

The Construction Process and Use Characteristics of Day Care Facilities for the Elderly in Mountainous Areas

- Case Study on northern part of Hagi area in Yamaguchi Prefecture-

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Abstract

The purpose of this paper is to clarify the construction process and use characteristics of day care facilities for the elderly in northern part of Hagi area, and to consider the development way of them for the future in rural area. The results are as follows. 1) A large day care facility with a nursing home is supplied by a social welfare corporation in many old towns and villages. The fulfilment rate (facility capacity / the number of the care-needed certificated people) is higher than urban areas, because the number of elderly people is small. However, the use sphere is wide, and the pick-up time is long, because the population density of elderly people is low. 2) On the other hand, the use sphere is small and pick-up time is short in Abu town, because the regional nucleus facility and the small day care facilities are supplied equally by a Social Welfare Corporation. From the above, the shortening of pick-up time become possible, by supplying a regional nucleus facility and satellite-type day care facilities in the rural areas, where the number of entries of medical corporations and corporations for profit is small. As a result, it is thought that it is effective method that they are supplied equally by social welfare corporations with the combination of the regional nucleus facility and the small day care facilities

Keywords: Day Service Facility; Social Welfare Corporation; The Construction Process; Distance to the Facility of the User

1. Introduction

Japan's aging rate in 2015 is over 25%, and an aged society is rapidly expanding. Especially, in a local city with depopulated areas, advance of an aged society induces many serious problems. One of the serious problems is the supply method of social welfare services for the elderly. Therefore, the Japanese government introduced nursing care insurance in 2000 to fulfill the demand of social welfare services for the elderly, and permitted welfare facilities for the elderly managed by a NPO and a corporation for profit in order to increase the number of facilities.

However, rural areas with low elderly people's population density are more disadvantageous than urban areas with high elderly people's population density in the viewpoint of facility management. Therefore, in rural areas, it is expected that the number of facilities cannot increase easily in the future. The number of day care facilities was 35,453 places in 2012,

among them the number of small-scale day care facilities was 17,963, and small-scale facilities were over 50% in the whole number of them. Although it is thought appropriate to supply a small-scale day care facility for the elderly in the viewpoint of facility supply in rural areas, supply of a small-scale facility is restricted by the nursing-care-insurance revision in 2015.

2. Purpose and Methods of Study

From the above-mentioned background, the purpose of this study is to clarify the supply process and utilization characteristic of in day care facilities for the elderly in Hagi, and to consider the supply method of them in depopulated areas for the future.

This study adopts the following three methods.

1. Creation of the database by statistical materials

We created the database by using the information of the day care facilities acquired from Yamaguchi protracted-life society division and Hagi city social welfare division.

2. An interview survey to Social Welfare Corporations

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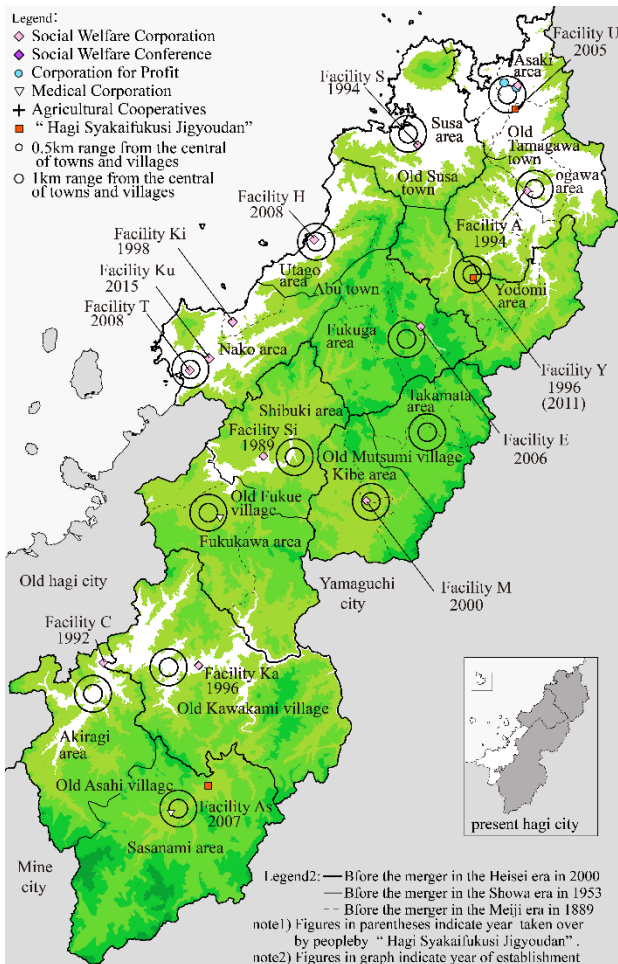


Fig.1. Location of Day Care Facilities for the Elderly

We conducted an interview survey to social welfare corporations in Hagi to clarify the supply process of day care facilities.

