

Aging of Large Cities and Medical and Nursing Care Issues: Estimate of Future Numbers of Doctors and Hospital Beds and Future Facility Capacity Based on Trend Data

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Abstract

The purpose of this study is to grasp the current status of nursing care, particularly in large cities, by identifying changes in the numbers of doctors and general hospital beds and the capacity of nursing care facilities in the past 10 years and to forecast future numbers. In order to look at changes in the numbers of doctors and general hospital beds in each secondary medical care area in the past 10 years amid the drastic change in the area demarcation following the major consolidation of municipalities, we recalibrated the data for 2004 in line with the demarcation of the secondary medical areas in 2014 and calculated the numbers of doctors and general hospital beds in 2004 and 2014 in each area. In addition, we estimated the supply of facilities for elderly people in 2025 based on changes in the facility capacity between 2014 and 2016. At the same time, we estimated an excess or shortage of facilities for elderly people by region in 2025 by multiplying the estimated number of people aged 75 or older by the ratio of the capacity of such facilities to the number of people aged 75 or older in 2015 (0.081). As a result, it was found that in the whole of Japan, the number of doctors increased 15% during the 10 years from 2004 to 2014, while the number of hospital beds decreased 7%. In large cities, the number of doctors increased remarkably but the number of hospital beds declined slightly. In the Tokyo metropolitan area and Fukuoka in particular, the increase in the number of doctors was prominent and the number of doctors per bed also rose steeply. Concerning facilities for elderly people, the capacity of facilities for elderly people recorded an increase matching the growth in the number of people aged 75 or older only in the Tokyo metropolitan area. On the other hand, in other large cities, the increase in the capacity of facilities for elderly people did not keep pace with the growth in the number of people aged 75 or older. If the current situation continues, it is highly likely that the capacity of facilities for elderly people will fall far short of the necessary capacity, resulting in a steep rise in the number of elderly people with nowhere to go in order to receive nursing care.

Keywords: number of doctors, number of general hospital beds, capacity of facilities for elderly people, time-sequential changes, secondary medical care area, large cities

JEL Classification: I11

I. Introduction

Community Health Care Visions are being formulated nationwide focusing toward 2025. Community Health Care Visions are attempts to estimate demand for each medical function in a community (a secondary medical care area in principle) in 2025. For example, from determining the number of necessary hospital beds for an area to allocation and coordination of hospital bed functions. Responding to regulatory obligations for prefectures to formulate their Community Health Care Visions, groups of representatives of medical care providers, municipal governments, and academics in the respective areas have begun discussing how they will provide future medical care services based on knowledge about the current status and prospects of future demand obtained from data provided by the central government. This clearly represents significant progress from the time when local governments formulated their medical care plans with little data to compare situations with other areas or data on future estimates.

However, because of lack of “data to show time sequential changes in the quantity of medical care resources in the respective areas” provided by the central government for discussions of Community Health Care Visions, these visions give an impression that they lack a time sequential viewpoint to examine trends specific to their individual areas. For example, suppose that both areas A and B currently have hospital beds totaling 1,000 and are forecasted to require 800 beds in 2025. Area A had 1,200 beds in 2005 and the number decreased by 200 during the past 10 years to the current 1,000. On the other hand, area B had 800 beds in 2005 and the number increased by 200 in the same 10 years to the current 1,000. In this case, while area A may adopt a policy to continue watching the situation, area B will be expected to take some significant actions to downsize bed numbers so that ruinous competition among medical care institutions can be avoided within the area. However, equipped only with present data along with the estimated future population and without past trend data, which is the case with the current scheme of Community Health Care Visions, it is highly probable that both areas A and B will adopt, more or less, the same kind of policy. To eliminate such a probability and design local medical care systems for 2025 that are more suited to actual future situations, it is indispensable to identify changes over time in the numbers of doctors and hospital beds in the respective areas.

The issue of the medical and nursing care refugee crisis in Tokyo and the three neighboring prefectures cautioned by the Metropolitan Area Committee of Japan Policy Council in 2015 also presupposes that without any time sequential data on the number of doctors and the capacity of medical facilities in the metropolitan region, the supply of medical and nursing

care facilities in the region surrounding the Tokyo metropolitan region will not keep pace with the expected rapid growth in the number of people aged 75 or older. However, if the deployment of doctors in areas surrounding Tokyo, which is faced with a significant shortage in the number of doctors, proceeds at a faster pace than the increase in the number of people aged 75 or older, along with development of medical and nursing care facilities in the Tokyo metropolitan region, then such a crisis will not arise. As seen in this example, it is essential to know whether the numbers of doctors and hospital beds in the area concerned show an upward or downward trend when considering the future supply of medical and nursing care services in the area.

The uneven distribution of doctors and hospital beds in large cities and depopulated areas has long been a major issue for medical care services in Japan and has a history of being discussed in many studies. Kobayashi et al. examined changes in the number of doctors between 1980 and 1990 at the municipal level and showed that the rapid increase in the number of doctors in the whole of Japan had not resolved the prevailing disparities between areas. Toyabe reported that the uneven distribution of doctors had instead been deteriorating since 2004, using data between 1996 and 2006. Sekimoto et al. focused on the 224 secondary medical care areas that did not experience major reconstruction between 1996 and 2010 and classified them into four groups according to quartiles of the total number of doctors per population. The results indicated that disparities among the groups had not been resolved despite an increase over time in the number of doctors per population in all four groups.

Maeda (2015) indicated yearly changes in the number of hospital beds by prefecture, which showed a 7% decrease in the whole of Japan from 2003 to 2013, with most prefectures seeing a decrease in the number of general hospital beds. On the other hand, research focusing on time sequential changes of the increase or decrease in medical and nursing care resources by region is rare, with no materials disclosed so far that show transitions of the numbers in doctors and hospital beds in each secondary medical care area in the country, even though such data is considered essential to discuss Community Health Care Visions. Additionally, no studies have been reported to date that focus on transitions in the capacity of facilities for elderly people at the regional level.

The purposes of this study are (1) to identify changes in the numbers of doctors and general hospital beds during the past 10 years in each secondary medical care area and (2) to identify changes in the numbers of doctors and general hospital beds in the past 10 years in large cities, provincial cities, and depopulated areas, respectively, by sorting changes in the numbers of doctors and hospital beds from 2004 to 2014 in each secondary medical care area and retotaling the numbers by types of regions, such as large cities, provincial cities, and depopulated areas. In addition, the study emphasizes analysis of situations in large cities and sets another major goal (3) to grasp the current capacity of medical and nursing care services in large cities by region, and forecast their future situations.

II. Methods

To identify changes in the numbers of doctors and general hospital beds by region, particularly in large cities, we (1) classified medical care areas throughout the country into large city type, provincial city type, and depopulated area type, (2) calculated the numbers of doctors and general hospital beds in each secondary medical care area for 2004 and 2014, and (3) calculated the increase or decrease in the numbers in each area. Based on the results, we calculated the increase or decrease in the numbers of doctors and hospital beds. In addition, to identify changes in the capacities of facilities for elderly people in large cities, we (4) calculated the capacities in large cities in 2015, as well as the rates of the increase or decrease in the capacities from 2014 to 2016. Based on an assumption that the capacities of facilities for elderly people continue changing at the same rates, we calculated estimated capacities of facilities for elderly people in 2025 and analyzed the obtained data.

II-1. Method to classify secondary medical care areas into large city type, provincial city type, and depopulated area type

In accordance with the following definitions based on population and population density, we classified the 344 secondary medical care areas that existed in 2015 into three types: 1) large city type, 2) provincial city type, and 3) depopulated area type.

(Definitions of the types of secondary medical care areas)

Large city type: An area with a “population of 1 million or over” or a “population density of 2,000/km² or over”

Provincial city type: An area with a “population of 0.2 million or over” or a “population of 0.1 - 0.2 million and a population density of 200/km² or over”

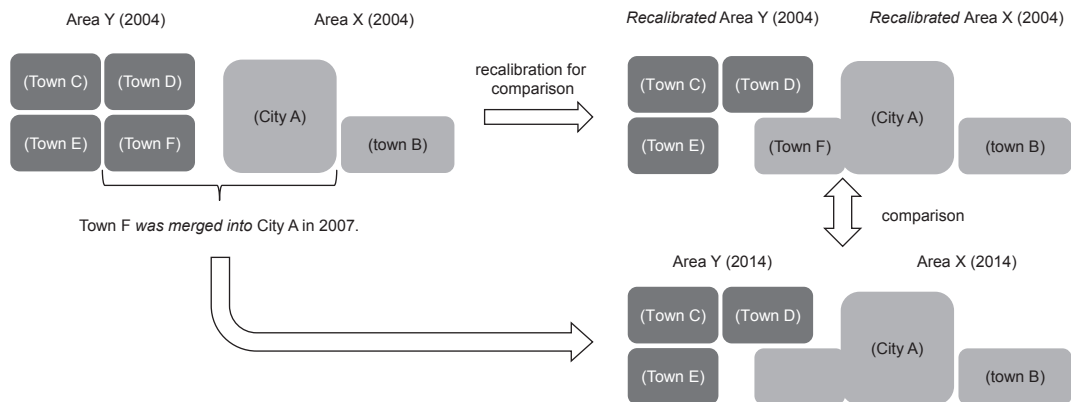
Depopulated area type: An area that does not fall into the above two types

Types of the respective medical care areas are indicated in the type columns of Tables 8-1 to 8-13 in the Appendix.

II-2. Method of preparing data on time sequential changes in the numbers of doctors and general hospital beds in each medical care area

There were 369 medical care areas and 2,463 municipalities in 2005, which decreased to 344 and 1,742 by 2015, respectively, marking losses of 25 and 721, respectively, during the 10 years. Since this prevents direct comparison between the medical care areas today and those 10 years before, we recalibrated the data for 2004 in line with the demarcation of the secondary medical care areas (municipalities) in 2014, as shown in Figure 1, before comparing the numbers of doctors and hospital beds in 2004 with the corresponding numbers today (2014).

Figure 1. A schematic illustration: recalibration of municipal demarcation in 2004 in line with that in 2014 for comparison



In 2004, a secondary medical care area X consisted of City A and Town B, and a secondary medical care area Y consisted of Town C, Town D, Town E and Town F. In 2007, Town F was merged into City A; the demarcation of the secondary medical care areas X and Y varied.

In this paper, for example, in order to look at changes in the area Y in the past 10 years, we calculated the total numbers of doctors and general hospital beds of Town C, Town D and Town E in 2004 as that of “the recalibrated area Y in 2004”, and compared this with that of “the area Y in 2014”.

To follow the above-mentioned procedure, we did the following:

- (1) identified present jurisdictions of the 721 municipalities that were lost in and after 2004 and
- (2) prepared a program to re-sort the numbers of doctors and hospital beds at the municipal level in 2004 according to the information obtained in step (1) to produce data available for comparison between 2004 and 2014 based on the same demarcations.

The sources of our data on the number of doctors by municipality in 2004 and 2014 are the Surveys of Physicians, Dentists, and Pharmacists (by municipality) conducted in 2004 and 2014, whereas the sources of data on the number of general hospital beds by municipality in 2004 and 2014 are the Surveys of Medical Institutions as of October 1, 2004 and 2014. As for the information on populations, data from the national census in 2005 and the Basic Resident Registration for 2015 were used. The data design and the procedure (1) were conducted by Takahashi while collection of data for 2004 and 2014, preparation of the program mentioned in (2), and preparation of the final data were conducted by Wellness Co. Ltd.

II-3. Analysis of changes in the numbers of doctors and general hospital beds

Based on the above-mentioned data, we first calculated changes in the numbers of doctors and general hospital beds in each secondary medical care area and illustrated part of the results with diagrams.

Next, we totaled the numbers (1) at the national level and (2) at the levels of large cities, provincial cities, and depopulated areas, then identified changes in the numbers of doctors and hospital beds during the past 10 years at the national level. Furthermore, we classified secondary medical care areas in large cities into the following four groups based on “levels of the numbers of doctors and hospital beds per population in 2004” and “rates of changes from 2004 to 2014”: 1) areas originally with small numbers of doctors/beds that saw further decrease (areas in a critical situation), 2) areas originally with small numbers of doctors/beds that saw increases (areas with favorable increases), 3) areas originally with large numbers of doctors/beds that saw decreases (areas with favorable decreases), and 4) areas originally with large numbers of doctors/beds that saw further increases (areas expected to make efforts to decrease the numbers).

