The Emergence of Modern Hospital Management and Organisation in the World 1880s–1930s

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The Emergence of Modern Hospital Management and Organisation in the World 1880s–1930s

BY

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Preface

This book studies the emergence of new patterns of organisation and management of new modern large hospitals in the world a century ago, between the 1880s and the 1930s. History never repeats itself, but there were three major events that interacted and influenced each other at that time, and that are once more having important consequences in our lives today. First, a technological and scientific revolution in the health industries which radically changed the methods of diagnosis and therapy for the sick, with enduring innovations taking place in Medicine, Biology, Pharmacy and sanitary equipment. Second, world migrations moving millions of people from one continent to another and from the countryside to cities. And third, weak healthcare policies unable to respond fast enough to a worldwide pandemic. A century old it was the Spanish flu; today it is COVID-19.

In every historical period, healthcare systems must balance radical life-saving innovations, pressure from their changing communities, rigid regulations and the reality of unequal and insufficient systems of access to health care. Their capacity to respond to challenges like new viruses or new bacteria that spread quickly and cause many deaths has been historically linked to the strength of public health insurances, the affordability of private health insurances, and in general to the level of healthcare expenditure in the national GDP. Today, the World Health Organization acknowledges in their official reports and sites that hospital management is also crucial factor in understanding the strength of healthcare systems.

What do we know about hospital organisation and management in history? This book aims to provide some answers to this question, with an international business history perspective. It is tremendously difficult to find information for many countries, and still more difficult to find analyses that compare different national healthcare systems, to see whether there has been a convergence in models of hospital organisation and management, or rather a persistent diversity of models that have developed in parallel, unconnected or without mutual influences.

The first objective of this book has been to contribute to this debate by offering an overview of the emergence of new large hospitals in a sample of regions and countries in the world, from Western Europe and the United States, to Latin America, China, former colonies like Hong Kong or India, Japan and Communist countries like Russia. There is a tremendous wealth of secondary sources, but also primary sources, some of them digitised and available in open access. Particularly important for this book have been documents from professional associations of surgeons and hospitals, rarely found first editions of books that pioneered a movement towards the standardisation of hospital organisation in

the world, statistics from international and national institutions and organisations, and travel logs by surgeons and physicians visiting distant countries with relatively unknown descriptions of new hospital organisation and management in Latin American Republics, and in Russia in the 1920s and 1930s.

Travels by surgeons have proven to be particularly noteworthy sources for some countries, because no other general description of original data is available for these years and areas of the world until after the 1960s. Prior to the 1930s, bulletins from the League of Nations or the Pan American Health Organization published information about the spread of epidemics and how to organise and coordinate methods of epidemic prevention and control across the world, but these bulletins are hard to find and give limited insight into the organisation and management methods of new hospitals. Travel logs published by associations of American and British surgeons are, therefore, precious sources that have provided the basis for at least two chapters of this book, with new evidence not found elsewhere in current publications on the history of new hospitals in the twentieth century.

This book aims to use a variety of secondary and primary sources to present, possibly for the first time, a general overview of the emergence of new hospitals and new models of hospital organisation and management for a large number of regions and countries in the first third of the twentieth century, for which there is a serious lack of quantitative and qualitative data.

There are excellent and abundant monographs and primary sources for studying the history of individual hospitals all around the world, and this book has used them to provide an in-depth approach to the emergence of new patterns of hospital management in the same city, in the same years, through the case study of the city of Barcelona, an example of what could have been similar experiences in other similar European cities before World War II. Archives with a diversity of documents from the administrative and medical boards of the Hospital de Santa Creu and Sant Pau, and from the Hospital Clínic of Barcelona, are used to show the significance of the professionalisation of hospital managers in developing, or creating obstacles to, the adaptation of hospital management to new challenges of the time.