3. A questionnaire survey of user information and a transportation survey.

We conducted a questionnaire survey to social welfare corporations in Hagi to grasp the utilization characteristic of day care facilities, and carried out a transportation survey to clarify pickup time for every facility. These surveys were conducted from May, 2009 to August, 2015.

3. Outline of this Study Area and Facility Supply

3.1 Outline of Northern Part of Hagi

Figure 1 indicates the location of day care facilities for the elderly. Figure 2 indicates the center of towns and villages in 1889 and the population of them in 2010. Present Hagi city is constituted by seven cities, towns and villages which merged in 2005, such as Old Susa town, Old Tamagawa town, Old Mutsumi village, Old Fukue village, Old Kawakami village and Old Hagi city. In this paper, we define the northern part of Hagi as the area which adds Abu-cho to old 6 towns and villages in present Hagi city. By the merger of Meiji Era in 1889,

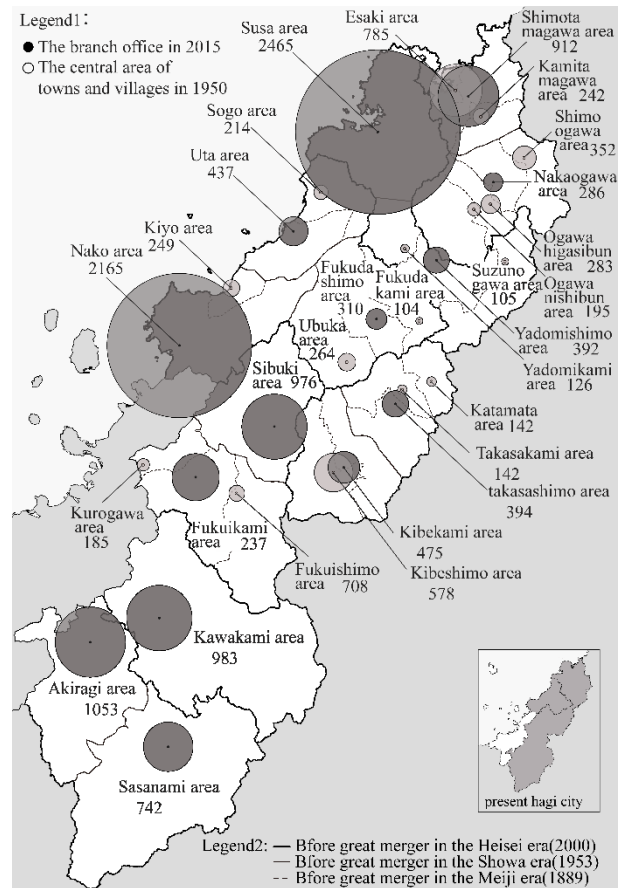


Fig.2. The Center of Towns and Villages in 1889 and the Population in 2010

Table 1. The Number of Facilities and Capacity

	Management organization	Year of establishment					Total
		1990	1995	2000	2005	2010	
Old Tamagawa town	Social Welfare Corporation		1(35)				1(25)
	“Hagi Syakaifukusi Jigyoudan”					1(10)	
	Corporation for Profit						1(20)
Old Susa town	Social Welfare Corporation		1(25)				
	“Hagi Syakaifukusi Jigyoudan”			1(35)			
	Total						2(60)
Old Mutsumi village	Social Welfare Corporation				1(25)		
	Total						1(25)
Old Fukue village	Social Welfare Corporation	1(30)					
	Total						1(30)
Old Kawakami village	Social Welfare Corporation			1(20)			
	Total						1(20)
Old Asahi village	Social Welfare Corporation		1(20)				
	“Hagi Syakaifukusi Jigyoudan”					1(10)	
	Medical Corporation						1(10)
	Total						2(30)
Abu town	Social Welfare Corporation	1(15)				3(30)	1(10)
	Total						5(55)
	Total	2(45)	3(80)	2(55)	1(25)	5(55)	4(65)
	Total						16(310)

note1) The total number in 2015

note2) Figures in parentheses indicate facility capacity

30 towns and villages decreased to 14 towns and villages. The population as of 2010 was large in Susa area, Nako area and Esaki area, and each population was 2465 persons, 2165 persons and 1939 persons. In addition, Esaki, Shimotamagawa and Kamitamagawa are included in Esaki area.

