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Medical service areas in Okinawa

Part II. Local features of southern Okinawa

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INTRODUCTION

Based on the basic policy for health and medical services(1), Okinawa Island is divided into four areas such as northern, central, southern and Naha to meet the medical needs of the residents of each area. The author has reported in Part I(2) that the sufficiency rate for medical services within the areas in northern, central and Naha areas was not high enough, but had recognized the conformity between the planned areas and the empirical ones. The southern area, however, had not recognized to be independent medical service area and was practically included into the Naha area.

In this paper, the author had studied local features of the southern area in order to make clear the reasons of non-independency as a service area.

MATERIALS

Using official statistics, reports and the related records (3-5), the author had paid attention to geographical distribution of medical facilities, daily bus runs by lines, commutation and school regions, structure of industry, and central place indices of each municipality in southern part of Okinawa Island.

RESULTS

1. Geographical distribution of medical facilities

Geographical distribution of medical facilities in the southern Okinawa and neighbor municipalities were shown as Fig. 1. In the southern medical service area administratively determined, which has 175, 798 population as of January 1, 1981 excluding offshore islands, there are quite few medical facilities. There are nine hospitals (thereafter increased to ten hospitals as of April 1980) of which general hospitals are only three, mental hospitals are five and TB sanatorium is one. The fact indicates lower level of medical services for general medical care and no medical facilities exist in Tamagusuku and Chinen. There is a clinic at Gushikami, it is managed under a medical service man(6) though. To the contrary, there are 16 hospitals and 170 clinics of which some are provided with in-patient care services at Naha City being close to southern area. These numbers of facilities account for 33 percent of all hospitals and 43 percent of all clinics in Okinawa Prefecture.

