the elderly people who left the hospital after "Kusunomori" was established.

4. Change of use characteristics

4.1 User properties and use pattern of the facilities

Figure 2 shows user properties in 2010 and 2015. In 2010, it was characteristics that there were many males with 40% in

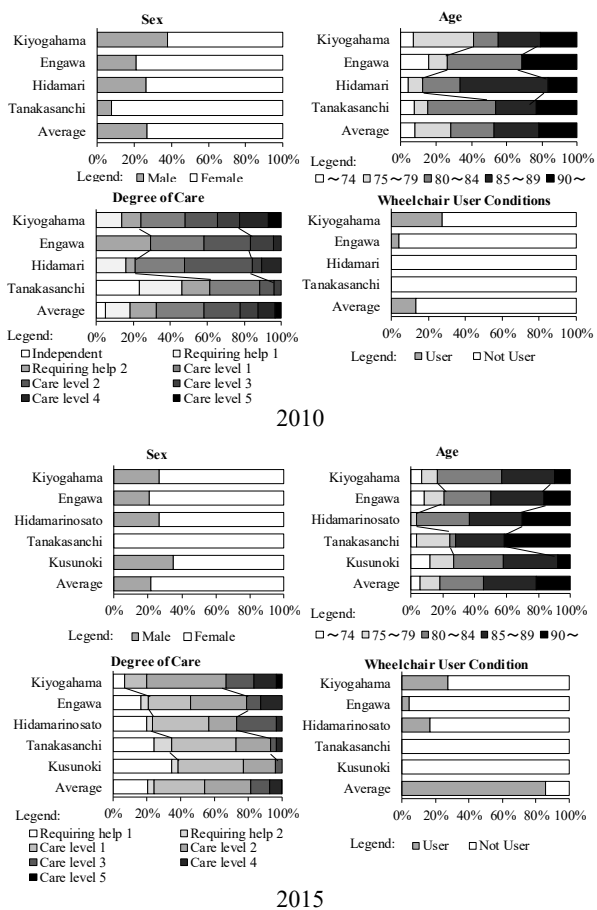


Fig.2. User properties

“Kiyogahama” as for the sex. On the other hand, there were many females with about 80% in the small-scale facilities. As for the age, the users of 90 years-old and over occupied about 20%. About user’s degree of care and wheelchair use conditions, the user of the care level 3 and over occupied 35% and the rate of the user with high degree of care was high, and there were 4 users with care level 5 in “Kiyogahama”. And the wheelchair user occupied about 30%. On the other hand, there are many users of the care level 1 and 2 with 50-60% in “Engawa” and “Hidamari”, and many users of requiring help 1 and 2 is 60% in “Tanakasanchi”.

In 2015, males decrease to about 20% in “Kiyogahama”, and there are many males with 30% in “Kusunoki” as for the sex. So, part of males has moved from “Kiyogahama” to “Kusunoki”. As for the age, the users of 90 years-old and over occupy about 20% and it is same with 2010, but they increase twice in “Tanakasanchi”. And the octogenarian users occupy about 60%, so the age of the users tends to rise. About user’s degree of care and wheelchair use conditions, the users of care level 3 and over declined to 25%, but the rate of the wheelchair user does not change in “Kiyogahama”. On the other hand, they increased from 16% to 21% and 27% in “Hidamarinosato” and “Engawa”. And there are no independent users and the users of requiring help 1 and 2 decrease to 40% in “Tanakasanchi”, so user’s degree of care tends to rise in the small-scale facilities.

Next, figure 3 shows use patterns in 2010 and 2015. In 2010, the users of once and twice a week are about 70% and the rate is high in “Kiyogahama” and “Tanakasanchi” as for the use frequency. On the other hand, the users of 3 times and over in a