II-4. Method to calculate the current and future capacity of facilities for elderly people

To grasp the current status and forecast future situations regarding the sufficiency of the capacity of facilities for elderly people in large cities, we calculated the capacity of facilities for elderly people in Sapporo, Sendai, Saitama Prefecture, Chiba Prefecture, the 23 Tokyo wards, the Tama region, Aichi Prefecture, Osaka Prefecture, Hiroshima City, and Fukuoka City for 2014, 2015, and 2016, respectively. Although information on individual facilities, which total 190,000 nationwide, is provided by respective prefectures in accordance with the Care Services Information Disclosure System, their total capacities by prefecture are not disclosed. In this situation, Care Review Inc. has created an original database by reading and re-sorting the information about all the 190,000 facilities disclosed by prefectures. By courtesy of Care Review Inc., we utilized their data on the capacity of facilities for elderly people in the above-mentioned regions for the years 2014, 2015, and 2016 to create data for analysis. The capacities of facilities for elderly people in this study refer to the total capacities of nursing care insurance facilities and specific facilities.

As of 2015, there are 81 nursing care beds per 1,000 people aged 75 or older according to the national average. The term “necessary capacity” in this study refers to the capacity required for each area to provide its people aged 75 or older with facilities for elderly people that equals the national average, which is calculated by multiplying the number of people aged 75 or older in each area in 2015, 2020, and 2025 by 0.081.

The “estimated capacity” in 2020 or 2025 refers to the forecasted capacity of facilities for elderly people in 2020 or 2025, which is calculated by multiplying the “yearly rate of change”

obtained from the changes in capacity in each area between 2014 and 2016 by 5 (or 10) and adding the obtained value to “the capacity of facilities for elderly people in 2015 in each area.”

The formula for the calculation of the estimated capacity for 2020 is as follows:
 (Estimated capacity in 2020)=(Capacity in 2015)+5×((Capacity in 2016-Capacity in 2014)/2).

III. Results

III-1. Changes in the number of doctors

First, we show changes in the total number of doctors (the numbers of hospital doctors + clinic doctors; hereafter referred as the number of doctors) in each area from 2004 to 2014.

III-1-1. Changes in the number of doctors in each secondary medical care area

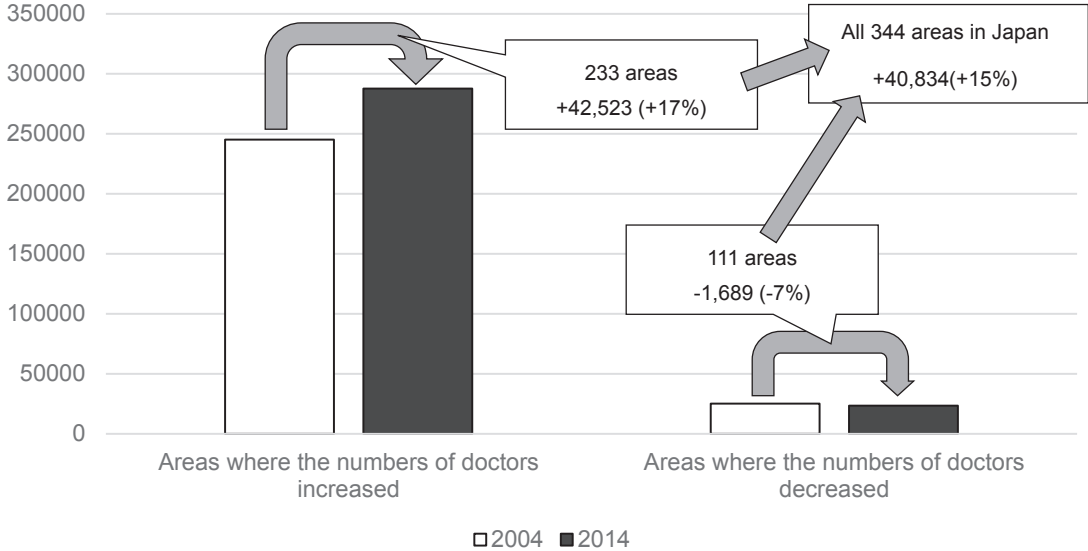
Tables 8-1 to 8-13 in the Appendix show changes in the numbers of doctors and general hospital beds in each of the 344 secondary medical care areas in Japan.

The secondary medical care areas are classified into three types, which are indicated in the column of area names with black for “LC or the large city type,” white for “PC or the provincial city type,” or gray for “DA or the depopulated area type.” In the column showing the rates of changes in the number of doctors, areas that saw an “increase of 30% or over” are marked with black and those that saw a “decrease” are marked with gray. In the same manner, in the column showing the rates of changes in the number of general hospital beds, areas that saw an “increase (0% or more)” are marked with black and those that saw a “decrease of 20% or over” are marked with gray.

An overview of the tables shows that large city names marked with black often have another black square to indicate an “increase of 30% or over” in the number of doctors while depopulated area names marked with gray often have another gray square to indicate a “decrease” in the number of doctors. The tables also show that areas with an increasing number of general hospital beds are more often found in large cities.

Figure 2. Changes in the numbers of doctors at the national level.

Changes in the numbers of doctors from 2004 to 2014



III-1-2. Changes in the number of doctors at the national level

Figure 2 illustrates the outline of changes in the number of doctors from 2004 to 2014 at the national level. Among the 344 secondary medical care areas in Japan, 233 areas saw an increase in the number of doctors. In these areas, doctors increased by 17% or 42,523 in total during the same 10 years. On the other hand, 111 areas saw a decrease in the number of doctors. In these areas, doctors decreased by 7% or 1,689 in total during the same 10 years.

In the whole of Japan, the number of doctors increased by 15% or 40,834 in the same 10 years.

III-1-3. Changes in the number of doctors in large cities, provincial cities, and depopulated areas

Table 1 shows changes in the number of doctors in large cities, provincial cities, and depopulated areas. In large cities, 51 out of 52 medical care areas saw increases in the number of doctors. Overall, areas in large cities saw a total increase of 21% or 26,447 in the number of doctors from 2004 to 2014. In provincial cities, 142 out of 171 medical care areas saw an increase in the number of doctors. Overall, the areas in provincial cities saw a total increase of 12% or 15,004 in the number of doctors from 2004 to 2014. On the other hand, in depopulated areas, 40 out of 121 medical care areas saw increases in the number of doctors while 81 medical care areas saw a decrease in the number of doctors, which totaled 617 or a 3% decrease overall.

Table 1. Changes in the number of doctors in large cities, provincial cities, and depopulated areas.

	Numbers of areas			Changes from 2004 to 2014		Numbers of doctors in 2004		Numbers of doctors in 2014	
	Total	Increasing number of doctors	Decreasing number of doctors	Increases in number of doctors	Rates of change in number of doctors	Total	Per 100,000 people	Total	Per 100,000 people
Japan	344	233	111	40,834	15%	270,371	212	311,205	243
Large cities	52	51	1	26,447	21%	125,492	231	151,939	270
Provincial cities	171	142	29	15,004	12%	125,161	205	140,165	232
Depopulated areas	121	40	81	-617	-3%	19,718	160	19,101	167

As a result, the numbers of doctors per 100,000 people increased in both large cities and provincial cities, the former from 231 in 2004 to 270 in 2014, and the latter from 205 in 2004 to 232 in 2014. On the contrary, in depopulated areas, the number of doctors per 100,000 people decreased from 160 in 2004 to 167 in 2014, indicating an expansion of disparities in medical care services between cities and depopulated areas in the past 10 years.

III-1-4. Ratios of increase in the number of doctors among regions that saw an increase

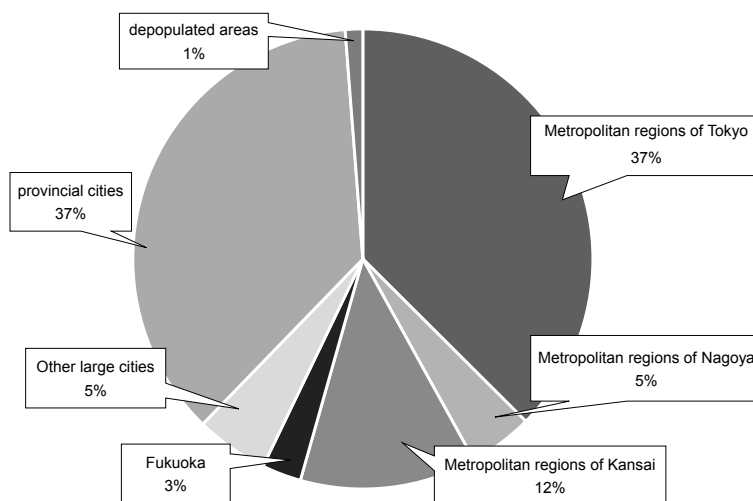
Table 2 and Figure 3 show the increase in numbers of doctors by region and the ratios of such increases among regions where an increase occurred. It is noted that increases in the number of doctors concentrate in the three major metropolitan regions of Tokyo, Nagoya, and Kansai, which together represent 54% of the overall increase in Japan. This concentration swells to 62% when the increases in Fukuoka and other large cities (Sapporo, Sendai, Hiroshima, and Kitakyushu) are also included.

Meanwhile, provincial cities and depopulated areas represent only 37% and 1% of the overall increase in the number of doctors, presenting yet more evidence to show that increases in the number of doctors were concentrated in large cities from 2004 to 2014.

Table 2. The numbers of doctors increased from 2004 to 2014 among the areas that underwent an increase.

	Increases in numbers of doctors from 2004 to 2014	Ratios of the increase among all areas where the number of doctors increased
Metropolitan regions of Tokyo	15,932	37%
Metropolitan regions of Nagoya	1,915	5%
Metropolitan regions of Kansai	5,277	12%
Fukuoka	1,174	3%
Other large cities	2,175	5%
provincial cities	15,527	37%
depopulated areas	523	1%
Japan (all areas where the number of doctors increased)	42,523	100%

Figure 3. The numbers of doctors increased from 2004 to 2014 among the areas that underwent an increase.



III-1-5. Levels of the number of doctors in 2004×levels of changes in the number in large cities

Table 3 is a cross-tabulation of levels of the number of doctors in 2004 and levels of changes in the numbers from 2004 to 2014 in large cities.

The vertical axis of the table represents levels of deviation of the number of doctors per 100,000 people in 2004 (the national average 212 ± 84). For example, deviation values of 65 and over (338 or more doctors per 100,000 people) are classified as Level 1. The horizontal axis of the table represents levels of changes in the number of doctors from 2004 to 2014. For example, an increase of 30% or over is classified as Level 1 whereas a decrease of 10% or over is classified as Level 5. The medical care areas placed in the upper right sections of the table represent those with higher levels of numbers of doctors in 2004 coupled with higher levels of increases in the number of doctors from 2004 to 2014. The medical care areas placed in the lower right sections of the table represent those with lower levels of numbers of doctors in 2004 and higher levels of increases from 2004 to 2014, indicating favorable increases in the number of doctors.

Medical care areas in Kuchuobu (Tokyo), Kuseibu (Tokyo), Kunanbu (Tokyo), Kuseinanbu (Tokyo), Nagoya (Aichi), Owaritobu (Aichi), Kyoto-Otokuni (Kyoto), Kobe (Hyogo), and Fukuoka (Fukuoka) saw increases of 15% or over in the number of doctors despite already higher levels of numbers of doctors per 100,000 in 2004.

On the other hand, areas placed in the lower right part of the table, namely Kutobu (Tokyo), Tokatsunanbu (Chiba), and Tokatsuhokubu (Chiba), Tobu (Saitama), Saitama (Saitama), Keno (Saitama), as well as Kawasakihokubu (Kanagawa) and Yokohamahokubu (Kanagawa), saw rapid increases in the numbers of doctors between 2004 and 2014 from lower levels of numbers of doctors in 2004.

The only medical care area in large cities that saw decreases in the numbers of doctors from 2004 to 2014 was Nakakawachi (Osaka); all the other 51 medical care areas saw an increase in the number of doctors in the same period.

Table 3. A cross-tabulation of levels of doctor numbers (deviations) in 2004 and levels of changes in the numbers (rates of changes) from 2004 to 2014 in large cities.

