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Uneven Distribution of Physicians: Projections by Prefecture

Hideaki Matsuoka
Economist

On November 9, 2008, the prefectural government of Hiroshima held an event in Roppongi, Tokyo, a posh business and commercial district, to induce Hiroshima-native physicians working in Tokyo to return to the prefecture to work¹. Although the Japanese government has abandoned its policy of holding down physician numbers and will increase the admission quotas for medical schools starting next academic year, the effect of the new policy will not be felt before 2017, as it takes six years of study to graduate from the faculties of medicine and two years of clinical training for a person to become a physician. Hiroshima Prefecture's recruiting efforts show how urgently the prefecture needs physicians who are able to work now.

A Conspicuous Physician Shortage in the Tohoku Region

The table shows the number of physicians per 1,000 patients. These figures represent those who are in clinical medicine and do not include physicians who are engaged in research or teaching. Nor do they include physicians in training.

As of 2006, the lowest figure was for Aomori Prefecture at the northern tip of Honshu, the main island of Japan. It is followed by Iwate, Akita and Yamagata Prefectures, demonstrating that overall, physician numbers are low in the Tohoku (Northeastern) region. By contrast, in Tokyo and Kyoto, physician numbers are almost twice that in Aomori Prefecture. This study examines how this uneven distribution of

Table Projections of Physician Numbers per 1,000 Patients by Prefecture

	2006		2017		2027		2035	
	(persons)	Ranking	(persons)	Ranking	(persons)	Ranking	(persons)	Ranking
Hokkaido	28.3	38	29.0	34	32.0	34	36.1	32
Aomori	23.5	47	22.9	47	24.5	47	27.0	47
Iwate	25.3	46	25.8	46	28.4	44	31.9	41
Miyagi	32.1	19	33.8	16	37.7	16	42.4	15
Akita	26.1	45	28.0	41	32.4	33	37.7	28
Yamaguchi	27.4	43	30.3	31	35.3	24	40.2	24
Fukushima	27.9	41	28.0	40	29.9	40	32.4	40
Ibaraki	29.5	31	30.3	30	33.5	29	37.5	30
Tochigi	31.5	22	32.8	19	36.4	20	40.8	20
Gunma	31.3	23	32.7	20	36.5	17	41.4	19
Saitama	28.4	37	30.9	26	35.4	23	41.5	18
Chiba	30.9	24	32.3	23	36.4	19	42.2	17
Tokyo	40.4	2	40.0	3	44.1	4	48.5	6
Kanagawa	34.9	7	35.2	11	38.8	10	43.5	13
Niigata	29.4	32	29.3	33	31.5	35	34.5	36
Toyama	33.8	11	35.3	10	39.1	9	44.0	9
Ishikawa	33.7	12	32.7	21	34.6	25	37.9	27
Fukui	30.8	25	30.7	27	32.9	32	36.1	33
Yamanashi	32.6	16	34.3	13	38.2	14	42.8	14
Nagano	34.5	8	39.1	4	45.6	2	53.1	2
Gifu	28.9	34	30.3	29	33.9	27	38.4	25
Shizuoka	32.7	15	34.1	15	38.4	13	43.6	12
Aichi	30.3	27	30.7	28	33.7	28	38.0	26
Mie	28.1	39	27.1	44	28.0	45	29.7	45
Shiga	33.3	13	36.0	8	39.8	8	44.0	10
Kyoto	41.3	1	40.2	2	44.1	3	49.9	4
Osaka	34.3	9	32.6	22	35.6	22	40.6	22
Hyogo	29.6	30	30.2	32	33.3	30	37.3	31
Nara	35.4	6	35.8	9	38.7	12	43.6	11
Wakayama	32.1	20	34.2	14	38.7	11	44.7	8
Tottori	37.4	3	38.2	5	41.3	7	44.8	7
Shimane	32.8	14	36.3	7	42.9	6	50.5	3
Okayama	35.8	5	38.0	6	43.2	5	49.4	5
Hiroshima	28.7	36	26.9	45	27.5	46	29.6	46
Yamaguchi	28.8	35	28.6	38	30.7	39	33.9	37
Tokushima	32.5	17	31.5	25	33.0	31	35.7	34
Kagawa	29.8	28	28.4	39	29.1	42	31.2	42
Ehime	29.0	33	28.9	35	30.7	38	33.2	39
Kochi	32.2	18	33.1	17	36.5	18	40.6	21
Fukuoka	34.0	10	34.4	12	37.7	15	42.4	16
Saga	26.2	44	27.8	42	31.1	36	35.2	35
Nagasaki	31.9	21	33.0	18	36.0	21	40.3	23
Kumamoto	29.7	29	28.6	37	29.6	41	31.1	43
Oita	30.8	26	31.6	24	34.4	26	37.6	29
Miyazaki	27.6	42	27.5	43	28.8	43	30.9	44
Kagoshima	27.9	40	28.7	36	31.0	37	33.5	38
Okinawa	36.9	4	42.7	1	48.4	1	54.2	1
Nationwide	32.1		32.7		36.1		40.5	
Maximum	41.3		42.7		48.4		54.2	
Minimum	23.5		22.9		24.5		27.0	
Mean	31.3		32.1		35.3		39.5	
Standard deviation	3.7		4.2		5.2		6.4	
Coefficient of variation	0.118		0.130		0.148		0.162	

Sources: The Ministry of Health, Labor and Welfare, *A Survey of Physicians, Dentists and Pharmacists*, and others.

physicians will change in the future with regard to both the number of patients and the number of physicians².