When, four years ago, I began the study of the history of hospitals that has led me to write this book, I also began my great debt of gratitude to Pierre-Yves Donzé, professor at the University of Osaka in Japan and a good colleague at the European Business History Association; he has contributed valuable research for a business history approach to the history of Swiss and Japanese hospitals and the role of German medical equipment distributed in South American hospitals in the twentieth century. His many articles and books are masterpieces that have helped me many times to discover a field of study that was new to me in 2016 when I first started studying history of hospitals. I have also learnt a great deal from two Spanish colleagues, Jerònia Pons and Margarita Vilar, who have published several working papers, articles and books about the construction of hospitals in Spain after the end of the Spanish Civil War, and the coexistence of private and public health insurance systems that are so typical of Spain still today. Jerònia and Margarita, together with Pierre-Yves, have always been willing to help and

to share their knowledge when needed, especially during the history of health industries workshop that I organised in the Faculty of Economics and Business at the University of Barcelona. This workshop was the origin of a special issue on Health Industries, coedited with Pierre-Yves, in the journal Business History in 2019. Many participants at that workshop who contributed to the special issue also shared their ideas, like Sabine Schleiermacher from the Institute of History of the Medicine at the Charité Faculty of Medicine of Berlin. I must also express a big debt of gratitude to a very wise man and scholar, one of the pioneers in History of Medicine in the Faculty of Medicine of University of Barcelona, Ferran Sabaté, from whom I learnt the history of public healthcare policy and sanitary innovations that developed in Catalonia in the first third of the twentieth century. Ferran has always been extremely generous, extremely collaborative, and always willing to help and to read through my work from the distant area of economic and business history. I must also mention Pep Barceló who has been very generous in sharing his knowledge and publication.

I also wish to thank four people who listened and enthusiastically encouraged me in my research project on the history of hospital organisation and management, during my public bid for full professorship in Economic History at the University of Barcelona in April 2019: Albert Carreras, Leandro Prados de la Escosura, Concha Betrán and Luis Bohigas. Leandro, Albert and Concha were wonderful colleagues, and Bohigas a very kind and intelligent person, an expert in hospital accreditation in Spain in the late twentieth century, who provided very positive support and encouragement, making me realise the importance of the history of modern hospital organisation for a variety of professionals, and how complementary my research project was with current research by Leandro Prados on the process of improvement in global well-being in the first third of the twentieth century. I will always be grateful to them for being so supportive in this public presentation of my new research project for the coming years.

I also want to thank colleagues at the Faculty of Economics and Business at the University of Barcelona, for their curiosity and interest in my research, especially Jaume Valls, Alba Roldán, Tomás Fernández de Sevilla, Miquel Gutiérrez, Alex Sánchez, Raimon Soler, Marc Prat and Alfonso Herranz. I also want to thank Mario Cerutti and Javier Vidal for their support in the presentation of my research in this book during the last CLADHE congress in Santiago de Chile in 2019.

Special words of thanks must be given to Jaime López Guauque for the long period of efficient and patient technical research assistance he provided with support of the two Icrea Academia awards I received in 2008 and 2013. Jaime produced more tables and figures than I would be ever able to use in my life, always willing to go one step further despite his field of expertise being Accountancy, so distant from my very qualitative economic and business history approach. Also extremely efficient, patient and always available to help, Kirstin Adams, who helped me polish up the English in the final version of the book.

Outstanding generosity was also provided by former archivist of the Arxiu Històric Hospital Santa Creu and Sant Pau, Pilar Salmerón, and the current archivist Miquel Terreu, who went beyond the call of duty to facilitate the search

and use of a wealth of diverse sources of information, from account books to meeting of administrative and medical boards, to internal bulletins and yearbooks of the hospital, without which the section on the transformation in the management of one of the largest hospitals of Barcelona still today, would have been impossible to complete.

I have been privileged with sustained financial support for my research. First, thanks to an Icrea Academia award that, between 2013 and 2018, provided funds for research, writing and dissemination of results in congresses and seminars; since 2019, from the research project 'Emprendimiento colectivo, innovación e internacionalización en las empresas españolas de servicios (1900–2017)', Reference PGC2018-093971-B-I00/MCIU/AEI/FEDER, UE. The support of Emerald Publishers in their financing of the publication and distribution of this book, as well as their constant support, must also be fully acknowledged. Niall Kennedy, David Mulvaney, and the series editors Kevin Tennent and Alex Gillett have always been extremely kind and supportive in their editorial support and guidance.

Last, but not the least, I would have never started this book without the support I have always received from my family. My very large family, that includes my mother, four sisters and brother, my very much loved daughter Paola and son Guillermo, and nephews and nieces, particularly Miguel Frognier and his mother Inés Pérez, who generously searched in Hong Kong libraries for updated books about history of hospitals of Hong Kong and China, which have been put to full use in this book. The freedom to read and to write about exactly what I want to, owes a great deal to the love I have always received from the two men who constantly believed in me and made me feel strong and capable of great things: my father who is in heaven, and Lucho.