		Rates of changes in the numbers of doctors from 2004 to 2014							
		~-10%	-10%~0%	0%~15%	15%~30%	30%~			
		5	4	3	2	1			
Deviations of the numbers of doctors per 100,000 people in 2004 (the national average 212 ± 84)	65~ (338~)	1				Kyoto-Otokuni (Kyoto)	Kuseibu (Tokyo)	Kuchuobu (Tokyo)	
	55~65 (254~338)	2			Sapporo (Hokkaido)	Kunanbu (Tokyo)	Owaritobu (Aichi)		
					Toyono (Osaka)	Kuseinanbu (Tokyo)	Kobe (Hyogo)		
					Osakashi (Osaka)	Nagoya (Aichi)	Fukuoka (Fukuoka)		
					Hiroshima (Hiroshima)				
					Kitakyushu (Fukuoka)				
	45~55 (170~254)	3			Sendai (Miyagi)	Chiba (Chiba)	Sagamihara (Kanagawa)	Yokohamananbu (Kanagawa)	
					Kitatamaseibu (Tokyo)	Kuseihokubu (Tokyo)	Mishima (Osaka)		
					Shonantobu (Kanagawa)	Kitatamananbu (Tokyo)	Kitakawachi (Osaka)		
					Minamikawachi (Osaka)	Kawasakinanbu (Kanagawa)	Sakaishi (Osaka)		
					Senshu (Osaka)	Yokosuka-Miura (Kanagawa)	Hanshinminami (Hyogo)		
	40~45 (128~170)	4			Nakakawachi (Osaka)	Seiwa (Nara)	Nanbu (Saitama)	Shonanseibu (Kanagawa)	Saitama (Saitama)
							Kutohokubu (Tokyo)	Owariseibu (Aichi)	Tokatsunanbu (Chiba)
							Minamitama (Tokyo)	Owarihokubu (Aichi)	Tokatsuhokubu (Chiba)
							Kitatamaseibu (Tokyo)	Higashiharima (Hyogo)	Kutobu (Tokyo)
							Yokohamaseibu (Kanagawa)		Yokohamahokubu (Kanagawa)
	~40 (~128)	5					Nanseibu (Saitama)	Owarichubu (Aichi)	Tobu (Saitama)
							Keno (Kanagawa)		Keno(Saitama)

III-2. Changes in the number of general hospital beds

Next, we will show changes in the number of general hospital beds in each area from 2004 to 2014.

III-2-1. Changes in the number of general hospital beds in each secondary medical care area

The right sides of Tables 8-1 to 8-13 in the Appendix show changes in the number of general hospital beds in each of the 344 secondary medical care areas throughout the country.

III-2-2. Changes in the number of general hospital beds at the national level

Figure 4 illustrates the outline of changes in the number of general hospital beds from 2004 to 2014 at the national level. Among the 344 secondary medical care areas in the country, 294 areas saw a decrease in the number of general hospital beds for a total of 83,032 or 9% during the 10 years. On the other hand, 50 areas saw an increase in the number of general hospital beds for a total of 9,381 or 5% during the 10 years.

In the whole of Japan, the number of general hospital beds decreased by 7% or 73,651 in the same 10 years.

Figure 4. Changes in the numbers of general hospital beds at the national level.

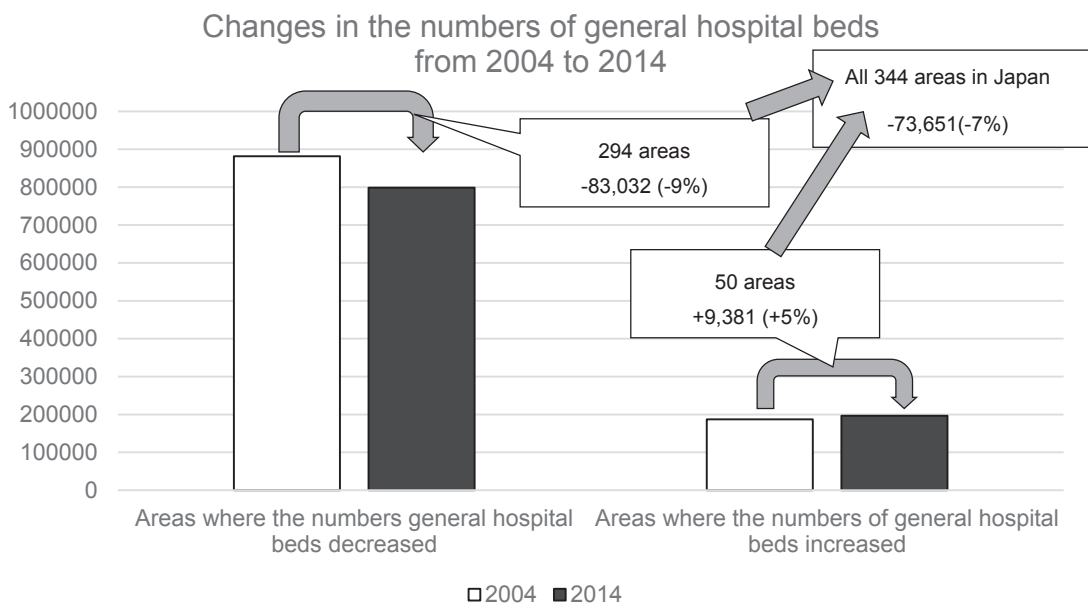


Table 4. Changes in the number of general hospital beds in large cities, provincial cities, and depopulated areas.

	Numbers of areas			Changes from 2004 to 2014		Numbers of general hospital beds in 2004		Numbers of general hospital beds in 2014	
	Total	Increasing numbers of general hospital beds	Decreasing numbers of general hospital beds	Increases in numbers of general hospital beds	Rates of change in numbers of general hospital beds	Total	Per 100,000 people	Total	Per 100,000 people
Japan	344	50	294	-73,651	-7%	1,068,821	837	995,170	776
Large cities	52	16	36	-15,818	-4%	406,885	747	391,067	694
Provincial cities	171	26	145	-39,610	-7%	544,187	892	504,577	835
Depopulated areas	121	8	113	-18,223	-15%	117,749	954	99,526	870

III-2-3. Changes in the number of general hospital beds in large cities, provincial cities, and depopulated areas

Table 4 shows changes in the number of general hospital beds in large cities, provincial cities, and depopulated areas. In large cities, 36 out of 52 medical care areas saw a decrease in the number of general hospital beds. Overall, the areas in large cities saw a total decrease of 4% or 15,818 in the number of general hospital beds from 2004 to 2014. In provincial cities, 145 out of 171 medical care areas saw a decrease in the number of general hospital beds. Overall, the areas in provincial cities saw a total decrease of 7% or 39,610 in the number of general hospital beds from 2004 to 2014. In depopulated areas, 113 out of 121 medical care areas saw a decrease in the number of general hospital beds, which totaled 18,223 or a 15% decrease overall.

As a result, the numbers of general hospital beds per 100,000 people decreased from 747 in 2004 to 694 in 2014 in large cities, from 892 in 2004 to 835 in 2014 in provincial cities, and 954 in 2004 to 870 in 2014 in depopulated areas. Among medical care areas of all the three types, depopulated areas saw the most rapid decrease.

III-2-4. Levels of the number of general hospital beds in 2004 × levels of changes in the number in large cities

Table 5 is a cross-tabulation of levels of the number of general hospital beds in 2004 and levels of changes in the number of general hospital beds from 2004 to 2014 in large cities.

The Sapporo area saw an increase in the number of hospital beds despite its already higher level of bed numbers per 100,000 people in 2004.

On the other hand, areas placed in the lower right part of the table, namely areas that include Kutobu (Tokyo), Tokatsunanbu (Chiba), Tokatsuhokubu (Chiba), Saitama (Saitama) and Nanseibu (Saitama), as well as areas that include Kitatamaseibu (Tokyo), Minamitama (Tokyo), and Kawasakihokubu (Kanagawa), in addition to areas including Shonantobu

Table 5. A cross-tabulation of levels of general hospital bed numbers (deviations) in 2004 and levels of changes in the numbers (rates of changes) from 2004 to 2014 in large cities.

			Rates of changes in the numbers of general hospital beds from 2004 to 2014						
			~-20%	-20%~-10%	-10%~0%	0%~10%	10%~		
			5	4	3	2	1		
Deviations of the numbers of general hospital beds per 100,000 people in 2004 (the national average 837 ± 282)	65~ (1260~)	1		Kuchuobu (Tokyo)					
	55~65 (987~1260)	2			Owaritobu (Aichi)	Fukuoka (Fukuoka)	Sapporo (Hokkaido)		
					Kyoto-Otokuni (Kyoto)	Kitakyushu (Fukuoka)			
					Osakashi (Osaka)				
	50~55 (837~987)	3			Kawasakinanbu (Kanagawa)	Sendai (Miyagi)	Nagoya (Aichi)		
					Kitakawachi (Osaka)	Kuseibu (Tokyo)	Hiroshima (Hiroshima)		
	45~50 (696~837)	4			Kunanbu (Tokyo)	Chiba (Chiba)	Nishiharima (Hyogo)	Toyono (Osaka)	
					Kuseinanbu (Tokyo)	Sakaishi (Osaka)	Seiwa (Nara)	Mishima (Osaka)	
					Kitatamatobu (Tokyo)			Kobe (Hyogo)	
					Shonanseibu (Tokyo)				
	40~45 (555~696)	5			Keno (Saitama)	Tobu (Saitama)	Owariseibu (Aichi)	Kutohokubu (Tokyo)	
					Kuseihokubu (Tokyo)	Kitatamananbu (Tokyo)	Kitakawachi (Osaka)		
					Yokohamananbu (Kanagawa)	Yokohamaseibu (Kanagawa)	Senshu (Osaka)		
					Keno (Kanagawa)	Yokosuka-Miura (Kanagawa)	Hanshinminami (Hyogo)		
					Nakakawachi (Osaka)	Sagamihara (Kanagawa)			
	~40 (~555)	6			Nanbu (Saitama)			Saitama (Saitama)	Seinanbu (Saitama)
					Yokohamahokubu (Kanagawa)			Tokatsunanbu (Chiba)	Tokatsuhokubu (Chiba)
								Minamitama (Tokyo)	Kutobu (Tokyo)
								Kitatamaseibu (Tokyo)	Kawasakihokubu (Kanagawa)
								Shonantobu (Kanagawa)	OwariChubu (Aichi)
								Owarihokubu (Aichi)	

(Kanagawa), Owarichubu (Aichi), and Owarihokubu (Aichi), saw an increase in the number of general hospital beds between 2004 and 2014 from lower levels of bed numbers in 2004.

Kuchuobu (Tokyo) placed in the upper left of the Table 5 saw an increase in population by 22% from 2004 to 2014 while the number of beds totaling 14,619 (deviation value 96) in 2004 decreased 12% to 12,929 (deviation value 80) toward 2014. However, hospital bed numbers in the area remain very high. Other areas with high levels of hospital bed numbers in 2004, namely Owaritobu (Aichi), Kyoto-otokuni (Kyoto), Osakashi (Osaka) Kitakyushu (Fukuoka), and Fukuoka (Fukuoka), are also seeing a decrease in the number of general hospital beds.

On the other hand, medical care areas with general hospital bed numbers of Level 5, namely Keno (Saitama), Kuhokuseibu (Tokyo), Yokohamanambu (Kanagawa), Keno (Kanagawa), and Nakakawachi (Osaka), saw a decrease of bed numbers by 10-20% from 2004 to 2014. Areas with general hospital bed numbers of Level 6, namely Nanbu (Saitama) and Yokohamahokubu (Kanagawa), are also seeing a decrease in the number of hospital beds.

III-3. Changes in the number of doctors per hospital bed

Table 6 shows changes in the number of hospital doctors per 100 beds in large cities, provincial cities, and depopulated areas from 2004 to 2014. At the national level, the total number of hospital beds decreased 7% during the past 10 years whereas the number of hospital doctors increased 19%, resulting in a 28% increase in doctor numbers per 100 beds.

During the 10 years from 2004 to 2014, the number of hospital doctors per 100 beds increased 32% in large cities, 26% in provincial cities, and 12% in depopulated areas, respectively. Of the overall upward trends in the number of doctors per beds nationwide, those in large cities are prominent.

Table 6. The number of hospital doctors per 100 beds in large cities, provincial cities, and depopulated areas from 2004 to 2014.