By the policy named Gold Plan upon which the Japanese government decided in 1989, one day care facility which a social welfare corporation manages was established in each towns and villages, and most established facilities are being located from each

Table 2. Outline of the Facilities of Northern part of Hagi area

Name of facility	Facility Su	Facility A	Facility Y	Facility U	Facility Si	Facility M
Management organization	Social Welfare Corporation	Social Welfare Corporation	“Hagi Syakaifukusi Jigyoudan”		Social Welfare Corporation	
Year of corporation establishment	1993	1981	2005		1988	
The type of services	1994 DC SNH 2000 LCS 2001 GH	1982 SNH 1994 DC 2003 LCS	2011 DC SNH FLS HNC	2005 DC	1989 DC SNH	1994 SNH 2000 DC LCS
Construction	A reinforced concrete structure, one-story	A reinforced concrete structure, one-story	A reinforced concrete structure, two-stories	A timber structure, two-stories	A steel structure, one-story	
Capacity/Number of staff	25 / 10	35 / 7	35 / 10	10 / 10	30 / 9	25 / 9
Facility C	Facility Ka	Facility Ki	Facility E	Facility H	Facility T	Facility Ku
Social Welfare	Social Welfare	Social Welfare Corporation				
1992	1995	1979				
1992 DC SNH	1995 DC SNH	1998 DC HS NH 2000 SNH 2005 GH	2006 DC	2008 DC	2008 DC	2015 DC
A reinforced concrete structure	A reinforced concrete structure	A reinforced concrete structure, one-story	A timber structure, two-stories	A timber structure, two-stories	A timber structure, two-stories	A timber structure, one-story
20 / 8	20 / 6	15 / 8	10 / 5	10 / 4	10 / 4	10 / 5

note) DC:Day Care Facilities for the Elderly SNH:Special Nursing Home HNC:Home Nursing Care GH:Group Home LCH:Long-term Care Health Facility
LCS:Designated In-Home Long-Term Care Support Providers FLS:Facility for Livelihood Supporting NH:Nursing Home HS:Helper Station

central settlement at less than 1 km. Thereafter the facility supply by the local self-government body and a social welfare corporation “Hagi Syakaifukusi Jigyoudan” progresses, and one facility is being founded for every area in 1889 in many cases without Old mutsumi village and Old fukue village.

“Hagi Syakaifukusi Jigyoudan” is one kind of the social welfare corporation established by the Hagi self-government body.

3.2 Facility Supply Process in Northern part of Hagi

Table 1 indicates the number of facilities and capacity in each old towns and villages. As mentioned above, facility supply of present Hagi city began from the 1980s. Special elderly nursing home was established by the social welfare corporation from 1982 to 1998 in each towns and villages and almost all corporations established the day care facility together with the nursing home simultaneously. After that, since the demand of social welfare services increased, the day care facility was installed in the special elderly nursing home which is not offering day care service.

In old Susa town, other than the large-scale day care facility with the special nursing home, Facility Y was independently established in 1996 by old Susa self-government body. After the introduction of nursing care insurance in 2000, “Hagi Syakaifukusi Jigyoudan” established Facility U in Esaki area of old Tamagawa town in 2005 and Facility As in Sasanami area of old Asahi village in 2007. The Facility Y management organization was changed into “Hagi Syakaifukusi Jigyoudan” from the self-government body in 2011 because of the personnel expenses problem. In old Tamagawa town where a size of population is large, the facility was established by the corporation for profit and the medical corporation at the center in the Esaki area. In Abu town, the nursing home for the aged was established in 1961 and the day care facility for the elderly was installed in it in 1998. Moreover, the special elderly nursing home was established in 2000. Thereafter, four small-scale facilities were established from 2006 to 2015.