This book has sought to give a first overview, a first glimpse, of an extremely ambitious and complex reality, difficult to encompass in a short book aimed at a general public. Much still needs to be done before a complete description of the process of transformation of our hospitals can be made, and I sincerely hope further research will continue in the effort.

Paloma Fernández Pérez
Barcelona, 22 May 2020

Chapter 1

Health Spending and Hospitals in the World in a Long-term Perspective

1.1. Health Spending and Hospital Centrism in the World

Health expenditure estimates for 1900 indicate that they may have accounted for 1% of a country's total GDP a century ago, and jumped to an average of 10% of the world GDP in 2017, with the fastest period of growth between the 1970s and the first decade of the twenty-first century. According to OECD statistics, in 1970, health expenditure jumped to an average of 4%–6% of GDP (5.2% in France; 5.7% in Germany; 4.4% in Japan; 4% in the United Kingdom; and 6.2% in the United States). In 2015, health expenditures accounted for 11% of GDP in France, 11.1% in Germany, 11.2% in Japan, 9.8% in the United Kingdom, and 16.9% in the United States (Donzé & Fernández-Pérez, 2019). The increase has also been visible in emerging markets like China and India in the last decades with health expenditure accounting for about 4%–6% of GDP in China and 4%–5% in India between 1995 and 2014 (Donzé & Fernández-Pérez, 2019).

According to reports of the World Health Organization (WHO), global health spending has seen a rapid increase in the last years, reaching US$7.8 trillion in 2017 (about 10% of GDP and $1,080 per capita), from US$7.6 trillion in 2016. Growth has been faster in low-income countries, with average annual growth rates of around 6% (for example, in 2013 Latin American countries spent on average 6.7% of their GDP on health with situations of great internal diversity), whereas high-income countries maintain an average of 3% growth annual rate. Most of the total health spending takes place, however, in high-income countries, and 60% of world health spending is public, 40% private (20% private in OECD in 2016 and 48% private in Latin America in 2013).[1] Data on health spending for close to 190 countries from 2000 to 2017 shows the trend is clearly upwards, although it also highlights that there are enormous differences between countries (World Health Organization (WHO), 2020; Xu et al., 2019).

Most of the world health spending is hospital spending (public plus private), in 2016 on average around 50%. There are many indicators that show the heterogeneity

[1]OECD data of 2016 in OECD 2019; PAHO (2013).

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across countries not only in the total volume of health spending on hospitals, but also on the specific relative weight of each of the many components of hospital health spending in each country. From a long-term historical perspective, there are two indicators for which it is relatively possible to elaborate, at a local and at a national level, as well as on a global scale, long-term statistics on the evolution of hospital health spending across territories. The first is the number of hospital beds; the second, the number of nurses. Since medieval times, every hospital with a decent archive has information about both. They are two of the oldest, simplest and most resilient indicators of the evolution of hospitals. Until the second half of the twentieth century, physicians in most parts of the world were not permanent staff members of a hospital (and in some poorer countries still aren't), so it is the data on nurses (religious, or lay professional) that best reflects the long-term increase in services in most of the world's hospitals; this, together with hospital beds. Hospital services are very knowledge intensive, but the daily assistance to incoming patients requires much labour intensive work and heavy spending on the costs involved in maintaining hospital beds over long periods of time, including all the necessary equipment and assistance of nurses or auxiliary medical staff, such as midwives.

The WHO has compiled several databases for recent years using these two indicators, from which Table 1.1 has been elaborated. The table presents the most recent data available in the WHO databases about hospital beds per 10,000 inhabitants, and nurses and midwives per 10,000 inhabitants in the world, by country. The year to which each indicator corresponds varies between 2013 and 2018. There is a small group of countries in which there is currently a high density of hospital beds and nurses and midwives, notably in five big regions of the world: (1) Germany, France, Austria, Belgium, Scandinavian countries and the Netherlands in Western Europe; (2) Poland, Hungary, Ukraine, Bulgaria and Romania in Eastern Europe; (3) Cuba and Argentina in the Americas; (4) Japan, South Korea, the Russian Federation and North Korea in Asia; and (5) Turkey, South Africa and Saudi Arabia in Africa and the Middle East. And there is a vast number of countries with very poor endowment of hospital beds and nurses. The latest pandemic, COVID-19 in 2020, has, with little variations, shown that precisely those countries with the highest indicators of density of hospital beds and nurses in the early twenty-first century are often those with the lowest number of deaths.