	Numbers of hospital doctors per 100 beds			Number of hospital beds			Numbers of hospital doctors		
	2004	2014	Rates of change from 2004 to 2014	2004	2014	Rates of change from 2004 to 2014	2004	2014	Rates of change from 2004 to 2014
Japan	9.0	11.6	28%	1,812,554	1,680,625	-7%	163,683	194,961	19%
Large cities	11.7	15.3	32%	646,336	617,252	-4%	75,420	94,742	26%
Provincial cities	8.0	10.1	26%	956,433	882,105	-8%	76,693	88,990	16%
Depopulated areas	5.5	6.2	12%	209,785	181,268	-14%	11,570	11,229	-3%

III-4. Estimated changes in the capacity of facilities for elderly people (reference values)

Table 7 shows the estimated excess or shortage of the capacity of facilities for elderly people in large cities in the future. First, we will explain how to read the table with the example of Sapporo shown in the second row. As of 2015, the national average capacity of facilities for elderly people was 81 per 1,000 people aged 75 or older, whereas such capacity was 85 in Sapporo. While the city is expected to see an increase in the number of people aged 75 or older at a yearly rate of 4.9% from 2015 to 2025, the capacity of facilities for elderly people increased only 1.5% per year from 2014 to 2016. When calculated based on the national average of 81 per 1,000 people aged 75 or older, the necessary capacity of facilities for elderly people in Sapporo for 2015 is 23,556. Compared with the actual capacity of

Table 7. Estimated excess or shortage of the capacity of facilities for elderly people in large cities.

Area name	Capacity per 1,000 people aged 75 or older in 2015	Yearly rate of change in the number of people aged 75 or older	Yearly rate of change in the capacity from 2014 to 2016	2015			2020			2025		
				Necessary capacity	Actual capacity	Excess /Shortage	Necessary capacity	Estimated capacity	Excess /Shortage	Necessary capacity	Estimated capacity	Excess /Shortage
National Average	81	3.2%	2.2%	1,339,503	1,339,503	0	1,528,260	1,486,788	-41,472	1,772,098	1,634,073	-138,025
Sapporo (Hokkaido)	85	4.9%	1.5%	23,556	24,517	961	28,302	26,310	-1,993	35,004	28,102	-6,902
Sendai (Miyagi)	79	4.4%	-0.1%	13,404	12,959	-445	15,965	12,907	-3,058	19,366	12,854	-6,512
Tokyo Metropolitan Region	84	4.4%	4.1%	323,066	334,455	11,389	392,860	400,928	8,068	465,648	467,400	1,752
Saitama Prefecture	93	5.4%	6.2%	62,243	71,406	9,163	78,870	91,981	13,111	95,768	112,556	16,788
Chiba Prefecture	75	5.1%	5.7%	58,326	53,841	-4,485	72,960	68,576	-4,384	88,072	83,311	-4,761
23 Tokyo Wards	64	3.1%	4.4%	80,313	63,323	-16,990	92,016	76,653	-15,363	105,608	89,983	-15,625
Tama & Toshi Region (Tokyo)	99	4.0%	2.1%	39,524	48,044	8,520	47,348	53,012	5,664	55,319	57,979	2,660
Kanagawa Prefecture	96	4.6%	2.7%	82,660	97,841	15,181	101,665	110,706	9,041	120,881	123,571	2,690
Aichi Prefecture	73	4.3%	1.3%	66,463	59,446	-7,017	80,105	63,189	-16,916	94,891	66,931	-27,960
Osaka Prefecture	69	4.3%	2.2%	87,095	73,921	-13,174	106,114	82,041	-24,073	124,336	90,161	-34,175
Fukuoka (Fukuoka)	89	4.9%	0.5%	12,939	14,670	1,731	15,495	15,055	-440	19,254	15,440	-3,814

24,517, the city still has room for 961 people. On the other hand, whereas the necessary capacity of facilities for elderly people in 2020 calculated by multiplying the estimated number of people aged 75 or older in 2020 by 0.081 equals 28,302, the estimated capacity calculated based on an assumption that the yearly rate of change in the capacity from 2014 to 2016 continues up to 2020 equals 26,310, forecasting a shortage of capacity of 1,993 people.

Considering the situation in Japan overall, although the number of people aged 75 or older is estimated to increase at a yearly rate of 3.2% from 2015 to 2025, the capacity of facilities for elderly people increased at a yearly rate of only 2.2% from 2014 to 2016, forecasting a shortage of capacity for 41,472 people in 2020 and 138,025 people in 2025. All in all, the increase in the capacity of facilities for elderly people does not seem to be sufficient to accommodate the increase in the number of people aged 75 or older.

Comparison between the columns of “yearly rate of change in the number of people aged 75 or older” and “yearly rate of change in the capacity from 2014 to 2016” shows that in all the areas other than Saitama and Chiba Prefectures and the 23 Tokyo wards, the number of people aged 75 or older underwent a greater increase rate than the capacity of facilities for elderly people. Accordingly, Sapporo and Fukuoka, which provided greater than the national average capacities (81) per 1,000 people aged 75 or older in 2015, are expected to face a shortage of capacity in and after 2020, if the current pace of increase in the capacity of facilities for elderly people is sustained, with the extent of such a shortage further swelling by 2025. In Sendai, Osaka, and Aichi Prefectures, the capacity of facilities for 1,000 people aged 75 or older was below the national average of 81 in 2015 and the shortage is expected to expand further toward 2025.

On the other hand, the “yearly rate of change in the capacity from 2014 to 2016” for the Tokyo metropolitan region was very high at 4.1%, indicating significant reinforcement of supply capacity of facilities for elderly people. Particularly in Saitama Prefecture, which features the highest rate of increase in the number of people aged 75 or older in Japan, the capacity per 1,000 people aged 75 or older was 93 in 2015, far greater than the national average. Coupled with the very high “yearly rate of change in capacity from 2014 to 2016” of 6.2%, Saitama Prefecture is expected to further develop its capacity to accommodate elderly people from surrounding areas, especially those from the 23 Tokyo wards. As for the Tokyo 23 wards and Chiba Prefecture, the capacities per 1,000 people aged 75 or older were 64 and 75, respectively, in 2015, far below the national average. However, since both areas show greater “yearly rate of change in the capacity from 2014 to 2016” compared to their “yearly rate of change in the number of people aged 75 or older,” unlike other areas, their tight supply-demand balance is expected to improve toward 2025 if the current high rates of increase in the capacity of facilities for elderly people are sustained. In the Tama region and Kanagawa Prefecture, whose capacities per 1,000 people aged 75 or older were far greater than the national average in 2015, the rates of increase in the capacity of facilities for elderly people are far below the rates of increase in the number of people aged 75 or older, suggesting weakening capacity to spare.

IV. Discussion

IV-1. Establishment of a data provision system for nursing care services

As mentioned in II. Methods, the capacities of facilities for elderly people shown in Table 7 were calculated using data provided by the respective prefectures based on the Care Services Information Disclosure System. The Care Services Information Disclosure System is a system by which prefectures disclose information on “care service offices” in their respective prefecture, that total around 190,000 nationwide, through the Internet and other measures to support users of nursing care services in choosing proper offices. Service providers are obliged to submit contents of their services in a prescribed format to the prefecture they belong to. While users can view this information about individual “care service offices” through the Internet, however, sorted and totaled forms of data on such information submitted by the individual offices are not disclosed. Accordingly, for the analysis in this study, we used data on the capacities of facilities sorted and totaled by region and category provided courtesy of Care Review Inc., a business entity that has built a database of offices around the country by reading relevant data one by one, coupled with population data.

After the Care Services Information Disclosure System started in 2006, the ratio of facilities that provide information has increased sufficiently following an early slump and now it is considered that most facilities submit necessary information to the respective prefectures based on relevant laws. However, since the ratio of submission is unknown, the possibility remains that data still exists on capacity that is not submitted, such as those of low-cost homes, pay homes, homes for elderly people with care services, and group homes, which may not have their data disclosed.

Compared with the case with medical care services, development of data provision systems for nursing care services, especially for home-based services, remains slow. To promote community-based integrated care services, prompt development of data provision systems for nursing care services is expected.

IV-2. National trends

According to the national average, the numbers of doctors and hospital doctors increased 15% and 19%, respectively, from 2004 to 2015, while the number of general hospital beds decreased 7%. As a result, “the number of doctors per bed (including beds for chronic patients and mental patients)” increased as much as 28%. In recent years, coupled with significant advances in medical care technology, trends are going toward a shorter average length of hospital stays, more hours of explanation for patients, and more hours per day for medical professionals to spend with patients. More than 9,000 students graduate from medical school every year and the number of doctors is expected to continue increasing. On the other hand, the number of hospital beds, that of general hospital beds in particular, is expected to continue

decreasing, resulting in a further increase in the number of doctors per hospital bed that will contribute to further advances in medical care technology.

Concerning nursing care facilities, the national average rate of estimated increase in the number of people aged 75 or older between 2015 and 2025 is 3.2% per year whereas the average rate of increase in the capacity of facilities for elderly people between 2014 and 2016 was 2.2% per year. Though it is difficult to forecast future capacities of facilities for elderly people because of frequent fluctuations in such capacity, considering the accelerated increase in the number of people aged 75 or older, it is unlikely that “the rate of increase in the capacity of facilities for elderly people” dominates “the rate of increase in the number of people aged 75 or older.” As a result, the shortage of the capacity of facilities for elderly people is expected to further expand toward 2025.

IV-3. Disparities in medical care services between large cities and depopulated areas

As reported in the results of this study, the disparities in medical care services between large cities and depopulated areas increased from 2004 to 2014. A study led by Naoki Okada, then a fifth year at Keio University School of Medicine, introduced by Nihon Keizai Shimbun on December 6, 2015, reports as follows: “We researched data between 1994 and 2012... The prefecture that saw the lowest rate of increase in the number of doctors compared to the number of successful applicants was Ishikawa with a runoff rate of 68%. A total of six prefectures, including Shimane, Tottori, and Kochi, marked runoff rates over 50%. On the other hand, in Chiba and Saitama Prefectures, the increase in the number of doctors more than doubled the number of successful applicants, followed by Hyogo, where the increase in the number of doctors was 1.7 times as much as the number of successful applicants. A common feature among the three prefectures is a relatively lower number of medical schools compared to their large population.” The findings in this article agree with our research results in many points. It has long been pointed that many students of university-oriented high schools in large cities enter medical schools in provincial areas and then return to large cities after graduation. Our study results also suggest flows of doctors from provincial areas to large cities. While flows of doctors from areas with more doctors per population to areas with fewer doctors per population are considered favorable in a sense that they contribute to the correction of imbalanced supply and demand in medical care services among different areas, flows of doctors from areas suffering a shortage of doctors into areas with a very large number of doctors, such as the Tokyo metropolitan region are considered unfavorable both because they make it difficult for medical schools in provincial areas to dispatch doctors to depopulated areas and because they are very likely to lead to an excess of doctors in the metropolitan regions. If the current situation is left as it is without any measures taken, the disparities in medical care services between large cities and depopulated areas are expected to further expand.

Meanwhile, there are new efforts to secure doctors in depopulated areas. For example, an

increasing number of medical schools recently set up quotas available for students who work in local areas after graduation, creating possibilities that these students support depopulated areas in respective regions. Additionally, collaborative efforts by a prefecture and municipalities to secure sustainable and a certain level of medical care services at hospitals on islands, as observed in the example of the Nagasaki Hospital Agency established in 2007, are drawing attention. These efforts to secure doctors in depopulated areas will become more important in the future.

IV-4. Trends in large cities by region

(1) Sapporo

Sapporo had far more doctors per population than the national average in 2004. The number of doctors further increased 15%, and coupled with the 3% increase in the number of hospital beds, the area successfully enriched its quantitative services of medical care that surpassed the increases in population and the number of elderly people during the same period. On the other hand, the pace of increase in the capacity of facilities for elderly people is slower than that of the increase in the number of people aged 75 or older, suggesting a more serious shortage of facilities for elderly people in the future.