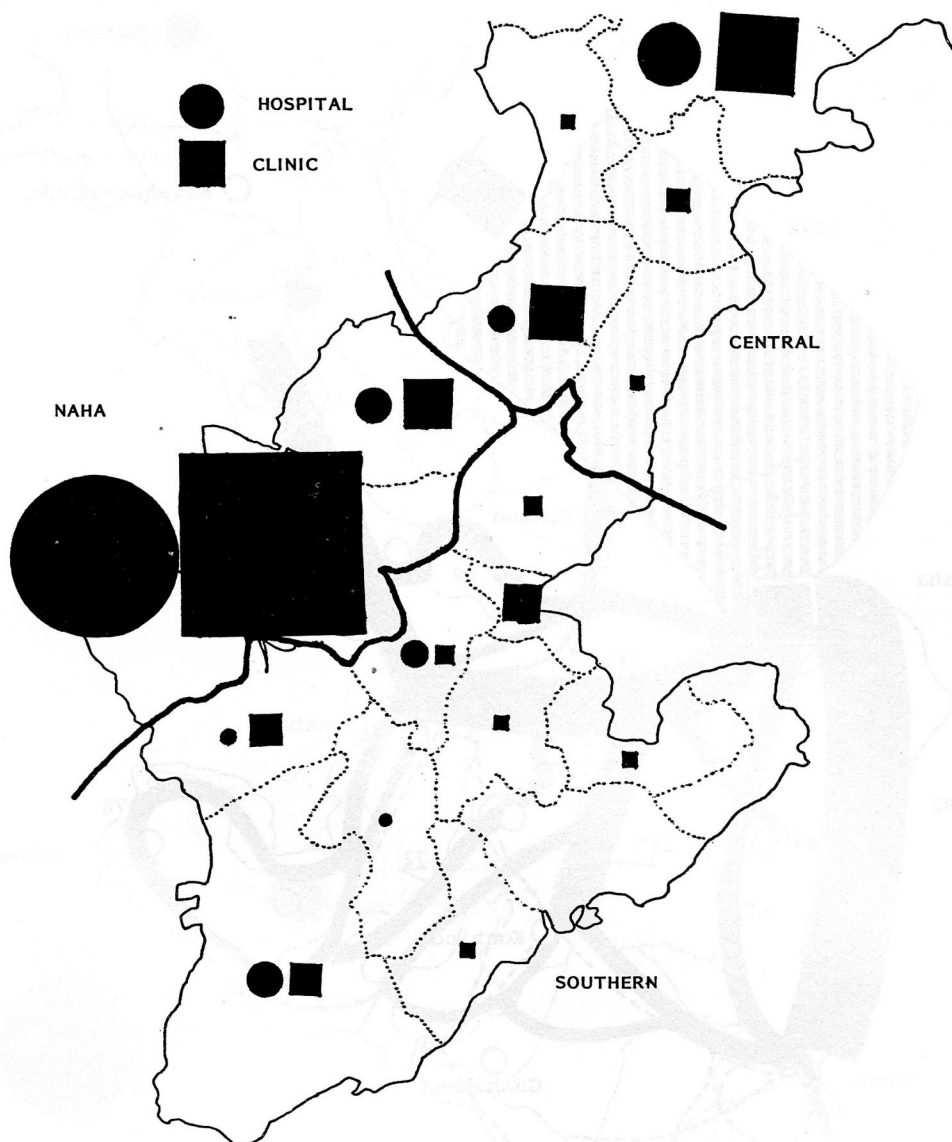


Fig. 1. Geographical distribution of medical facilities. The size of the mark stands for relative numbers of facilities and the smallest square and circle mean one hospital or one clinic.

2. Public transportation networks

Since public transportation is an obviously important factor for use of medical services and bus is the only public mass transportation system in Okinawa, daily bus runs by lines were studied. As be shown in Fig. 2, at the southern area and surrounding areas most lines start and terminate at Naha City.

Among three lines between Itoman and Naha, the main line has 352 runs daily, followed by 240 runs between Yonabaru and Naha, 160 runs between Kochinda and Naha, 159 runs between Nishihara and Naha via Yonabaru, 90 runs between Nishihara and Naha via Shuri, 78 runs between Chinen and Naha via Yonabaru, 72 runs between Tamagusuku and Naha via Yonabaru. Lines run across the southern area are less than 25 runs daily.