The concentration of health services and the coordination of health needs of the communities through hospitals of various typologies has been called hospital centrism. Hospital centrism, with its origins in the 1830s, developed in the 1880s–1930s, and became widespread in the 1950s and 1960s. This was a process by which public and private investment in large hospital facilities concentrated the access to health services for large portions of the sick population on very large hospitals. This process resulted in a rapid expansion of hospital capacity, doubling or more in some cases, in most medium sized and large cities of the world before World War II: from between 600 and 1,200 hospital beds per large hospital before the 1940s, to an average of 2,000 hospital beds per large hospital in OECD economies and 4,000 or more hospital beds in large emerging markets.

International statistics do not provide comparable indicators for all countries within the same years when dealing with a long-term perspective of around a century,

Table 1.1. Hospital Beds and Nurses and Midwives per 10,000 Inhabitants in Selected Countries of the World, 2013/2018.

Region/Country	**Hospital Beds/Year**	**Nurses and Midwives/Year**
AMERICAS		
Canada	27/2012	99.44/2018
United States	29/2013	145.4/2017
Mexico	15.2/2015	23.96/2018
Guatemala	6/2014	0.74/2018
Honduras	7/2014	7.36/2018
Nicaragua	9/2014	15.33/2018
Costa Rica	11.6/2015	34.14/2018
Panama	23/2013	30.72/2018
Cuba	52/2014	75.61/2018
Haiti	7/2013	6.8/2018
Dominican R.	16/2014	13.8/2018
Venezuela	8/2014	9.42/2018
Guyana	16/2014	10.4/2018
Colombia	15/2014	13.31/2018
Ecuador	15/2013	25.06/2018
Bolivia	11/2014	15.59/2017
Peru	16/2014	24.4/2018
Brazil	22/2014	101.2/2018
Argentina	50/2014	26/2017
Chile	22/2013	133.2/2018
Uruguay	28/2014	19.41/2017
Paraguay	13/2011	16.6/2018
EUROPE		
Portugal	33.95/2013	69.75/2017
Spain	29.65/2013	57.3/2017
Greece	42.5/2015	36.33/2017
Italy	34.22/2012	57.4/2018
France	64.77/2013	114.7/2018
UK	27.58/2013	81.72/2018
Ireland	27.61/2013	161/2017
Germany	82.78/2013	132.4/2017

Table 1.1. (*Continued*)

Region/Country	Hospital Beds/Year	Nurses and Midwives/Year
Netherlands	46.57/2009	111.8/2017
Belgium	62.29/2014	194.6/2018
Switzerland	46.77/2013	175.4/2017
Austria	76.47/2013	2.63/2018
Sweden	25.94/2013	118.2/2017
Denmark	25.3/2015	103.2/2016
Norway	38.58/2013	182.2/2018
Finland	43.5/2015	147.4/2016
Poland	65/2013	68.93/2018
Hungary	70.37/2013	69.16/2018
Bulgaria	68.16/2013	48.16/2015
Romania	62.7/2013	73.89/2017
ASIA and PACIFIC REGION		
Russian Fed.	81.75/2013	85.43/2017
China	42/2012	26.62/2017
Japan	134/2012	121.5/2018
Indonesia	12.1/2015	24.15/2018
India	6.6/2011	17.27/2018
South Korea	115.3/2015	73.01/2018
North Korea	143/2010	44.49/2017
Australia	37.9/2014	125.5/2017
MIDDLE EAST AND AFRICA		
Turkey	26.56/2013	27.11/2017
Egypt	15.6/2014	19.26/2018
Saudi Arabia	26.5/2014	54.76/2018
Iran	15/2014	4.43/2018
Afghanistan	5/2015	1.76/2017
Morocco	11/2014	13.89/2017
South Africa	28/2005	13.08/2017

Source: Prepared by the author with data from database of WHO (2020), The Global Health Observatory, Indicators, Hospital Beds per 10,000 inhabitants per country and Nurses and Midwives per 10,000 inhabitants per country, retrieved from https://www.who.int/data/gho/data/indicators (06/05/2020).

when large hospitals started to change their scale, their scope, their organisation and their management. The League of Nations elaborated in 1930 a list of hospital beds for a limited sample of countries. Later, the OECD and the Pan American Health Organization of the WHO started collecting data supplied by official national institutions for a larger sample of countries covering a number of years after 1960, though with many gaps for most countries. After the 1990s and the early twenty-first century, and possibly in connection with radical improvements in the handling, storage and sharing of information that ICTS made possible, statistics at a national and international level increased, became more comparable, and started to be collected in a more standardised way by international organisms like OECD, United Nations, WHO or World Bank. Their websites and publications provide a wealth of information from the 1960s onwards for many countries. The WHO's Global Health Observatory Database of 2020, for instance, gives data on various indicators of health care for a very large sample of countries for the years 2012–2015.