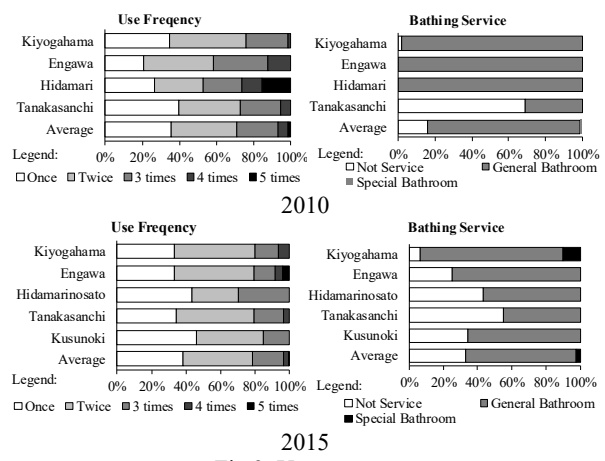


Fig.3. Use patterns

week occupy 40-50% in “Engawa” and “Hidamari”, especially the users of 5 times a week occupy about 10%, and it is characteristics that the use frequency is high. About bathing service, it is characteristics that there are a few users who take a bathing service in “Tanakasanchi”, but most users take a bathing service in other facilities. It is characteristic that there were many special bathroom users with 17% in “Kiyogahama” that accepts many users whose degree of care is high.

In 2015, the users of once and twice a week are about 80% in all facilities as for the use frequency. There are many users of 4 times and over in a week in “Hidamari”, but there is no user of 4 times and over in a week in “Hidamarinosato”. And the use frequency decreases in also “Engawa”. About bathing service, there are the users who don’t take a bathing service in all facilities, and the average rate of them is 30%. The rate of the special bathroom users decreases to 10% in “Kiyogahama”.

4.2 The use sphere of the facilities

Figure 4 shows the use sphere of the facilities in 2010 and 2015. In 2010, the users from Nago area that was close to the facility were many with 38 people. However, the users from Utago area and Hagi city where it left the facility also occupied 21% in “Kiyogahama”. So, the 50% and 80% use spheres were as wide as with 3.0km and 5.5km. On the other hand, there were two users from Fukuga area where it needed for more than 1 hour to transport the users before “Engawa” was established in 2006, but the use sphere sharing with “Engawa” was completed with 0 person in June 2010. “Engawa” accepted the users from Fukuga area where small-scale villages were distributed in wide scale, so the 50% and 80% use sphere were wider than other small-scale facilities. “Hidamari” and “Tanakasanchi” was located in the central parts of Utago and Nago areas, so the 50% use sphere was narrow 0.7km and 0.2km, and the 80% use sphere was within 2.0km.

In 2015, the facility capacity of “Kiyogahama” decreased and “Kusunoki” was established newly, so the 50% the use sphere is wider with 3.9km in “Kiyogahama”. On the other hand, the 80% the use sphere is narrower with 4.2km, because there are only two users from Utago area. The 50% and 80% use sphere of “Engawa” are wider with 3.6km and 4.8km, because the users from Hagi city increases. The 50% and 80% use sphere are little wider with 0.7km and 1.9km, but they are the narrowest in “Hidamarinosato” that has moved from the facility used a wooden house to the facility used an abolished