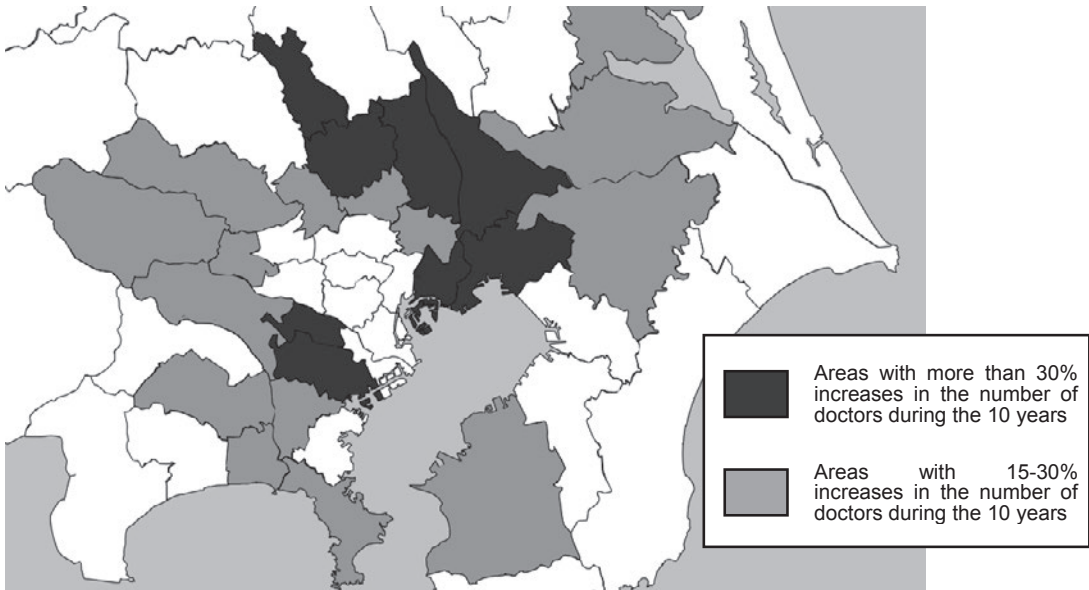
(2) Sendai

Sendai had the national average number of doctors per population in 2004 and the number increased 14% during the following 10 years toward 2014, a relatively lower rate of increase compared to other large cities. The number of hospital beds decreased 6%, which led to an increase in the number of doctors per bed by 24% in the same 10 years. Compared with the national average of 28% and the large-city average of 32%, the pace of increase in the density of medical care services in Sendai seems to be slower. Coupled with the stagnation in construction of new facilities for elderly people and an expected pace of increase in the number of elderly people, a serious shortage in the capacity of facilities for elderly people is expected.

(3) The region surrounding the Tokyo metropolitan region

Figure 5 illustrates areas around Tokyo with a small number of doctors in 2004 and a significant increase in the number during the following 10 years. Tokatsunanbu and Tokatsuhokubu in Chiba Prefecture, Tobu (areas around Kasukabe), Saitama City, and Keno (areas around Ageo) in Saitama Prefecture, Kawasakihokubu and Yokohamahokubu in Kanagawa Prefecture saw more than 30% increases in the number of doctors during the 10 years. Coupled with increases in the number of hospital beds, the areas experienced rapid advances in quantitative enrichment of medical care services during the 10 years.

Figure 5. Areas around Tokyo with a small number of doctors in 2004 and a significant increase in the number during the following 10 years.



While large cities in Saitama and Chiba Prefectures are faced with the most rapid increase in the number of people aged 75 or older in Japan, the cities are also seeing fast increases in the capacity of facilities for elderly people. If the current pace of increase in the capacity of those facilities is sustained, both cities will be able to accommodate expected rapid increases in the number of people aged 75 or older, too. On the other hand, while the Tama region in Tokyo and Kanagawa Prefecture have many facilities for elderly people, the increase in the number of these facilities is not as fast as that in Saitama and Chiba Prefectures. Accordingly, their current reserves to accommodate elderly people from Tokyo are expected to shrink rapidly.

(4) The Tokyo metropolitan region

In the Tokyo metropolitan region, Kuchuobu (areas centered around Minato and Bunkyo wards) and Kuseibu (areas centered around Shinjuku Ward), where many university hospitals concentrate, had many more doctors per population than the national average as of 2004 and the number of doctors increased substantially during the following 10 years. In central wards, the number of general hospital beds decreased more than 10% and the number of doctors per bed increased sharply, corresponding to the advance in medical care technology and a trend toward shorter length of hospital stays. In other areas, the number of doctors increased 20% or more in general, resulting in substantial increases in the number of doctors overall in the 23 wards. In particular, Kutobu (Koto, Sumida, and Edogawa wards), which traditionally had

fewer doctors, saw a 55% increase in the number of doctors during the 10 years. As for general hospital beds, the number increased in Kutobu and Kuhokutobu (Adachi, Katsushika, and Arakawa wards) while it decreased in other wards.

As of 2004, the capacity of facilities for elderly people was small compared to the number of people aged 75 or older in the Tokyo metropolitan region. However, this is one of the rare regions in Japan where the capacity of such facilities has been increasing faster than the rate of increase in the number of people aged 75 or older, showing a sign of gradual resolution concerning the shortage of facilities for elderly people.

As mentioned in the introduction, the issue of the medical and nursing care refugee crisis in Tokyo and the three neighboring prefectures indicates that the capacity of facilities for elderly people in the 23 Tokyo wards and medical care facilities in the region surrounding the Tokyo metropolitan region will not keep pace with the expected rapid growth in the number of people aged 75 or older. However, the results of our study suggest that the supply systems of medical care services in the regions surrounding the Tokyo metropolitan region as well as the capacity of nursing care facilities in the Tokyo metropolitan region are improving at a speed that will keep pace with increases in the number of people aged 75 or older. Though it is highly possible that the rapid pace of increase in the capacity of facilities for elderly people currently observed in the metropolitan region will lose steam due to shortages of workers for such facilities because of a decrease in the number of younger generations or outflow of workforce to other industries triggered by the coming Tokyo Olympics, the metropolitan region will avoid the predicted medical and nursing care crisis if the current pace of increase in the number of doctors and the capacity of facilities for elderly people is sustained in the region surrounding the Tokyo metropolitan region.

(5) Large cities in the Nagoya region

In the Nagoya region, that includes Nagoya City and surrounding areas, Nagoya City had a higher number of doctors per population than the national average as of 2004, while the numbers in the surrounding large cities were below the national average. Overall, the number of doctors per population in the region was at the national average in 2004. On the other hand, during the 10 years between 2004 and 2014, all the surrounding areas underwent 20% or higher rates of increase in the number of doctors while the rate in Nagoya remained at 19%. Overall, the region achieved an increase in the number of doctors much greater than the national average. Concerning the number of hospital beds, some medical care areas saw a slight increase while other areas saw a slight decrease, resulting in an almost unchanged number of beds in the region after 10 years.

Focusing on Aichi Prefecture overall, the average capacity of facilities for elderly people per 1,000 people aged 75 or older was low at 73 in 2015 (compared to the national average of 81). Considering the high rate of increase in the number of people aged 75 or older at 4.3% compared with the low rate of increase in the capacity of facilities for elderly people at 1.3%, a rapidly growing shortage of facilities for elderly people is expected.

(6) Large cities in the Kansai region

Among large cities in the Kansai region that stretches from Kyoto and Osaka to Kobe, Kyoto-Otokuni (Kyoto), Kobe (Hyogo), and Sakaishi (Osaka) underwent high rates of increase in the number of doctors at 19%, 20%, and 24%, respectively, in contrast to the Toyono (Osaka) or the home town of Osaka University and Osaka City, where the rates of increase remained lower than the national average at 13% and 10%, respectively. The increase rates in other areas of the region were also 20% or lower, resulting in a rather insignificant increase in the number of doctors overall compared to large cities in the Tokyo metropolitan region, where most medical care areas showed rates of increase of 20% or over.

Other than in the Toyono (Osaka), Mishima (Osaka), and Kobe (Hyogo) medical care areas, which saw increases in the number of hospital beds, bed numbers are on a declining trend in this region, marking an overall decrease. As for the number of doctors per hospital bed, Kyoto-Otokuni (Kyoto), a major center of advanced medical care services that rivals the Tokyo metropolitan region, showed a significant increase, although the increase was small in the Toyono (Osaka) medical care area and Osaka City.

Osaka Prefecture overall showed a relatively lower capacity of facilities for elderly people per 1,000 people aged 75 or older at 69 (compared to the national average of 81) in 2015. Furthermore, despite the rapid yearly rate of increase in the number of people aged 75 or over at 4.3%, the capacity of facilities for elderly people has not increased sufficiently other than in Osaka City. Coupled with the yearly rate of increase in the capacity of facilities for elderly people remaining at 2.2%, far lower than the rate of increase in the number of people aged 75 or over, the prefecture is expected to face a rapidly growing shortage in the capacity of facilities for elderly people in the areas surrounding Nagoya.

(7) Hiroshima

Hiroshima had a greater number of doctors per population than the national average as of 2004, and the rate of increase in the number during the 10 years between 2004 and 2014 was 14%, slightly lower compared to the rate in other large cities.

(8) Large cities in Fukuoka Prefecture

Both Fukuoka and Kitakyushu Cities had significant numbers of doctors and hospital beds in 2004. During 2004 and 2014, Fukuoka City underwent a more than 20% increase in the number of doctors and a decrease in the number of hospital beds. The areas surrounding Fukuoka saw increases both in the numbers of doctors and hospital beds, indicating a similar trend found in the Tokyo metropolitan region. In contrast, the rate of increase in the number of doctors in Kitakyushu City was far below the national average, with the number of hospital beds remaining almost unchanged.

As of 2015, Fukuoka City had a relatively higher capacity of facilities for elderly people per 1,000 people aged 75 or older at 89 (compared with the national average of 81). However, the yearly rate of increase in the number of people aged 75 or older is very high at 4.9%, while the rate of increase in the capacity of facilities for elderly people remains low at 0.5%, a far lower pace than the former. If the rate of increase in the capacity of facilities for elderly people remains at the current level, the capacity per 1,000 people aged 75 or older will soon fall below the national average and the city will be faced with a shortage in the capacity of facilities for elderly people.

V. Conclusion

In this study, we researched changes in the numbers of doctors and general hospital beds and the capacity of facilities for elderly people especially in large cities. The results indicated a trend in large cities that the number of doctors is increasing significantly while the number of hospital beds is decreasing slightly. In the Tokyo metropolitan region and Fukuoka, in particular, the increase in the number of doctors is significantly high as well as the increase in the number per bed. On the other hand, in Osaka and Kitakyushu Cities, the numbers of doctors and hospital beds were high in 2004 but the increase in the number of doctors remained slow afterwards, as well as the increase in the number per bed.

Concerning facilities for elderly people, only the Tokyo metropolitan region saw an increase in capacity that meets the increase in the number of people aged 75 or older. In other large cities, the increase in the capacity of facilities for elderly people does not seem to be keeping pace with the increase in the number of people aged 75 or older.

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Appendix

(1) Changes in the numbers of doctors and general hospital beds in medical care areas in Japan

Tables 8-1 to 8-13 below show changes in the numbers of doctors and general hospital beds from 2004 to 2014 for each medical care area in Japan. First, we explain how to read the tables with the example of Minamioshima shown in the first row. Minamioshima belongs to the “PC” (provincial city) type and the number of doctors increased by 1 (0%) from 2004 to 2014. The number of doctors was 877 (208 per 100,000 people) in 2004 and 878 (224 per 100,000 people) in 2014. The same manner is applied to read the numbers of general hospital beds. The secondary medical care area names represented in gray indicate that these areas belong to the “DA” (depopulated area) type whereas the names represented in black indicate that these areas belong to the “LC” (large city) type.