As mentioned above, in old Susa town and old Tamagawa town, facility supply is progressing by the

corporation for profit and “Hagi Syakaifukusi Jigyoudan”, and there is much capacity of facilities. However, in other four old towns and villages, facility supply is not progressing, and there is little capacity of facilities. In six old towns and villages of present Hagi city, there is a difference between the areas. On the other hand, in Abu town which did not merge with old Hagi city, facility supply is progressing by one social welfare corporation, and the demand of social welfare services is fulfilled.

3.3 Outline of the Facilities

Outline of the facilities in Northern part of Hagi is indicated in Table 2. There are Facility Su and Facility Y in old Susa town, and the capacity of them is each 25 and 35. Both facilities are equipped with the mechanical bathtub corresponding to wheelchair elderly people. There are Facility A and Facility U in old Tamagawa town, and the capacity of them is each 35 and 10. Although there is the mechanical bathtub in Facility A, there is no mechanical bathtub in Facility U because Facility U is the facility type which repaired the private house. But wheelchair elderly people can also use Facility U. There is Facility M in old Mutsumi village, and the capacity of it is 25. There is Facility Si in old Fukue village, and the capacity of it is 30. There is Facility Ka in old Kawakami village, and the capacity of it is 20. Three facilities are equipped with the mechanical bathtub. There are Facility C and Facility As in old Asahi village, and the capacity of them is each 20 and 10. With regard to Facility C there is the mechanical bathtub. Facility As was the facility type which repaired the private house. Facility As was managed by “Hagi Syakaifukusi Jigyoudan” from 2007 to 2013 and is managed by the medical corporation from 2013.

In Abu town, there are one large-scale day care facility with the special nursing home and four small-scale day care facilities. In four small facilities, one facility is the facility type which repaired the closed school and three facilities are the facility type which repaired the private house, and the capacity of them is 10. Facility supply in Abu town is progressing by one social welfare corporation, and all the areas of the

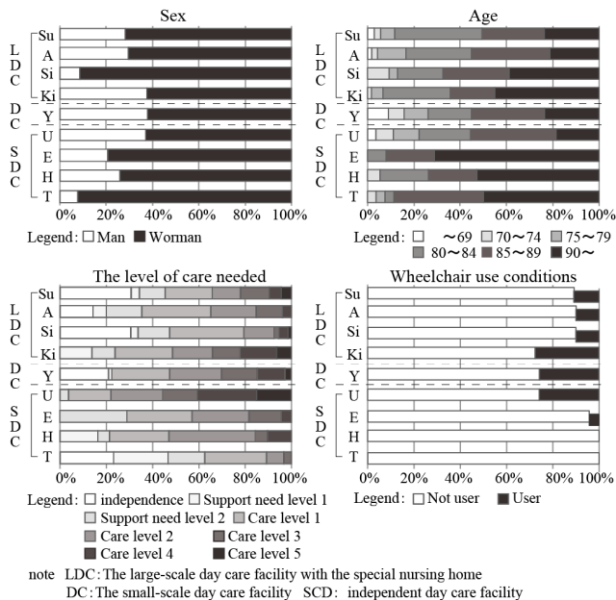


Fig.3. User's Characteristic

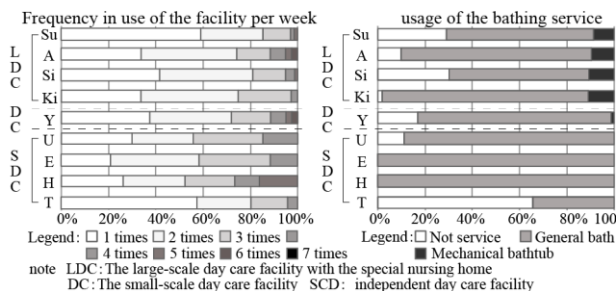


Fig.4. Frequency in Use of the Facility Per Week and Usage of the Bathing Service

geographic division in 1889 have one or more facilities. The social welfare corporation is advancing the miniaturization of facilities and reduced the capacity of the Facility Ki from 30 to 15. Because various social welfare services for the elderly are provided in Facility Ki, Facility Ki is functioning as a center core of social welfare for the elderly.

4. User's Characteristic and Utilization Pattern of the Facility

Nine facilities from which investigation cooperation was obtained were classified into three types. Type LDC can be defined as the type of the large-scale day care facility with the special nursing home. Facility Su, Facility A, Facility Si and Facility Ki were classified into Type LDC. Type DC can be defined as the type of the independent day care facility with the capacity of about 30. Facility Y was classified into Type DC. Type SCD can be defined as the type of the small-scale day care facility with the capacity of about 10. Facility U, Facility E, Facility H and Facility T were classified into Type SCD.