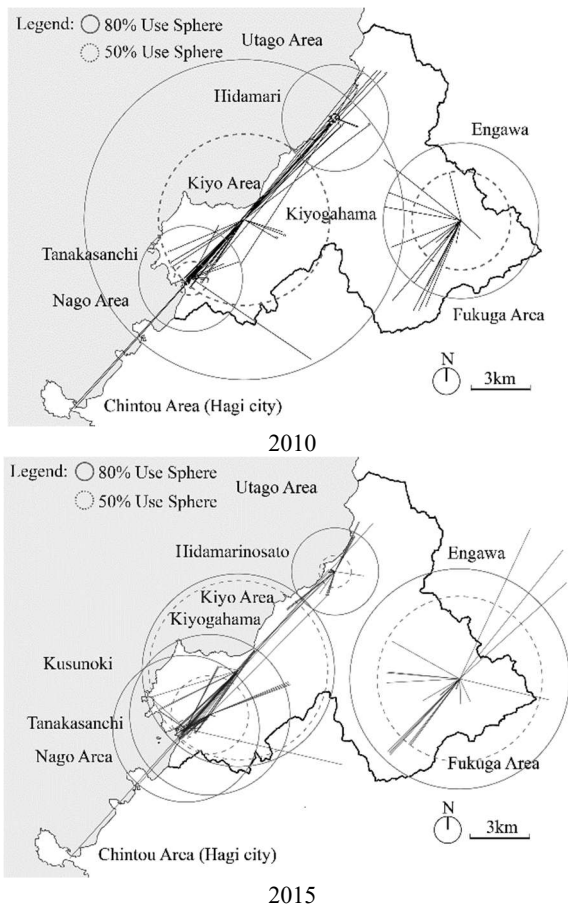


Fig.4. The use sphere of the facilities

school. The 50% use sphere of “Tanakasanchi” is same with 0.7km, but the 80% use sphere is wider with 3.2km, because the users from the area where it left the facility increases. The 50% and 80% use sphere of “Kusunomori” are as wide as with 1.7km and 3.5km, because the facility is located in the area distant from center of Nago area. Therefore, the use sphere sharing is completed in 3 areas, because the 80% use spheres of “Kiyogahama”, “Engawa” and “Hidamarinosato” area don’t overlap.

4.3 The method of transportation service

Table 3 shows method of transportation service and transportation time in 2010 and 2015. In this paper, transportation time that a staff needs time for a user is used for analysis of transportation time, and it is the time required for one staff to transport one user. And transportation time per user means the time required for staffs to transport one user. In 2010, the staff transported the users by four cars including two lift cars, because the users were many and the rate of wheelchair users was high in “Kiyogahama”. Two staffs accompanied one lift car to transport the users in Nago area that was close to the facility. However, transportation time of the lift cars was long with 50 minutes, because it needed the time for wheelchair user’s getting on and off a car. And transportation time of other cars were also long, so transportation time that a staff needs time for a user was long with 16.6 minute/person. The pick-up time varies in the case of the facility users, so the transportation was divided into several times in the small-scale facilities. The transportation time that a staff needs time for a user of “Engawa” was relatively short, because three cars were used to

Table 3. The method of transportation service

| | | 2010 | | 2015 | | | |
|----------------|---------------------------|---------|--|------------------|--|--|---|
| Facility Name | Car Type and Staff Number | | Transportation Time and User Number min (people) | | Average of a Week | | |
| | Morning | Evening | Morning | Evening | Total Transportation Time and User Number min (people) | Transportation time per user (min /people) | Transportation time a staff needs for a user (min/people) |
| | | | | | | | |
| Kiyogahama | L2 | L2 | 172.5 (15) | 156.3 (15) | 328.8 (31) | 10.7 | 16.6 |
| | W1 | W1 | | | | | |
| | M1 | M1 | | | | | |
| Engawa | M3 | M2 | 113.8 (9) | 89.0 (9) | 202.8 (18) | 11.3 | 11.3 |
| Hidamari | M2 | M2 | 71.2 (4) | 65.6 (4) | 136.8 (9) | 18.9 | 18.9 |
| Tanakasanchi | W1 | W1 | 59.0 (6) | 63.8 (6) | 122.8 (11) | 10.5 | 10.5 |
| | | 2015 | | Average of a Day | | | |
| Facility Name | Car Type and Staff Number | | Transportation Time and User Number min (people) | | Average of a Day | | |
| | Morning | Evening | Morning | Evening | Total Transportation Time and User Number min (people) | Transportation time per user (min /people) | Transportation time a staff needs for a user (min/people) |
| | | | | | | | |
| Kiyogahama | L2 | L2 | 79(7) | 87(7) | 166(14) | 11.9 | 20.8 |
| | W2 | M1 | | | | | |
| | M1 | M1 | | | | | |
| Engawa | M1 | M1 | 92(8) | 78(8) | 170(16) | 10.6 | 10.6 |
| Hidamarinosato | M1 | M1 | 56(7) | 44(7) | 100(14) | 7.1 | 7.1 |
| Tanakasanchi | M1 | M1 | 35(4) | 20(4) | 55(8) | 6.9 | 6.9 |
| Kusunoki | M1 | M1 | 90(9) | 81(9) | 171(18) | 9.5 | 9.5 |

Note: Transportation time a staff needs for a user = \sum [Transportation time (Morning, Evening)(min) \times Staff number (people)] / Total user number(people)

Staff number : The number of staff per car

Total user number : The total number of users in a day

Legend: Car type L: Wheelchair lift car, W: Wagon car, S: Standard car, M: Minicar

cover the whole Fukuga area. The transportation time that a staff needs time for a user of “Hidamari” was long with 18.9 minute/person, because the facility accepted the users from Nago area. On the other hand, the transportation time was 12.9 minute/person in the day when the users from only Utago area were transported. Transportation time that a staff needs time for a user of “Tanakasanchi” was short with 10.5 minute/person, because the use sphere was narrow and one wagon car was used to transport the users.