Table 8-1. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
1	Minamioshima	PC	1	0%	877	208	878	224	-656	-12%	5,465	1,294	4,809	1,227
2	Minamihiyama	DA	-7	-18%	38	128	31	123	-22	-6%	346	1,162	324	1,288
3	Kitaoshimahiyama	DA	-17	-25%	68	153	51	133	-85	-12%	712	1,605	627	1,633
4	Sapporo	LC	893	15%	6,089	264	6,982	296	821	3%	25,659	1,111	26,480	1,122
5	Shiribeshi	PC	-54	-11%	486	194	432	195	-849	-27%	3,127	1,250	2,278	1,027
6	Minamisorachi	DA	-29	-9%	319	163	290	170	-700	-30%	2,345	1,201	1,645	965
7	Nakasorachi	DA	11	5%	243	188	254	227	-284	-19%	1,500	1,161	1,216	1,089
8	Kitasorachi	DA	-6	-8%	72	184	66	197	-164	-38%	430	1,097	266	794
9	Nishiiburi	PC	-52	-11%	493	237	441	229	-215	-9%	2,337	1,123	2,122	1,101
10	Higashiiburi	PC	16	5%	330	151	346	161	-204	-11%	1,938	887	1,734	808
11	Hidaka	DA	-19	-19%	98	120	79	110	-254	-36%	709	871	455	636
12	Kamikawachubu	PC	74	6%	1,238	299	1,312	326	-427	-8%	5,609	1,357	5,182	1,287
13	Kamikawahokubu	DA	4	3%	115	151	119	176	-79	-10%	797	1,048	718	1,063
14	Furano	DA	-6	-10%	62	129	56	128	-96	-20%	476	994	380	869
15	Rumoi	DA	-7	-9%	77	131	70	141	-37	-7%	565	962	528	1,063
16	Soya	DA	-14	-17%	82	105	68	99	-86	-13%	672	857	586	855
17	Hokumo	PC	-14	-4%	346	143	332	148	-155	-6%	2,670	1,100	2,515	1,123
18	Emmon	DA	-28	-23%	124	151	96	131	-277	-28%	1,004	1,223	727	995
19	Tokachi	PC	59	11%	532	150	591	170	-68	-2%	3,712	1,048	3,644	1,045
20	Kushiro	PC	-17	-4%	427	163	410	169	-285	-10%	2,947	1,125	2,662	1,099
21	Nemuro	DA	-2	-2%	85	101	83	105	-151	-24%	628	747	477	602
22	Tsugaruchiiki	PC	38	4%	869	274	907	305	-625	-14%	4,425	1,393	3,800	1,277
23	Hachinohechiiki	PC	51	9%	557	160	608	181	-566	-15%	3,661	1,051	3,095	924
24	Aomoriichiiki	PC	72	12%	608	179	680	212	-1,019	-23%	4,447	1,306	3,428	1,069
25	Seihokugochiiki	DA	5	3%	160	103	165	118	-581	-44%	1,315	847	734	527
26	Kamitosanchiiki	DA	-7	-3%	224	117	217	119	-444	-25%	1,793	937	1,349	742
27	Shimokitachiiki	DA	0	0%	104	124	104	132	-149	-21%	716	855	567	719

Table 8-2. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
28	Morioka	PC	122	9%	1,296	265	1,418	297	-609	-11%	5,736	1,172	5,127	1,073
29	Iwatechubu	PC	19	6%	322	135	341	149	-470	-20%	2,331	979	1,861	813
30	Tanko	DA	-5	-2%	222	151	217	157	-255	-18%	1,432	977	1,177	849
31	Ryoban	DA	0	0%	205	142	205	155	-316	-20%	1,576	1,090	1,260	951
32	Kesen	DA	6	6%	93	124	99	152	-240	-33%	731	976	491	752
33	Kamaishi	DA	-9	-11%	84	141	75	153	-312	-33%	956	1,607	644	1,315
34	Miyako	DA	-16	-13%	123	123	107	122	-362	-42%	869	870	507	580
35	Kuji	DA	2	3%	77	115	79	126	-58	-12%	492	734	434	693
36	Ninohe	DA	4	5%	77	118	81	138	-138	-22%	635	977	497	844
37	Sennan	DA	23	10%	239	125	262	146	-181	-14%	1,262	660	1,081	603
38	Sendai	LC	525	14%	3,648	249	4,173	277	-737	-6%	13,174	900	12,437	827
39	Osaki-Kurihara	PC	53	14%	392	131	445	158	-294	-14%	2,168	726	1,874	664
40	Ishinomaki-Tome-Kesennuma	PC	41	8%	486	119	527	145	-1,327	-36%	3,668	901	2,341	645
41	Odate-Kazuno	DA	-25	-13%	190	151	165	143	-266	-21%	1,288	1,022	1,022	883
42	Kitaakita	DA	-16	-29%	56	130	40	107	-247	-50%	494	1,145	247	661
43	Noshiro-Yamamoto	DA	-1	-1%	151	156	150	173	-305	-25%	1,231	1,274	926	1,068
44	Akitashuhen	PC	130	11%	1,180	273	1,310	321	-372	-9%	4,125	954	3,753	919
45	Yurihonjo-Nikaho	DA	1	0%	203	171	204	188	29	2%	1,521	1,283	1,550	1,430
46	Daisen-Senboku	DA	12	6%	195	132	207	152	-449	-34%	1,340	904	891	654
47	Yokote	DA	15	8%	179	173	194	202	-106	-10%	1,058	1,021	952	992
48	Yuzawa-Ogachi	DA	0	0%	85	111	85	125	-70	-11%	633	825	563	828
49	Murayama	PC	148	10%	1,429	248	1,577	284	-242	-4%	5,474	948	5,232	942
50	Mogami	DA	-12	-10%	121	133	109	135	-144	-16%	923	1,017	779	961
51	Okitama	PC	19	5%	361	151	380	174	-167	-9%	1,962	822	1,795	823
52	Shonai	PC	20	4%	520	168	540	189	-796	-29%	2,765	893	1,969	688

Table 8-3. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
53	Kenhoku	PC	118	10%	1,228	240	1,346	279	-551	-11%	5,156	1,009	4,605	954
54	Kenchu	PC	63	7%	949	169	1,012	189	-718	-13%	5,709	1,018	4,991	932
55	Kenan	DA	5	3%	199	130	204	139	-339	-25%	1,376	897	1,037	704
56	Aizu	PC	11	2%	466	168	477	187	-462	-16%	2,918	1,050	2,456	962
57	Minamiaizu	DA	-8	-22%	36	109	28	97	-60	-36%	168	510	108	376
58	Soso	DA	-76	-32%	240	119	164	90	-645	-37%	1,733	862	1,088	598
59	Iwaki	PC	-53	-8%	632	178	579	173	-628	-19%	3,364	949	2,736	820
60	Mito	PC	182	21%	859	181	1,041	218	-600	-12%	5,213	1,098	4,613	967
61	Hitachi	PC	-5	-1%	395	140	390	147	-123	-5%	2,272	806	2,149	810
62	Hitachiota-Hitachinaka	PC	77	24%	319	85	396	106	44	2%	1,974	529	2,018	541
63	Rokko	PC	-1	0%	249	89	248	89	-299	-17%	1,735	622	1,436	513
64	Tsuchiura	PC	79	18%	442	163	521	195	-206	-10%	2,091	773	1,885	707
65	Tsukuba	PC	242	25%	984	320	1,226	366	-22	-1%	2,786	907	2,764	825
66	Toride-Ryugasaki	PC	120	18%	677	145	797	168	225	7%	3,071	659	3,296	697
67	Chikusei-Shimotsuma	PC	-21	-7%	290	102	269	98	-294	-19%	1,568	553	1,274	464
68	Koga-Bando	PC	32	12%	268	112	300	127	-110	-7%	1,523	637	1,413	598
69	Kenhoku	PC	71	14%	505	128	576	149	-329	-13%	2,548	648	2,219	576
70	Kensei	DA	20	8%	246	124	266	142	-72	-6%	1,264	637	1,192	635
71	Kento	PC	8	5%	169	110	177	120	-68	-8%	812	530	744	502
72	Utsunomiya	PC	46	5%	940	187	986	189	-484	-12%	4,009	798	3,525	677
73	Kenan	PC	173	10%	1,735	357	1,908	392	-385	-8%	4,673	962	4,288	880
74	Ryomo	PC	73	17%	435	153	508	185	-280	-12%	2,243	791	1,963	713

Table 8-4. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
75	Maebashi	PC	180	13%	1,367	401	1,547	455	-231	-6%	3,622	1,062	3,391	997
76	Takasaki-Annaka	PC	171	24%	715	167	886	203	-308	-9%	3,258	761	2,950	676
77	Shibukawa	PC	25	12%	205	171	230	197	32	3%	1,083	905	1,115	954
78	Fujioka	DA	2	1%	152	207	154	216	-69	-8%	833	1,132	764	1,069
79	Tomiooka	DA	-7	-4%	164	202	157	209	-24	-4%	576	710	552	734
80	Azuma	DA	-17	-17%	102	155	85	143	-522	-38%	1,368	2,085	846	1,426
81	Numata	DA	-10	-7%	151	161	141	161	-27	-3%	824	877	797	911
82	Isesaki	PC	51	13%	381	158	432	174	62	4%	1,579	656	1,641	661
83	Kiryu	PC	-13	-4%	333	185	320	188	-309	-18%	1,717	953	1,408	826
84	Ota-Tatebayashi	PC	33	6%	524	131	557	137	-291	-11%	2,722	680	2,431	598
85	Nanbu	LC	204	23%	903	125	1,107	139	-36	-1%	3,482	480	3,446	434
86	Nanseibu	LC	176	28%	632	95	808	114	291	10%	2,820	424	3,111	438
87	Tobu	LC	425	34%	1,263	116	1,688	148	-290	-5%	6,210	572	5,920	519
88	Saitama	LC	508	30%	1,675	142	2,183	173	144	3%	5,589	475	5,733	455
89	Keno	LC	195	32%	611	117	806	151	-377	-12%	3,143	604	2,766	517
90	Kawagoehiki	PC	67	4%	1,707	215	1,774	222	-251	-4%	5,590	703	5,339	670
91	Seibu	PC	334	28%	1,174	150	1,508	192	608	14%	4,252	544	4,860	619
92	Tone	PC	96	14%	664	100	760	116	178	5%	3,653	551	3,831	583
93	Hokubu	PC	48	7%	671	127	719	138	-99	-3%	3,038	575	2,939	566
94	Chichibu	DA	-4	-3%	154	134	150	142	3	1%	551	481	554	524
95	Chiba	LC	453	20%	2,259	244	2,712	282	-484	-6%	7,488	810	7,004	728
96	Tokatsunanbu	LC	859	41%	2,083	127	2,942	170	99	1%	8,531	522	8,630	499
97	Tokatsuhokubu	LC	654	39%	1,682	131	2,336	172	1,039	15%	6,967	541	8,006	591
98	Inba	PC	200	21%	973	142	1,173	162	338	9%	3,892	569	4,230	585
99	Katorikaiso	PC	0	0%	540	171	540	185	-133	-6%	2,395	761	2,262	776
100	Sanbucuseiisumi	PC	49	11%	439	94	488	109	14	1%	2,059	442	2,073	462
101	Awa	PC	202	53%	378	267	580	435	-4	0%	1,573	1,111	1,569	1,178
102	Kimitsu	PC	89	23%	381	118	470	142	-254	-13%	2,021	627	1,767	535
103	Ichihara	PC	50	11%	444	158	494	176	-60	-3%	1,884	672	1,824	651

Table 8-5. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
104	Kuchuobu	LC	2,627	32%	8,204	1,205	10,831	1,301	-1,690	-12%	14,619	2,147	12,929	1,553
105	Kunanbu	LC	537	20%	2,749	272	3,286	304	-778	-11%	7,352	726	6,574	609
106	Kuseinanbu	LC	736	20%	3,676	281	4,412	324	-986	-11%	9,225	705	8,239	605
107	Kuseibu	LC	982	19%	5,235	457	6,217	522	-518	-5%	9,633	841	9,115	765
108	Kuseihokubu	LC	1,018	26%	3,844	214	4,862	260	-1,358	-11%	12,029	670	10,671	570
109	Kutohokubu	LC	382	21%	1,809	146	2,191	164	331	5%	7,076	570	7,407	556
110	Kutobu	LC	985	55%	1,788	137	2,773	194	765	12%	6,566	503	7,331	512
111	Nishitama	PC	145	29%	501	126	646	165	-19	-1%	1,944	487	1,925	490
112	Minamitama	LC	430	21%	2,064	151	2,494	178	6	0%	6,654	488	6,660	474
113	Kitatamaseibu	LC	225	24%	924	149	1,149	178	148	4%	3,301	533	3,449	536
114	Kitatamananbu	LC	655	27%	2,416	249	3,071	307	-111	-2%	6,495	670	6,384	639
115	Kitatamahokubu	LC	113	9%	1,219	172	1,332	183	-1,050	-19%	5,462	772	4,412	606
116	Tosho	DA	-1	-3%	34	118	33	122	-6	-5%	116	404	110	407
117	Yokohamahokubu	LC	707	34%	2,076	144	2,783	179	-94	-1%	6,620	459	6,526	420
118	Yokohamaseibu	LC	470	27%	1,760	163	2,230	201	-379	-6%	6,654	616	6,275	565
119	Yokohamananbu	LC	794	34%	2,337	221	3,131	295	-779	-11%	7,247	686	6,468	610
120	Kawasakhokubu	LC	471	39%	1,193	155	1,664	202	365	11%	3,174	413	3,539	430
121	Kawasakinanbu	LC	249	19%	1,277	229	1,526	245	-636	-13%	5,034	901	4,398	707
122	Yokosuka-Miura	LC	285	22%	1,271	173	1,556	211	-474	-10%	4,954	672	4,480	609
123	Shonantobu	LC	260	27%	954	142	1,214	171	71	2%	2,894	431	2,965	417
124	Shonanseibu	LC	106	8%	1,307	221	1,413	242	-480	-12%	4,159	704	3,679	629
125	Keno	LC	173	18%	976	119	1,149	135	-933	-18%	5,171	628	4,238	499
126	Sagamihara	LC	253	17%	1,507	215	1,760	246	-68	-2%	4,175	595	4,107	574
127	Kensei	PC	59	11%	551	153	610	173	-416	-16%	2,583	715	2,167	614
128	Kaetsu	PC	43	14%	316	138	359	165	-88	-6%	1,441	629	1,353	623
129	Niigata	PC	205	9%	2,214	237	2,419	264	-318	-4%	7,658	821	7,340	802
130	Keno	PC	-23	-7%	335	139	312	133	-72	-4%	1,615	669	1,543	659
131	Chuetsu	PC	36	5%	750	158	786	172	-135	-4%	3,826	804	3,691	809
132	Uonuma	DA	-26	-11%	230	121	204	117	-87	-6%	1,388	733	1,301	746
133	Joetsu	PC	10	2%	461	156	471	168	-158	-6%	2,454	830	2,296	818
134	Sado	DA	1	1%	94	139	95	159	-9	-2%	503	746	494	829