User's Characteristic is indicated in Figure 5. A woman occupies more than 60% of a day care facility user. There are few differences among three types.

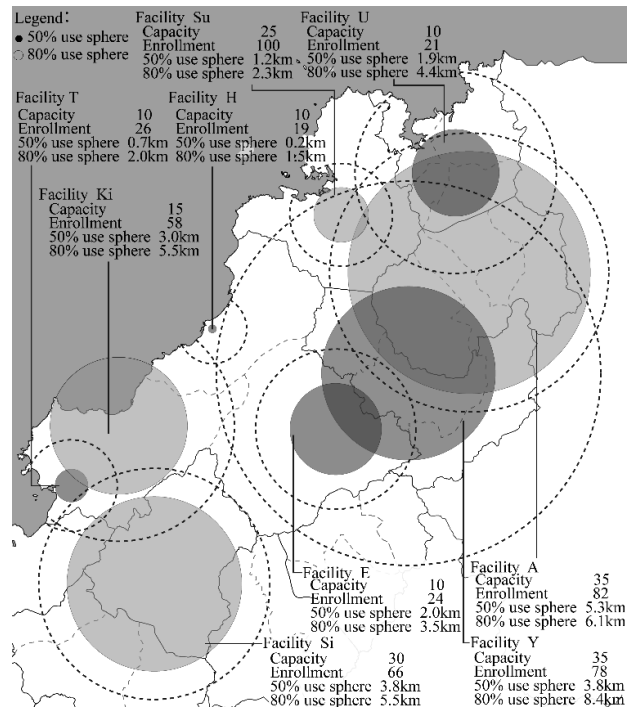


Fig.5. Distance from a User's House to a Facility

Although the rate of octogenarian occupies more than 50% of a day care facility user in almost all facilities, the rate of nonagenarian is different among facilities. In Facility Ki, Facility Si, Facility E, Facility H and Facility T, the rate of nonagenarian is over 40%. Especially, in Facility E, it is over 70%. The rate under 80 years old in Type SCD is lower than other types. As for the level of care needed, there are many differences among facilities. Although, in almost all facilities, the rate of the care-level 3-5 is from 10 to 20%, it is over 30% in Facility Ki, Facility Y and Facility U. Therefore, wheelchair elderly people are about 30% in these three facilities. Especially, although Facility U is not equipped with the mechanical bathtub corresponding to wheelchair elderly people, a user's level of care needed is the highest.

Frequency in use of the facility per week and usage of the bathing service are indicated in Fig.4. In all facilities, more than half of users use the facility once or twice per week, and there is almost no user who uses the facility more than 5 times per week. In the facilities of Type SCD, there are more users who use the facility 3 times or more per week than other types. Most users receive the bathing service in almost all facilities except Facility T near the facility of Type LDC. About 10% of users use the mechanical bathtub in the facilities of Type LDC, and 1% of users use it in the facility of Type DC.

As mentioned above, the relationship between user's care level and facility equipment is low in old towns and village of present Hagi city because Facility U of Type SCD also has many users of the high care level. In Abu town, Division of roles among facilities is performed because Facility Ki of Type LDC has many users with the high level of care needed and other

Table 3. The User's Pickup Time by the Staff

Name of facility	Type of facility	Number of user in number of user/ Average of user	Type of a car. Number of cars		Transportation time(number of user/ number of staff)			Transp ortation time for a user (min.)	The user's transportation time by staff (min.)
			Picking up	Dropping off	Picking up	Dropping off	total		
Facility Y	DC	16/16.8	S1 M4	S1 M3	230(13/6)	275(14/8)	505(27/14)	18.7	18.7
Facility Si	LDC	13/15.5	L2 M1 S2	L2 S2	200(13/6)	213(13/5)	413(26/11)	15.9	15.9
Facility Ki	LDC	16/15.2	L2 W1 M	L1 W1 M1	181(16)	163(16)	344(32)	10.8	15.8
Facility Su	LDC	15/20	L2 S1 M3	L2 M1 S1	152(14/7)	136(14/6)	288(28/13)	10.3	14.7
Facility H	SDC	5/4.8	M1	M1	80(5)	67(5)	147(10)	14.7	14.7
Facility A	LDC	26/30	L3 S1 M3	L3 M3	322(26/8)	269(26/7)	591(52/15)	11.4	11.4
Facility E	SDC	7/9.0	M3	M2	96(7)	63(7)	159(14)	11.4	11.4
Facility T	SDC	6/5.6	W1	W1	73(6)	55(6)	128(12)	10.7	10.7
Facility U	SDC	7/6.3	W1 M2	W1 M2	62(6/3)	68(7/3)	130(13/6)	10.0	10.0

note1: Transportation time for a user(min.)= \sum Transportation time of the picking up +