In Tables 1.2, we have compiled for comparison purposes a few of the available indicators from these three sources, applied to a reduced number of countries that yielded significant data in order to draw some conclusions.

One of the tables illustrates with numbers, even if incomplete, something extremely important: the sustained trend of growth in hospital beds per capita between the 1920s and the 1980s in many developed countries, and the sustained

Table 1.2. Hospital Beds Per 1,000 Inhabitants in the World, 1929–2017.

	1929	**1960**	**1970**	**1980**	**1990**	**2000**	**2013**	**2017**
EUROPE								
France	3.6					7.9	6.4	5.9
Germany	5.0					9.1	8.2	8.2
Italy		8.9	10.5	9.6	7.2	4.7	3.4	3.1
Spain	4.0*		4.6	5.3	4.2	3.6	2.9	2.9
UK						4.1	2.7	2.5
ASIA AND OCEANIA								
Japan						14.6	13.4**	13.0
China								4.2
India								0.6
Russian Federation						8.1		
Australia							3.7	
AMERICA								
Argentina	6.4	5.7	5.4				5.0	

Table 1.2. (*Continued*)

	1929	1960	1970	1980	1990	2000	2013	2017
Bolivia		1.8	2.0	1.8				1.1
Brazil		3.4	3.8	3.8				2.2
Canada		10.6	9.8	8.9				2.7
Colombia	3.2	2	1.7				1.5	
Costa Rica	5.1	3.9	3.5				1.16	
Cuba		2.3	4.2	4				5.2
Chile		5.0	3.7	3.6				2.2
Ecuador	2.1	2.1.	2.1.				1.5	
El Salvador	2.2	2.1	1.8					
Guatemala	2.8	2.4	2				0.6	
Haití		0.7	0.7	0.8				0.7
Honduras	2.0	1.7	1.3				0.7	
Mexico	9.6	1.4	1.2	1.2				0.5
Nicaragua	1.8	2.5	2.2				0.9	
Panama	3.8	3.2	3.9				2.3	
Paraguay	0.8	1.5	1.5				1.3	
Peru		2.2	2	2				1.6
Rep. Dom.	2.7	2.8	2.8				1.6	
Uruguay	3.9	5.7	5.7				2.8	
United States	2.97	9.18	7.88	6.01	4.86	3.49	2.9	2.77**
Venezuela	3.6	3	3.4				0.8	

Source: Prepared by the author. Data for 1929: *International Year-Book of the League of Nations 1920* (*Spain's figure in 1929 in fact is data corresponding to 1940 from Nicolau 2005, and assumes that during the Civil War 1936–1939 no significant increase in number of hospital beds took place compared to numbers before the war and that therefore data for 1940 is likely to be close to the number of hospital beds in around 1935). For 1960 to 2000 OECD Statistics. For 2013 Global Health Observatory Database for 2020 of the World Health Organization (Japan for 2013 in fact is data for 2012). For 2017 OECD *At a Glance Healthcare Indicators* 2019 (data in 2017 for the United States in fact is year 2016). For 1960 to 1980 years information for American countries retrieved from Pan American Health Organization reports https://www.paho.org/salud-en-las-americas-2012/index.php?option=com_content&view=article&id=10:archives&Itemid=121&lang=es (accessed between 2018 and 2019, data downloaded with technical assistance by J. Lopez Guauque: data for 1970 published in 1972 report; PAHO data for 1980 corresponds to 1978).

trend of decline in number of hospital beds in the developed world, with different levels, between the 1980s and our days.

Another table provides data for 2013 from the WHO, that reveals the extremely low numbers of hospital beds in all the emerging economies of the world (with the notable exception of Eastern Europe and some communist countries like

Cuba and North Korea, in which there is a high number of hospital beds per capita for the population).