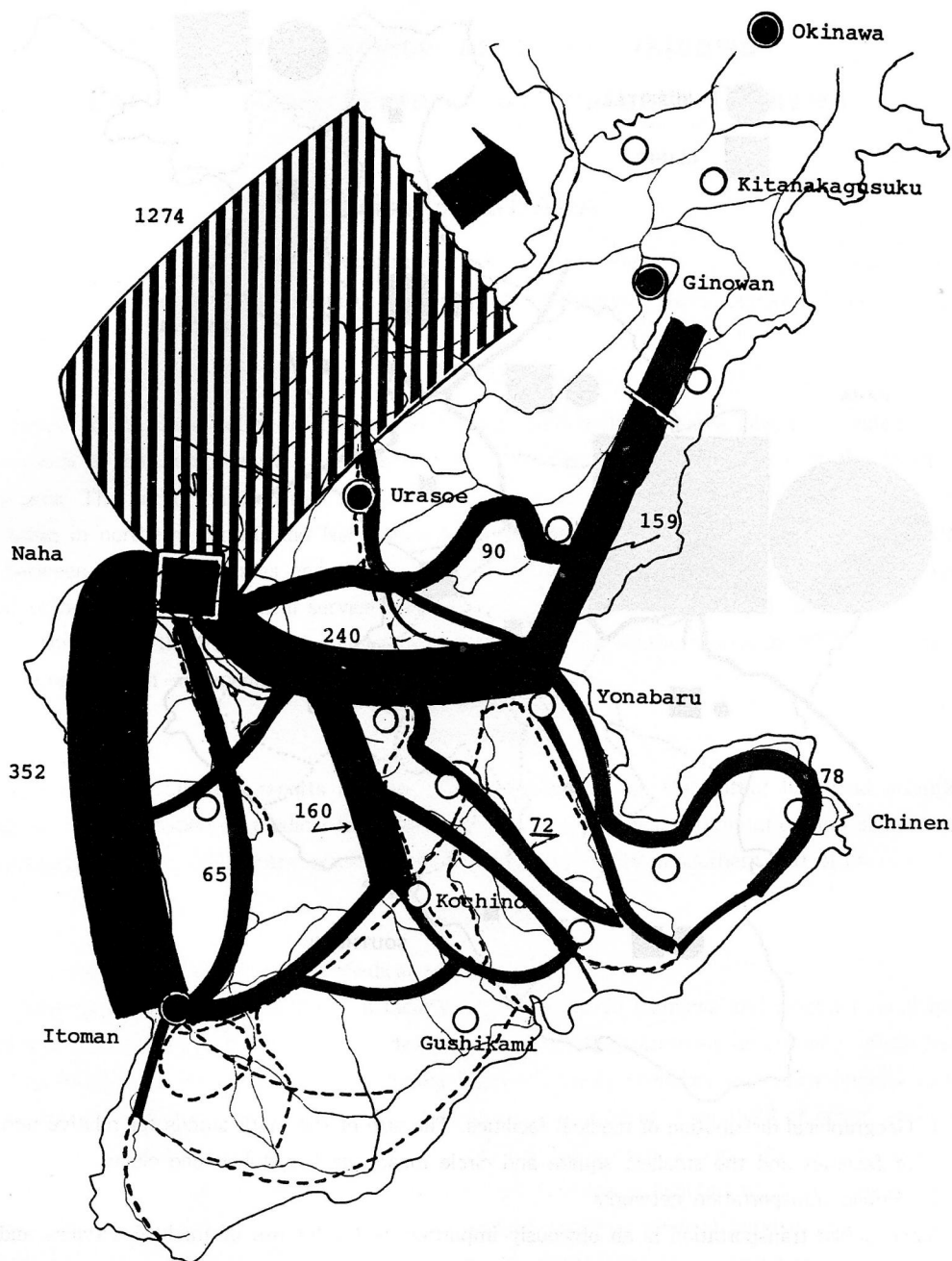


Fig. 2. Daily bus runs by lines. The number of each line shows daily bus runs and dotted lines stand for less than 25 runs daily.

As be noted, no central place has been recognized in the southern medical service area administratively determined and it is also obvious that the true central place is Naha City. This fact has also conformed by public transportation networks observed. Moreover, the trunk line of the Island which is starting Naha and connecting central and northern part of Okinawa Island (the national road route 58) has 1,274 runs daily which suggests strong great-sphere functions of Naha.

3. Central places

Central place indices of each municipality as a geographical concept have been calculated based on the trade statistics of 1979. As reported by Nishimura(7), sum of retail minus retail of food and drinks in total amount of annual trade has shown the level of area-wide functions of the area that will be the best indicator of central place.