Transportation time of the dropping off / Total number of user/

note2: The user's transportation time by staff(min.)= \sum

Transportation time of the picking up \times Number of staff +

Transportation time of the dropping off \times Number of staff / Total number of user/

Number of staff: Number of staff in a car

Total number of user: The total number of user of transportation time of the picking up and dropping off

note3: L: A lift vehicle W: A station wagon S: A standard vehicle M: A light motor vehicle

note4: LDC: A large day care facility with a nursing home DC: A single day care facility

SDC: A small day care facility

facilities of Type SCD have many users with the low level of care needed.

5. Utilization Characteristic of the Facilities

5.1 Distance to the Facility of the User

Distance from a user's house to a facility is indicated in Figure 3. As for the facilities classified into Type LDC except Facility Su, distance including 50% of users and distance including 80% of users tend to become long. They are located at the center as of 1889 in each old towns and villages, and they have accepted the user from each old towns and villages whole region. In Facility Su, many of users are concentrating near

Facility Su and distance including 50% of users is narrower than other facilities of Type LDC at 1.2 km. As for facility Y, although half of users live in the area in which Facility Y is located, distance including 50% of users is long at 3.8 km. As for facility U, distance including 50% of users is narrow at 1.9km because there is much population 75 years or older in Esaki area where facility U is located. However, since there is a user from other areas who likes the facility which repaired the private house, distance including 80% of users is longer than Facility Su.

In Abu town, since division of roles among facilities is performed, distance from a user's house to a facility is short in Type SDC and distance from a user's house to a facility is long in Type LDC.

5.2 Pickup Time of Users by a Facility

The user's pickup time by the staff are indicated in Table 3. The Pickup time of users by a facility and the total number of users using pickup service and the user's pickup time by the staff. The user's pickup time by the staff is classified in three groups. Facility Y is classified into group 1, and the user's pickup time by the staff of group 1 is about 20 minutes. Facility Su, Facility Si, Facility Ki and Facility H are classified into

Table 4. Local Government Type by Facility Supply

	type1	type2	type3	type4				
					Old kawakami village	Old mutsumi village	Old asahi village	Old fukue village
The population of the municipalities 2010	983	1731	1795	2106	3088	3055	3743	
The number of the municipalities before the merger of Meiji Era in 1889	1	5	2	4	4	7	7	
The number of the municipalities after the merger of Meiji Era in 1889	1	2	2	2	2	2	3	
Year of establishment the regional nucleus facility / the small-scale day care facility	-1999	1/0	1/0	1/0	1/0	2/0	1/0	1/0
	2000-2009	1/0	1/0	1/1	1/0	2/0	1/1	1/3
	2010-2014	1/0	1/0	1/1	1/0	2/0	1/3	1/4
	Sum	1	1	2	1	2	4	5
The facility capacity	20	25	30	30	60	95	55	
The number of the care-needed certificated person 2015	85	150	156	182	268	265	432	
The fulfillment rate 2015	0.235	0.167	0.192	0.165	0.224	0.358	0.127	
Distance to the facility of the user 50% / 80%	The regional nucleus facility				3.8/5.5	1.2/2.3	5.3/6.1	3.0/5.5
	The small-scale day care					3.8/8.4	1.9/4.4	1.0/2.3
The user's pickup time by the staff/	The regional nucleus facility				15.9/15.9	10.3/14.7	11.4/11.4	10.8/15.8
The Pickup time of users by a facility	The small-scale day care					18.7/18.7	10.0/10.0	12.3/12.3

note) A large-scale day care facility with the special nursing home and a independent day care facility is regarded as the regional nucleus facility.

group 2, and the user's pickup time by the staff of group 2 is about 15 minutes. Facility A, Facility U, Facility E and Facility T are classified into group 3, and the user's pickup time by the staff of group 3 is about 10 minutes.