In 2015, the staff transports the users by two cars including one lift car, because the facility capacity of “Kiyogahama” decreases to 15 people. The use sphere becomes narrow, but there are many users with high degree of care such as wheelchair users, and two staffs accompany all car. Therefore, the transportation time that a staff needs time for a user is longer with 23.1 minute/person. The transportation method is same with 2010 in the small-scale facility. The transportation time that a staff needs time for a user of “Engawa” is shorter with 10.6 minute/people, because three cars are used to cover the whole Fukuga area and Hagi city. The transportation time that a staff needs time for a user of “Hidamarinosato” is shorter with 7.1 minutes/person, because there is no user from Nago area. The transportation method changes from by a wagon to by a minicar, and the transportation time that a staff needs time for a user of “Tanakasanchi” is the shortest with 6.9 minutes/person. Two minicars are used to transport the users, and the transportation time that a staff needs time for a user of “Kusunoki” is relatively long with 9.5 minutes/person. Placing the facility far from the center of Nago area affects long transportation time.

Therefore, the use sphere has become narrow from 2010 to

2015, but the transportation time that a staff needs time for a user becomes longer in “Kiyogahama”, because the users with high degree of care increases. On the other hand, the use sphere has become wide from 2010 to 2015, but the transportation time becomes shorter in the small-scale facilities, because multiple cars are used to cover the whole area.

5. Conclusions

This paper has clarified change in use characteristics of 2010 and 2015. The results are as follows;

(1) A day care facility with a special nursing home was established as a regional nucleus facility before 2000, and new management organization “Abu social welfare corporation” was established in 2000 to carry out the effective practical use of these facilities. After that, Abu welfare corporation started to establish three small-scale facilities. And one facility moved from the facility reused a wooden house to the facility reused an abolished school in 2011. In addition, the organization established a new day care facility, and facility capacity of the regional nucleus facility decreased from 30 people to 15 people in 2015.

(2) About the user properties, the users with care level 3 and over occupied 30% in the regional nucleus facility and the rate of the users with high degree of care was high in 2010, and there were many users with low degree of care in the small-scale facilities. On the other hand, the user’s degree of care tends to rise in all facilities in 2015, and the users with high degree of care especially increases in two facility that is far from the regional nucleus facility.

(3) The use sphere of the regional nucleus facility shared with only “Engawa” that was the farthest facility from the regional nucleus facility in 2010. However, it shares with also “Hidamarinosato” that is farther facility from the regional nucleus facility in 2015. In addition, the users with low degree of care have moved from the regional nucleus facility to “Kusunoki” after it was established. So, establishment of “Kusunoki” probably affects reduce of the use sphere of “Kiyogahama”.

(4) About the transportation time, the transportation time that a staff needs time for a user of the regional nucleus facility has become longer, because the users with high degree of care increases. On the other hand, the transportation time of the small-scale facilities has become shorter with within 10 minute/person, because the use sphere shares in each area, and multiple cars are used to cover each area.

From the above, the facility management system has changed from 2010 to 2015, because of establishment of a new facility and decrease of the facility capacity in the regional nucleus facility. Many users with high degree of care used the regional nucleus facility, and many users with low degree of care used the small-scale facility in 2010. However, the number of the users with high degree of care increases in the small-scale facilities that is far from the regional nucleus facility in 2015. And the regional nucleus facility accepts the users from only Nago area, so the use sphere sharing completed in each area in 2015. Therefore, cooperation system among the facilities is shifted from function sharing to use sphere sharing. And sharing of the use sphere and shortening of the transportation time in the small-scale facilities establishes have

been clarified. So, the changes of aged person welfare network are probably effective.

On the other hand, “Engawa” is the facility used a wooden house, but it accepts the elderly people whose degree of care is high. So, it is important to verify whether it is possible to accept many elderly people whose degree of care is high. Business profit was analyzed in 2010, and it was clarified that the surplus management in small-scale facility compensated for deficits in regional nucleus facility. However, long-term care fees were reduced by nursing-care insurance revision in 2015, and management of a day care facility becomes strict. So, it is important to verify current business profit.

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