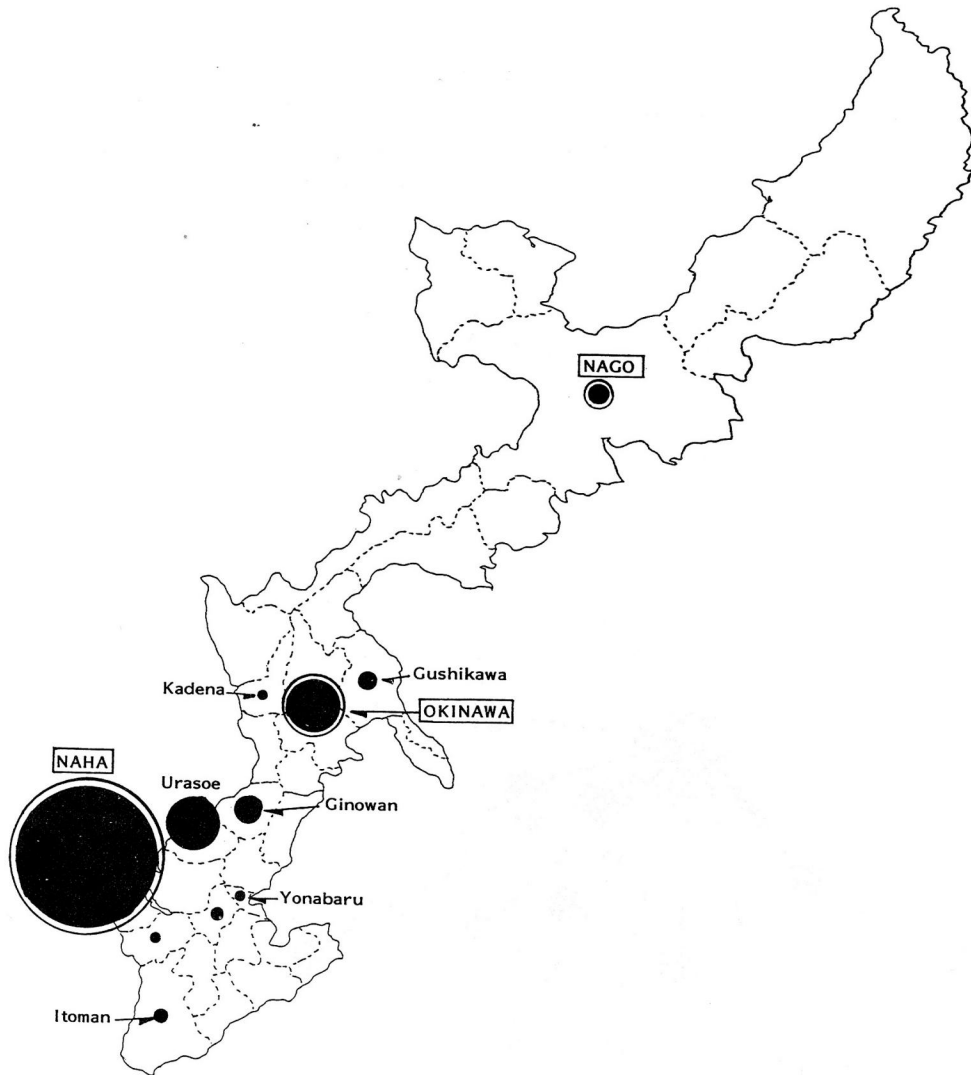


Fig. 3. Central place indices. Central place index of each municipality is presented in comparison with the median as 1.00 at Gushikami.

The results were rearranged to be 1.00 at median of Gushikami among 53 municipalities in Okinawa. As estimated, it was 134.3 the highest at Naha, followed by 39.8 at Okinawa City, 35.6 at Urasoe, 17.9 at Ginowan, 14.5 at Nago, 10.6 at Gushikawa City and the rest were very low. Naha, Okinawa City, and Nago are placed as the central places of Naha, central and northern medical service area respectively and they are recognized to be conformed with the empirical central places.

Central place indices at municipalities of the southern medical service area were too low to form a central place and therefore no central place has been recognized in this area. In the planning of the Prefecture, Itoman City is placed as the central city in the area, but it was only 6.0, and followed by 4.2 at Haeburu, 3.8 at Tomigusuku and Yonabaru, 2.2 at Nishihara, 1.3 at Kochinda and Ozato, 1.1 at Sashiki, 1.0 at Gushikami and Tamagusuku, and 0.1 at Chinen in the order named.

4. Commutation and school regions

Commutation and school-attendance areas of southern part of Okinawa based on the 1975 population census were shown in Fig. 4. Traveling within the municipality they live were 90.5 percent at Naha, 65.2 percent at Itoman, 55.5 percent at Urasoe, 52.0 percent at Kochinda, 51.5 percent at Gushikami, 50.5 percent at Haeburu, 49.5 percent at Yonabaru, 49.4 percent at Nishihara, 45.4 percent at Tamagusuku, 44.2 percent at Ozato, 43.1 percent at Tomigusuku, 43.1 percent at Chinen and 38.4 percent at Sashiki.