The information in the tables show how in some countries like Italy or Spain and the United States, there are fewer hospital beds per 10,000 inhabitants today than before World War II. The countries with more drastic cuts in hospital beds seem to be, according to this table, the United States where today there are around 27 hospital beds per 10,000 inhabitants when in 1960 there were three times as much; and Italy where a similarly radical cut took place from the 105 hospital beds in 1970 to 31.8 in 2017. One wonders whether there is a relationship between these cuts and the huge impact of deaths due to COVID in 2020.

During the 1930s and 1940s, governments and international organisations had great difficulty in gathering and elaborating reliable comparable indicators on the progress of new large professional hospitals in the world. Only gradually in the mid-1950s – and above all after the 1960s on a national scale – did governments start to use some indicators and were able to provide them to international organisations such as the United Nations, the WHO and the Pan American Health Organization. The tables below present data from OECD that highlight how in four decades the numbers of registered physicians, nurses and pharmacists per 1,000 inhabitants multiplied by two or three in a sample of developed countries between 1960 and 2013. The rapid growth in numbers of healthcare sector professionals ran in parallel with the growth in the number of public and private hospitals and clinics in the world in these last five decades, as can be observed in Table 1.3–1.8:

Table 1.3. Number of Hospitals in Some OECD Countries, 1980–2013.

	1980	**1990**	**2000**	**2010**	**2013**
France	..	..	3,120	2,707	3,382
Germany	..	..	3,635	3,301	3,183
Italy	..	1,757	1,321	1,230	..
Japan	..	10,096	9,266	8,670	8,540
Spain	1,084	820	771	765	764
United States	6,965	6,649	5,810	5,754	..

Table 1.4. Number of Hospitals Per Million Inhabitants.

	1980	**1990**	**2000**	**2010**	**2013**
France	..	..	51.35	41.76	51.48
Germany	..	..	44.22	40.37	39.47
Italy	..	30.98	23.2	20.75	..
Japan	..	81.67	73	67.7	67.09
Spain	28.95	21.11	19.15	16.42	16.39
United States	30.65	26.64	20.59	18.6	..

Source: OECD.stat http://stats.oecd.org/ (January 2017).

Table 1.5. Hospital Beds Per Country (Number).

	1960	1970	1980	1990	2000	2010	2013
France	..	..	..	..	484,279	416,710	413,206
Germany	..	..	..	..	749,473	674,473	667,560
Italy	450,539	568,513	542,260	410,026	268,057	215,980	..
Japan	..	..	..	..	1,864,008	1,730,215	1,695,114
Spain	..	157,598	201,035	165,897	148,081	145,199	138,153
UK	..	..	..	..	241,331.8	183,848.55	176,788.8
United States	1,658,000	1,616,000	1,365,000	1,213,000	983,628	941,995	..
Total Hospital Beds by Country Per 1,000 People							
France	..	..	..	..	7.97	6.43	6.29
Germany	..	..	..	..	9.12	8.25	8.28
Italy	8.97	10.56	9.61	7.23	4.71	3.64	..
Japan	..	..	..	..	14.69	13.51	13.32
Spain	..	4.66	5.37	4.27	3.68	3.12	2.96
UK	..	..	..	..	4.1	2.93	2.76
United States	9.18	7.88	6.01	4.86	3.49	3.05	..

Source: OECD.stat http://stats.oecd.org/ (January 2017).

Table 1.6. Physicians Per 1,000 Inhabitants.

		1960	1970	1980	1990	2000	2010	2013
Physicians not retired	France	..	..	..	..	..	..	3.1
	Germany	..	..	..	..	3.26	3.73	4.05
	Italy	..	..	..	..	..	..	3.9
	Japan	1.03	1.09	1.27	1.65	1.93	2.21	..
	Spain	..	..	1.84	2.05	3.16	3.76	3.81
	UK	0.85	0.94	1.32	1.62	1.96	2.7	2.77
	United States	..	..	..	..	2.29	2.43	2.56
Physicians active in their profession	France	..	..	..	3.02	3.26	3.27	3.33
	Germany	..	2.08	2.82	3.76	3.58	4.08	4.43
	Italy	..	..	..	..	4.16	4	4.19
	Japan	..	..	1.32	1.7	2	2.28	..
	Spain	..	..	..	2.24	3.41	4.01	4.1
	United States	..	..	..	..	2.45	2.57	2.7