Table 8-6. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
135	Niikawa	DA	11	5%	243	184	254	203	-134	-11%	1,228	932	1,094	876
136	Toyama	PC	65	5%	1,422	279	1,487	294	-475	-10%	4,921	967	4,446	880
137	Takaoka	PC	3	0%	632	192	635	198	-590	-19%	3,152	955	2,562	798
138	Tonami	DA	3	1%	277	196	280	208	-197	-16%	1,250	886	1,053	783
139	Minamikaga	PC	14	4%	374	158	388	165	-284	-12%	2,299	970	2,015	857
140	Ishikawachuo	PC	312	14%	2,244	316	2,556	357	-657	-8%	7,801	1,100	7,144	997
141	Notochubu	DA	7	3%	246	170	253	189	-279	-16%	1,692	1,172	1,413	1,054
142	Notohokubu	DA	-11	-9%	117	141	106	144	-202	-28%	732	880	530	718
143	Fukui-Sakai	PC	236	20%	1,193	289	1,429	349	-585	-11%	5,428	1,313	4,843	1,182
144	Okuetsu	DA	-5	-7%	75	116	70	116	-105	-19%	540	833	435	723
145	Tannan	DA	1	0%	237	122	238	125	-267	-19%	1,440	741	1,173	618
146	Reinan	DA	-2	-1%	247	166	245	170	-296	-21%	1,402	939	1,106	769
147	Chuhoku	PC	185	16%	1,149	241	1,334	283	-693	-15%	4,582	961	3,889	826
148	Kyoto	DA	28	12%	236	161	264	187	6	0%	1,403	959	1,409	996
149	Kyonan	DA	-12	-16%	77	121	65	115	-33	-8%	436	687	403	716
150	Fuji-Tobu	DA	25	10%	248	125	273	146	-187	-15%	1,230	621	1,043	558
151	Saku	PC	65	16%	417	194	482	227	-102	-5%	1,948	908	1,846	868
152	Josho	PC	18	6%	304	147	322	159	-126	-9%	1,471	711	1,345	664
153	Suwa	PC	62	16%	387	184	449	221	-201	-11%	1,789	848	1,588	781
154	Kamiina	DA	13	5%	250	130	263	140	-56	-5%	1,060	550	1,004	533
155	Hani	DA	26	9%	290	165	316	188	-254	-18%	1,385	789	1,131	674
156	Kiso	DA	-9	-20%	45	133	36	122	0	0%	207	612	207	699
157	Matsumoto	PC	215	16%	1,348	313	1,563	362	-258	-7%	3,846	892	3,588	830
158	Taihoku	DA	24	26%	93	140	117	189	-44	-9%	514	776	470	758
159	Nagano	PC	173	19%	921	163	1,094	197	-498	-11%	4,661	824	4,163	748
160	Hokushin	DA	-22	-13%	166	169	144	155	-139	-16%	868	881	729	782
161	Gifu	PC	428	24%	1,784	222	2,212	271	-38	-1%	6,697	835	6,659	816
162	Seino	PC	49	9%	569	145	618	161	-248	-10%	2,529	646	2,281	595
163	Chuno	PC	79	16%	486	125	565	146	-111	-5%	2,277	586	2,166	562
164	Tono	PC	107	22%	489	136	596	171	-9	0%	2,337	651	2,328	668
165	Hida	DA	-15	-5%	286	173	271	176	-219	-15%	1,424	860	1,205	782

Table 8-7. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
166	Kamo	DA	-17	-14%	121	154	104	149	-40	-8%	527	671	487	698
167	Atamiito	PC	34	15%	226	199	260	235	-122	-12%	977	860	855	773
168	Suntotagata	PC	153	12%	1,266	187	1,419	211	-867	-15%	5,963	881	5,096	757
169	Fuji	PC	27	5%	518	135	545	139	-367	-15%	2,465	641	2,098	534
170	Shizuoka	PC	208	15%	1,381	191	1,589	222	-183	-4%	5,064	700	4,881	682
171	Shidahaibara	PC	66	10%	677	142	743	156	-337	-12%	2,865	603	2,528	531
172	Chutoen	PC	94	17%	556	117	650	136	-537	-23%	2,365	498	1,828	384
173	Seibu	PC	262	14%	1,894	219	2,156	247	-299	-5%	5,827	674	5,528	634
174	Nagoya	LC	1,113	19%	5,895	266	7,008	310	-1,886	-10%	19,527	882	17,641	780
175	Ama	PC	98	28%	351	107	449	134	49	4%	1,306	397	1,355	403
176	Owarichubu	LC	31	30%	104	67	135	81	151	61%	248	160	399	241
177	Owaritobu	LC	381	27%	1,417	320	1,798	386	-393	-9%	4,431	1,000	4,038	866
178	Owariseibu	LC	176	24%	726	143	902	172	-241	-7%	3,348	658	3,107	592
179	Owarihokubu	LC	214	23%	934	130	1,148	154	29	1%	3,971	553	4,000	537
180	Chitahanto	PC	131	18%	740	124	871	139	-465	-14%	3,413	572	2,948	470
181	Nishimikawahokubu	PC	130	22%	592	126	722	150	-177	-8%	2,309	493	2,132	443
182	Nishimikawanabanunishi	PC	185	22%	836	128	1,021	147	-135	-4%	3,345	511	3,210	464
183	Nishimikawanabanuhigashi	PC	17	3%	557	139	574	137	-359	-19%	1,907	477	1,548	369
184	Higashimikawahokubu	DA	-11	-13%	86	134	75	126	-74	-18%	404	628	330	555
185	Higashimikawanambu	PC	167	16%	1,057	150	1,224	172	-424	-10%	4,347	619	3,923	552
186	Hokusei	PC	247	20%	1,256	152	1,503	176	-499	-9%	5,471	664	4,972	584
187	Chuseiiga	PC	126	11%	1,182	251	1,308	283	-415	-10%	4,178	886	3,763	816
188	Nanseishima	PC	150	17%	862	177	1,012	215	-82	-2%	3,471	714	3,389	720
189	Higashikishu	DA	-16	-12%	135	157	119	156	-89	-15%	583	679	494	646
190	Otsu	PC	186	18%	1,060	327	1,246	363	-65	-2%	2,664	823	2,599	758
191	Konan	PC	127	22%	575	191	702	214	31	1%	2,493	827	2,524	770
192	Koka	PC	27	16%	166	111	193	131	-178	-17%	1,071	718	893	604
193	Higashiomi	PC	62	18%	342	146	404	173	-278	-16%	1,692	725	1,414	607
194	Koto	PC	2	1%	240	157	242	155	-176	-16%	1,134	740	958	612
195	Kohoku	DA	-10	-3%	294	178	284	175	-83	-7%	1,164	703	1,081	668
196	Kosei	DA	0	0%	78	145	78	151	-33	-10%	344	638	311	603

Table 8-8. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
197	Tango	DA	4	2%	167	149	171	165	137	16%	834	746	971	937
198	Chutan	PC	-14	-3%	452	214	438	216	-131	-6%	2,080	984	1,949	960
199	Nantan	DA	31	13%	231	156	262	186	-78	-7%	1,191	807	1,113	792
200	Kyoto-Otokuni	LC	1,042	19%	5,627	347	6,669	425	-891	-5%	16,839	1,037	15,948	1,016
201	Yamashirokita	PC	158	24%	661	149	819	185	86	3%	3,047	685	3,133	707
202	Yamashirominami	PC	45	40%	112	103	157	132	141	36%	391	361	532	446
203	Toyono	LC	418	13%	3,281	326	3,699	358	374	5%	7,064	702	7,438	719
204	Mishima	LC	271	16%	1,643	224	1,914	255	111	2%	5,444	742	5,555	740
205	Kitakawachi	LC	410	19%	2,139	180	2,549	216	-110	-1%	8,106	683	7,996	678
206	Nakakawachi	LC	-26	-2%	1,410	163	1,384	165	-602	-12%	5,219	604	4,617	549
207	Minamikawachi	LC	176	12%	1,513	233	1,689	270	-641	-12%	5,568	857	4,927	788
208	Sakaishi	LC	368	24%	1,541	185	1,909	225	-463	-7%	6,298	758	5,835	688
209	Senshu	LC	230	13%	1,704	186	1,934	210	-153	-3%	5,221	569	5,068	550
210	Osakashi	LC	850	10%	8,332	317	9,182	344	-1,502	-5%	28,150	1,071	26,648	998
211	Kobe	LC	811	20%	4,058	266	4,869	314	237	2%	12,427	815	12,664	817
212	Hanshimminami	LC	428	17%	2,452	241	2,880	275	-119	-2%	6,918	679	6,799	650
213	Hanshinkita	PC	202	18%	1,149	161	1,351	182	118	3%	4,523	634	4,641	625
214	Higashiharima	LC	229	20%	1,147	160	1,376	189	-162	-3%	5,260	732	5,098	700
215	Kitaharima	PC	73	15%	492	169	565	202	284	11%	2,510	860	2,794	998
216	Nakaharima	PC	148	14%	1,035	177	1,183	201	-320	-7%	4,747	813	4,427	753
217	Nishiharima	PC	19	5%	393	140	412	153	-108	-5%	2,291	817	2,183	809
218	Tajima	DA	0	0%	336	176	336	188	-333	-21%	1,621	848	1,288	720
219	Tanba	DA	-22	-10%	212	183	190	171	-100	-11%	937	807	837	755
220	Awaji	PC	4	1%	295	195	299	209	-20	-2%	895	591	875	613
221	Nara	PC	170	23%	728	197	898	247	196	7%	2,906	785	3,102	853
222	Towa	PC	75	14%	549	240	624	289	-389	-16%	2,505	1,096	2,116	980
223	Seiwa	LC	44	8%	534	152	578	163	-180	-7%	2,521	716	2,341	662
224	Chuwa	PC	47	5%	947	249	994	259	31	1%	2,668	701	2,699	703
225	Nanwa	DA	-58	-35%	165	184	107	137	-95	-13%	719	800	624	799