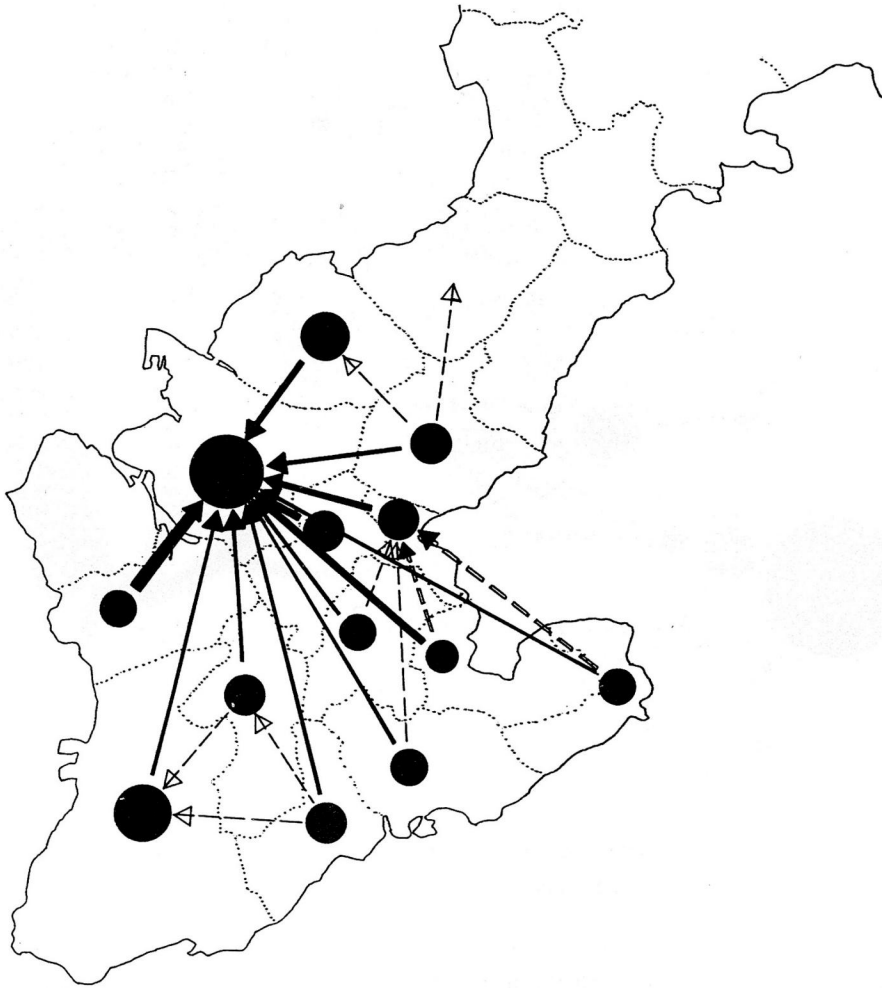


Fig. 4. Commutation and school regions. The circle of each municipality means relative proportion of traveling within own municipality, and the size and direction of the arrows stand for traveling to the indicated direction.

Traveling to Naha City was the highest, 45.6 percent from Tomigusuku, followed by 34.7 percent from Urasoe, 32.8 percent from Haeburu, 30.8 percent from Sashiki, 30.7 percent from Yonabaru, 29.5 percent from Ozato, 29.1 percent from Kochinda, 28.1 percent from Nishihara, 28.0 percent from Tamagusuku, 27.2 percent from Gushikami, 26.2 percent from Itoman and 25.9 percent from Chinen.

Besides these, traveling to Yonabaru has been observed as 12.4 percent from Chinen, 10.5 percent from Sashiki, 7.2 percent from Ozato and 6.9 percent from Tamagusuku. Traveling to Itoman was 7.1 percent from Kochinda, 6.4 percent from Gushikami and was negligible from other municipalities.

These data have also indicated that Naha City is the nucleus of the southern area including Yonabaru as a small nucleus. And Itoman has a very weak attractive force for consumers outside the city to the contrary and too low in functions as a nucleus city.

5. Industrial structure

Industrial structure as a factor indicating local feature was shown in Table 1. Among 11 municipalities of the southern area, only two municipalities of Yonabaru and Sashiki were less than the prefectural average proportion of the primary industry workers in all employed persons 15 years old and over in Okinawa. When the prefectural average was 100, they were 246.8 at Gushikami as the top, 226.6 at Ozato, 199.3 at Kochinda, 184.2 at Itoman, 168.1 at Chinen, 97.8 at Sashiki and 25.2 at Yonabaru.

Table 1. Industrial structure

	Primary industry ¹⁾		Secondary industry ²⁾		Tertiary industry ³⁾	
All Okinawa	13.9 %	100.0	20.8 %	100.0	64.7 %	100.0
Itoman	25.6	184.2	17.0	81.7	57.1	88.3
Nishihara	14.9	107.2	29.2	140.4	55.3	85.5
Tomigusuku	16.7	120.1	17.9	86.1	64.6	99.8
Kochinda	27.7	199.3	18.6	89.4	53.4	82.5
Gushikami	34.3	246.8	16.5	79.3	49.1	75.9
Tamagusuku	25.3	110.1	23.5	113.0	50.6	78.2
Chinen	23.4	168.1	23.3	112.0	53.1	82.1
Sashiki	13.6	97.8	24.7	118.8	61.4	94.9
Yonabaru	3.5	25.2	24.5	117.8	71.1	109.9
Ozato	31.5	226.6	15.7	75.5	52.3	80.8
Haeburu	17.8	128.1	26.9	129.3	54.8	84.7

The data was rearranged by Sakihara based on the 1975 population census.

- 1) This category is including a) agriculture, b) forestry and hunting, c) fishery and aquaculture.
- 2) These are a) mining, b) construction, c) manufacturing.
- 3) These are a) wholesale and retail trade, b) finance and insurance, c) real estate, d) transport and communication, e) electricity, gas, water and steam, f) services, g) government, and h) unclassifiable.

The proportion of the secondary industry was 140.4 at Nishihara as the top and other five municipalities such as Haeburu, Sashiki, Yonabaru, Tamagusuku and Chinen were more than the average.

And Itoman, Tomigusuku, Kochinda, Gushikami and Ozato were lower than that.