Facilities of Type LDC and Type DC are classified into group 2 in many cases. Although Facility A and Facility Y have long distance from the user's house to the facility, they are different about the user's pickup time by the staff. The kind of vehicle for pickup service, the division of roles for pickup service, and time to guide users to the inside and outside of a pickup vehicle are considered as a reason. Moreover, since there is a facility where the user's pickup time by the staff is long and where the pickup time of users is short, it is also considered that the number of the staff in a pickup vehicle has influenced.

As mentioned above, it is thought possible by devising the pickup method to shorten the user's pickup time by the staff.

6. Local Government Type by Facility Supply

Local government types by facility supply are indicated in Table 4. 7 old towns and villages are classified into 4 types. Type 1 can be defined as the type in which facility supply hardly advanced after the day care facility with the special nursing home was established. Old Kawakami village, old Mutsumi village, old Asahi village and old Fukue village apply to Type 1. In local self-government bodies classified into Type 1, the area in which the user using the facility lives is large, and the user's pickup time by the staff is also long. However, the fulfillment rate exceeds 0.2 in old towns and villages, because there are few number of elderly people requiring nursing care. In this paper, the fulfillment rate of facility demand means ration of a facility capacity to the number of the care-needed certificated person. Type 2 can be defined as the type in which there are two regional nucleus facilities in one self-government body. Old Susa town applies to Type 2. Since the facility of Type LDC is located in the

densely populated district, distance including 50% of users and distance including 80% of users are narrower and the user's pickup time by the staff is shorter than other facilities of Type LDC. On the other hand, in the facility of Type DC, the area in which the user using the facility lives is large, and the user's pickup time by the staff is the longest. Type 3 can be defined as the type in which facility supply is progressing. Old Tamagawa town applies to Type 3. There is much population in old Tamagawa town, but there was one facility of Type SCD except the facility of Type LDC. Therefore, Medical Corporation and Corporation for Profit supplied facilities newly after 2010. This type of facility supply is a general type to be seen in the urban area, and the fulfilment rate as of this type in 2015 becomes highest in 4 types. The area of Type SCD in which the user using the facility lives is smaller and the user's pickup time of Type SCD by the staff is shorter than Type LDC. However, the difference of the user's pickup time between Type SCD and Type LDC is small by improving the pickup method. Type 4 can be defined as the type in which one corporation supplied the facilities with Type LDC and Type SCD. Abu town applies to Type 4. In Abu town, since division of roles among facilities is performed, the area in which the user using the facility lives is small and the user's pickup time by the staff is short. Although there are many facilities in Abu-cho, since population is also large, the fulfilment rate is the lowest with 0.12 in 4 types.

7. Conclusions

1) By the policy named Gold Plan upon which the Japanese government decided in 1989, one facility of Type LDC which a social welfare corporation manages was established in each towns and villages. Thereafter, in old Susa town, old Tamagawa town and Abu town where each population is large, new facilities were established by the self-government body, "Hagi Syakaifukusi Jigyoudan" and the social welfare corporation.

2) In old towns and villages of present Hagi city, since there are users with the high level of care needed not only in Type LDC but also Type SCD, it is thought that they have not made facility selection with facility equipment. On the other hand, in Abu town, since the facility of Type LDC has many users with the high level of care needed and other facilities of Type SCD have many users with the low level of care needed, division of roles among facilities is performed.

3) Although the facility located at the center of the local government where population is large has the small area in which the user using the facility lives, the facility in the local government where a colony is scattering has the large area. In Abu town, since division of roles among facilities is performed and facilities are equally located, the area in which the user using the facility lives is small and the user's pickup time by the staff is short.

4) 7 old towns and villages are classified into 4 types by facility supply. Therefore, it is considered that the local characteristic and the size of population of each self-government body have influenced facility supply greatly.

In the self-governing body where population is small, since the demand of social welfare services can be fulfilled by the facility of Type LDC, it is thought that the present number of facilities is sufficient. On the other hand, in the self-governing body where population is large, facilities of Type SCD are supplied by medical corporations and corporation for profit. In the area which cannot expect facility supply by other corporations, it is the effective method of facility supply that the corporation managing the facility of Type LDC establishes the facility of Type SCD as like Abu town. Furthermore, in old Susa town which has a large area in north and south, the facility of Type LDC is newly supplied by the self-government body. As mentioned above, it is important to consider the method of facility supply from a size of population and the local characteristic.

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