Table 8-9. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
226	Wakayama	PC	154	10%	1,523	342	1,677	380	-390	-7%	5,563	1,250	5,173	1,173
227	Naga	PC	1	1%	183	154	184	154	40	5%	767	646	807	674
228	Hashimoto	PC	0	0%	182	185	182	198	-51	-6%	823	837	772	841
229	Arita	DA	-8	-6%	138	165	130	166	-167	-27%	614	734	447	571
230	Gobo	DA	8	5%	148	210	156	236	-73	-7%	987	1,399	914	1,382
231	Tanabe	DA	48	18%	263	187	311	231	-71	-6%	1,185	844	1,114	826
232	Shingu	DA	-14	-8%	165	208	151	210	-158	-18%	898	1,131	740	1,028
233	Tobu	PC	23	4%	539	218	562	239	-314	-13%	2,401	970	2,087	889
234	Chubu	DA	8	4%	217	192	225	209	-74	-6%	1,175	1,038	1,101	1,022
235	Seibu	PC	45	5%	953	387	998	414	-643	-22%	2,924	1,187	2,281	947
236	Matsue	PC	23	4%	624	245	647	262	-94	-3%	2,712	1,065	2,618	1,062
237	Unnan	DA	-21	-22%	97	147	76	126	-39	-9%	444	671	405	674
238	Izumo	PC	99	15%	677	390	776	444	-5	0%	1,800	1,036	1,795	1,027
239	Ota	DA	-18	-15%	119	186	101	176	-90	-16%	547	856	457	795
240	Hamada	DA	1	1%	186	205	187	227	-208	-21%	999	1,100	791	958
241	Masuda	DA	-26	-17%	151	218	125	196	-187	-23%	821	1,186	634	993
242	Okii	DA	-6	-15%	41	173	35	167	-37	-25%	148	625	111	529
243	Kennantobu	PC	505	19%	2,685	293	3,190	348	-880	-8%	11,709	1,277	10,829	1,181
244	Kennanseibu	PC	195	11%	1,817	254	2,012	279	-591	-8%	7,785	1,090	7,194	999
245	Takahashi-Niimi	DA	-17	-15%	116	155	99	152	-63	-11%	549	733	486	748
246	Maniwa	DA	-20	-21%	96	182	76	153	-175	-26%	678	1,284	503	1,016
247	Tsuyama-Aida	DA	46	14%	337	170	383	204	-368	-20%	1,819	915	1,451	771
248	Hiroshima	LC	480	14%	3,472	260	3,952	290	-1,037	-9%	11,237	842	10,200	747
249	Hiroshimanishi	PC	64	21%	308	211	372	256	-86	-7%	1,312	900	1,226	842
250	Kure	PC	-1	0%	820	292	819	314	-57	-2%	2,688	957	2,631	1,008
251	Hiroshimachuo	PC	44	11%	393	175	437	198	5	0%	1,814	809	1,819	825
252	Bisan	PC	-37	-6%	609	223	572	220	-262	-8%	3,122	1,142	2,860	1,102
253	Fukuyama-Fuchu	PC	87	9%	996	193	1,083	207	-207	-5%	4,455	864	4,248	811
254	Bihoku	DA	-5	-2%	223	218	218	233	10	1%	947	924	957	1,023

Table 8-10. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
255	Iwakuni	DA	21	7%	301	193	322	217	-80	-6%	1,284	822	1,204	813
256	Yanai	PC	-19	-10%	194	212	175	209	-8	-1%	1,001	1,094	993	1,187
257	Shunan	PC	52	11%	466	179	518	201	-467	-19%	2,452	944	1,985	770
258	Yamaguchi-Hofu	PC	18	3%	694	220	712	227	-55	-2%	2,585	818	2,530	808
259	Ube-Onoda	PC	-48	-4%	1,083	394	1,035	395	-333	-11%	3,120	1,134	2,787	1,065
260	Shimonoseki	PC	44	7%	660	227	704	256	-156	-5%	2,909	1,001	2,753	1,000
261	Nagato	DA	-10	-14%	72	175	62	169	-42	-9%	460	1,118	418	1,136
262	Hagi	DA	-17	-16%	108	174	91	165	-97	-20%	478	770	381	690
263	Tobu	PC	194	11%	1,708	311	1,902	355	-186	-3%	6,056	1,103	5,870	1,096
264	Nanbu	DA	-2	-1%	392	238	390	251	-327	-16%	1,999	1,214	1,672	1,076
265	Seibu	DA	-25	-13%	196	204	171	200	-183	-17%	1,060	1,104	877	1,025
266	Okawa	PC	-7	-5%	147	160	140	166	-288	-40%	728	794	440	520
267	Shozu	DA	-12	-22%	55	163	43	140	-66	-25%	266	790	200	652
268	Takamatsu	PC	193	14%	1,400	311	1,593	345	-671	-11%	6,116	1,358	5,445	1,181
269	Chusan	PC	56	8%	676	225	732	246	-369	-11%	3,475	1,158	3,106	1,043
270	Mitoyo	PC	-10	-4%	264	194	254	193	-200	-14%	1,468	1,076	1,268	965
271	Uma	PC	-3	-2%	166	179	163	179	-259	-27%	959	1,033	700	769
272	Niihama-Saijo	PC	-53	-10%	517	218	464	196	-346	-12%	2,807	1,183	2,461	1,042
273	Imabari	PC	2	1%	321	176	323	186	-256	-13%	1,900	1,043	1,644	948
274	Matsuyama	PC	361	20%	1,838	281	2,199	337	-831	-10%	8,058	1,233	7,227	1,108
275	Yawahama-Ozu	DA	-48	-15%	316	187	268	176	-350	-21%	1,663	986	1,313	861
276	Uwajima	DA	-24	-8%	286	215	262	217	-382	-18%	2,132	1,601	1,750	1,449
277	Age	DA	-17	-16%	109	187	92	177	-133	-25%	533	914	400	772
278	Chuo	PC	101	6%	1,771	311	1,872	344	-138	-2%	7,675	1,346	7,537	1,386
279	Koban	DA	-22	-21%	107	161	85	143	-84	-18%	461	695	377	635
280	Hata	DA	-27	-13%	210	207	183	199	-37	-4%	1,046	1,033	1,009	1,097

Table 8-11. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
281	Fukuoka-Itojima	LC	1,174	24%	4,830	322	6,004	378	-124	-1%	15,066	1,005	14,942	942
282	Kasuya	PC	103	27%	386	148	489	172	422	21%	2,010	769	2,432	856
283	Munakata	PC	51	24%	217	145	268	172	78	8%	974	650	1,052	675
284	Chikushi	PC	155	23%	680	165	835	192	-210	-8%	2,771	671	2,561	588
285	Asakura	PC	7	4%	158	173	165	187	-107	-13%	829	906	722	819
286	Kurume	PC	207	11%	1,894	407	2,101	453	-731	-11%	6,492	1,394	5,761	1,243
287	Yame-Chikugo	PC	3	1%	282	199	285	209	-222	-16%	1,427	1,010	1,205	885
288	Ariake	PC	-8	-1%	596	239	588	256	-163	-5%	3,523	1,415	3,360	1,461
289	Iizuka	PC	113	24%	476	246	589	316	-129	-4%	2,941	1,517	2,812	1,508
290	Onogata-Kurate	PC	3	1%	207	179	210	187	-103	-12%	874	756	771	686
291	Tagawa	PC	-4	-1%	269	191	265	199	-64	-5%	1,334	948	1,270	953
292	Kitakyushu	LC	277	8%	3,302	290	3,579	321	-38	0%	12,465	1,096	12,427	1,113
293	Keichiku	PC	23	9%	259	135	282	147	-124	-11%	1,114	582	990	517
294	Chubu	PC	246	23%	1,079	300	1,325	377	-147	-3%	4,203	1,169	4,056	1,155
295	Tobu	PC	35	19%	189	158	224	179	-82	-8%	1,026	856	944	756
296	Hokubu	PC	31	13%	245	178	276	206	-103	-8%	1,230	892	1,127	843
297	Seibu	PC	-8	-6%	129	162	121	156	34	5%	672	843	706	908
298	Nanbu	PC	30	9%	343	203	373	233	-46	-2%	1,850	1,093	1,804	1,128
299	Nagasaki	PC	195	10%	1,964	350	2,159	400	-945	-13%	7,101	1,267	6,156	1,141
300	Sasebokenhoku	PC	-34	-4%	777	223	743	224	-269	-7%	3,904	1,120	3,635	1,094
301	Keno	PC	100	14%	717	263	817	299	-274	-7%	3,798	1,395	3,524	1,290
302	Kennan	PC	-6	-2%	249	162	243	169	-118	-8%	1,415	918	1,297	904
303	Goto	DA	-1	-1%	80	179	79	199	-109	-17%	659	1,472	550	1,388
304	Kamigoto	DA	-4	-11%	37	131	33	139	-148	-51%	291	1,028	143	600
305	Iki	PC	-1	-2%	43	137	42	147	-30	-10%	290	923	260	913
306	Tsushima	DA	-3	-5%	57	148	54	164	-92	-23%	402	1,045	310	939

Table 8-12. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
307	Kumamoto	PC	581	23%	2,572	353	3,153	429	543	6%	9,847	1,353	10,390	1,414
308	Uki	PC	18	11%	169	149	187	169	100	11%	882	778	982	888
309	Ariake	PC	-16	-5%	316	182	300	180	-165	-12%	1,402	806	1,237	742
310	Kamoto	DA	-4	-4%	102	177	98	179	-70	-11%	664	1,150	594	1,083
311	Kikuchi	PC	25	8%	300	182	325	178	-350	-12%	2,969	1,799	2,619	1,431
312	Aso	DA	14	17%	82	117	96	142	12	3%	448	637	460	682
313	Kamimashiki	DA	10	8%	118	131	128	144	-97	-16%	596	664	499	561
314	Yatsushiro	PC	1	0%	321	214	322	223	-210	-12%	1,752	1,167	1,542	1,070
315	Ashikita	DA	-4	-3%	147	265	143	285	-121	-11%	1,073	1,937	952	1,898
316	Kuma	DA	-31	-16%	196	195	165	178	-155	-15%	1,041	1,034	886	956
317	Asakusa	DA	-22	-8%	261	189	239	192	-59	-4%	1,467	1,064	1,408	1,129
318	Tobu	PC	31	5%	618	275	649	304	-364	-9%	3,878	1,725	3,514	1,647
319	Chubu	PC	261	17%	1,523	271	1,784	310	-130	-2%	7,417	1,319	7,287	1,268
320	Nanbu	DA	-3	-2%	150	187	147	193	-41	-4%	1,029	1,281	988	1,299
321	Hohi	DA	-23	-18%	128	188	105	168	-56	-7%	787	1,156	731	1,170
322	Seibu	DA	6	4%	151	146	157	163	-127	-10%	1,235	1,193	1,108	1,150
323	Hokubu	DA	7	2%	328	193	335	200	-207	-10%	2,090	1,227	1,883	1,122
324	Miyazakihigashimorokat	PC	216	17%	1,303	307	1,519	350	-300	-6%	5,018	1,181	4,718	1,087
325	Miyakonokitamorokata	PC	7	2%	357	183	364	186	31	1%	2,495	1,276	2,526	1,293
326	Nobeokanishiusuki	DA	-35	-12%	294	184	259	171	-93	-6%	1,639	1,026	1,546	1,022
327	Nichinankushima	DA	-8	-5%	166	200	158	206	-70	-7%	975	1,174	905	1,180
328	Nishimoro	DA	-5	-4%	141	169	136	172	-11	-1%	752	900	741	936
329	Saitokoyu	DA	6	4%	134	121	140	132	-102	-10%	985	886	883	834
330	Hyugairigo	DA	11	8%	143	150	154	165	-251	-25%	990	1,040	739	792

Table 8-13. Changes in the numbers of doctors (hospital + clinic) and general hospital beds from 2004 to 2014 in each secondary medical care area.

	Area name	Type	Numbers of doctors						Numbers of general hospital beds					
			Changes from 2004 to 2014		2004		2014		Changes from 2004 to 2014		2004		2014	
			Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people	Increases	Rates of Change	Total	Per 100,000 people	Total	Per 100,000 people
331	Kagoshima	PC	386	18%	2,163	313	2,549	370	233	3%	9,014	1,305	9,247	1,341
332	Nansatsu	DA	-22	-7%	321	206	299	212	-127	-7%	1,888	1,211	1,761	1,249
333	Sensatsu	DA	21	9%	239	187	260	214	-142	-10%	1,365	1,066	1,223	1,006
334	Izumi	DA	-17	-11%	154	162	137	154	-209	-23%	928	977	719	810
335	Aira-Isa	PC	-1	0%	437	177	436	180	243	11%	2,309	938	2,552	1,053
336	So	DA	-17	-15%	110	119	93	108	-44	-8%	521	564	477	554
337	Kimotsuki	DA	-9	-3%	292	171	283	175	-266	-10%	2,600	1,525	2,334	1,442
338	Kumage	DA	-2	-4%	53	111	51	115	36	7%	488	1,019	524	1,185
339	Amami	DA	-6	-3%	198	157	192	166	-10	-1%	1,538	1,216	1,528	1,319
340	Hokubu	DA	22	13%	172	168	194	188	-283	-20%	1,407	1,373	1,124	1,090
341	Chubu	PC	212	29%	742	160	954	189	-49	-2%	2,938	633	2,889	571
342	Nanbu	PC	514	30%	1,695	246	2,209	301	-166	-3%	5,820	845	5,654	769
343	Miyako	PC	10	11%	91	166	101	181	-173	-23%	765	1,394	592	1,058
344	Yaeyama	DA	10	12%	84	164	94	172	-20	-5%	414	809	394	721