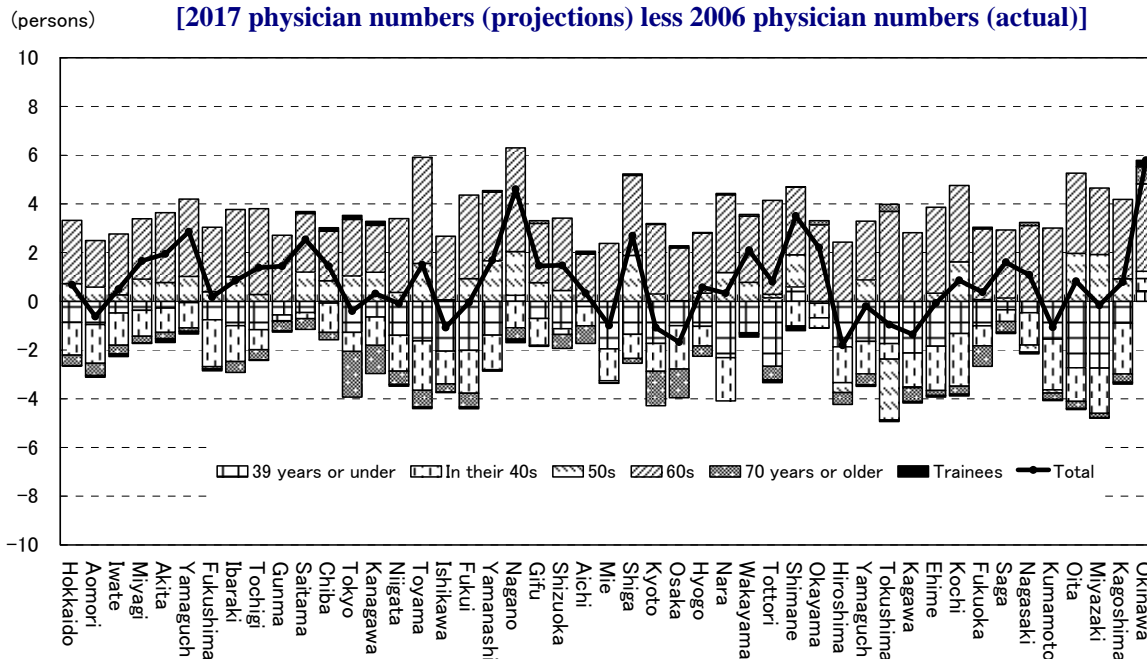
The number of patients is based on the progress of the aging of the population. The estimates were made on the assumption that the elderly tends to consult physicians more often than younger generations. Used to make the estimates was *Population Projections by Prefecture* of the National Institute of Population and Social Security Research.

On the other hand, based on the fact that physicians tend to retire from their profession after age 65, the projection of physician numbers by prefecture is based on the present age distribution of physicians in each prefecture. This projection takes into account the planned increase of 50 percent in admission quotas for medical schools in the next 10 years.

Pronounced Aging of Physicians

First, what will be the situation in 2017, immediately before the increase in medical students starts to have an effect? The chart shows that the increases in physician numbers will be attributable mostly to increases in physicians over the age of 60. These physicians belong to the generation of doctors, who were admitted to faculties of medicine between 1972 and 1980, when many medical schools were established under a policy designed to solve the problem of “prefectures without a single medical school.” On the other hand, the number of physicians in their 30s and 40s, who are in their prime working years, will decline in most prefectures. In other words, the government’s recent policy of holding down the admission quotas of medicine faculties will have negative consequences.

Chart Increases in the Numbers of Physicians per 1,000 Patients [2017 physician numbers (projections) less 2006 physician numbers (actual)]



Sources: As for the Table. The figure for each age group includes trainee-physicians, but since their ages are unknown, they are not included in the overall figure.

By 2027, when the policy to increase physicians will have an effect in full, the average number of physicians per 1,000 patients will increase by a little over 10 percent in the nation as a whole as compared with 2006 (Table). However, there will be hardly any improvement in Aomori Prefecture, where the physician shortage is most acute. This is because as the present number of physicians newly assuming posts in the prefecture is small, even if there is some increase in the number of physicians in the future, it will not be enough to resolve the shortage. The coefficients of variation, which show the discrepancy in the densities of physician population among prefectures, will rise, worsening the uneven distribution of physicians.

Tightening Regulations on Physicians Assuming Posts in Different Regions

Merely increasing the admission quotas of the faculties of medicine will not solve the problem of the uneven distribution of physicians. Empirical studies in other countries have demonstrated that “quotas for local students,” which are expected to be enlarged in the future in this country, and offering scholarships in exchange for commitments to work in the prefectures which are in need of more physicians are effective to a certain extent. However, even if these “local quotas” and “scholarship” policies are adopted for students who plan to attend medical schools in or after the next academic year, it will take approximately 10 years before this policy has an effect.

If a more immediate solution is to be sought, perhaps “regional quotas for physicians” might be introduced. Germany and France have already introduced such quotas. In Japan, the new clinical training system for physicians, adopted in 2004, which allows medical school graduates to freely choose the institutions where they wish to receive clinical training, is exacerbating the uneven distribution of physicians. Perhaps, it is time for more rigorous regulations regarding the regions in which physicians may practice their profession.

Notes:

- 1) A news item from NHK (Japan Broadcasting Corporation) broadcast on November 9, 2008.
- 2) Details of this study will be released shortly on the JCER Web site, *JCER Discussion Paper*.

Hideaki Matsuoka

Economist in the Economic Research Department of the JCER, specializing in Public finance and social security.

For inquiries regarding this paper, please contact at ht-matsuoka@jcer.or.jp

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Japan Center for Economic Research (JCER)

Nikkei Kayabacho Bldg. 2-6-1 Nihombashi Kayabacho, Chuo-ku, Tokyo 103-0025, Japan

Phone:81-3-3639-2801 / FAX:81-3-3639-2839