The proportion of the tertiary industry which means urbanized indicator was 109.9 at Yonabaru as the top and the rest ten municipalities were less than the average. However, Tomigusuku and Sashiki were almost same level as the average, and Itoman was at the fourth place in the order.

Top fives in each category of industry observed in the southern area were Gushikami, Ozato, Kochinda, Itoman, and Chinen for the primary industry; Nishihara, Haeburu, Sashiki, Yonabaru and Tamagusuku were for the secondary industry; Yonabaru, Tomigusuku, Sashiki, Itoman and Nishihara were for the tertiary industry.

In other words, municipalities with the rural characters were Gushikami, Ozato, Kochinda, Itoman and Chinen; ones with the industrialized characters were Nishihara, Tamagusuku and Haeburu; the rest with the urbanized characters were Yonabaru, Tomigusuku and Sashiki. Both Tomigusuku and Haeburu just be lie by Naha City have the most close relations in many aspects with Naha and those municipalities be along the rout 329 between Naha and Nishihara via Yonabaru have characterized with the industrialized areas. The more they were far away from Naha, the more they were with the rural characters. Since Itoman is located at end of the southwest of the Island, it has characterized with the rural even if she has a larger size of population.

DISCUSSION

The primary object of setting up the medical service areas is to complete the medical care services within the area. If the sufficiency rate for the medical care services within the area was not high enough, it means that unbalance in medical supply and demand relations be existed.

Supply and demand relations in medical services are basically differed from ones in general consumers' behavior. Medical supply has control over medical demands and develop them on one hand. But when medical supplies are considerably low, actualization of the medical needs will be repressed and or the sphere of action of the patients will be enlarged to the area beyond the usual daily life areas.

The southern part of Okinawa Island is the just typical example of this social phenomenon. Since it is considerably low in general medical care services at each municipality, and besides that Naha City, at where higher level of medical care services are available, is so close that it will be considered to be quite natural to depend upon Naha City for medical care services.

Since all of the bus, the only mass transportation system in Okinawa, are operated by private companies, and therefore payability has always priority to all other reasons, bus operations intermunicipality of the southern Okinawa are limited. Moreover, the central place indices showing area-wide functions of the area were lower and therefore municipalities with a function as central place were not existed in the southern part of Okinawa. In this area, higher dependency to Naha for shopping of daily necessities would be easily presumed from the excessive high score in index of central place at Naha.

Observing the commutation and school regions, and industrial structure, the place that has nucleus functions is Naha City with no doubt and to the contrary, Itoman that is planned to be the central place of the southern medical service area by the prefectural authority, has not attracted by the people of neighbor municipalities and the area-wide urban functions are also weak.

In the southern area, Yonabaru has rather the stronger functions and is considered to be a sub-

center of the area.

When the medical service areas are determined, it will not be sufficient to take into account the spacial distribution of the medical facilities, but considerations for the local features as be mentioned will be essential to meet the medical needs of residents.

In summary, when we simply allocate medical facilities at the areas with lower supply for medical care services, sufficiency for medical care would not be mechanically improved. For appropriate and reasonable decision - making in allocation of medical facilities, we should take account of these local features. In establishing medical service areas, we need to make a plan for the residents to meet their medical needs and other daily life needs as well, and consequently formation of the true central place is the necessity. In this connection, conformity of the medical service areas administratively determined and the regional planning for public services of the Prefecture (8) should be considered at first.

CONCLUSION

As the results of studying local features of the southern part of Okinawa Island and the neighbor municipalities, it has observed that southern medical service area was extremely low for medical care services and no central place with area - wide urban functions was existed. The actual central place was Naha City that provide the residents of the southern area with various social services in great quantity and quality and consequently it has also observed that the residents of the southern area depend upon Naha for their use of medical care services and other daily necessities.

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- 4) Okinawa Transportation Office: Annual report on transportation in Okinawa (Gyomu Gaikyo), 1979
- 5) Bureau of Statistics, Office of the Prime Minister: 1975 Population Census of Japan, Vol. 3, Part 47
- 6) Medical service man is originally defined by Civil Administration Ordinance No. 43 in 1951 as a person who has received medical training for at least one year under the direct supervision and guidance of or in association with a qualified licensed physician and is authorized to practice first aid, care of the sick, diagnosis and treatment of minor ailments, performance of minor surgical procedures, so forth, and is also authorized by the Ministry of Health and Welfare after the reversion of administration of Okinawa to Japan.
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