Rev Saúde Pública 2009;43(4)

Ronir Raggio Luiz

Lígia Bahia

Income and vocational integration of Brazilian physicians since the establishment of the National Health System

ABSTRACT

OBJECTIVE: To analyze trends relating to physicians' vocational integration and income composition from the *Pesquisas Nacionais por Amostra de Domicílio* (PNAD – National Household Sampling Surveys).

METHODS: PNAD microdata from 1988, 1993, 1998 and 2003 were analyzed in relation to demographic, social and occupational parameters. In the exploratory analysis, trends relating to physicians' employment and income were considered. Statistical associations were evaluated by means of the chi-square test.

RESULTS: Regarding the demographic profile, a trend of increasing presence of women and of professionals over 55 years of age was observed, with a continuing high proportion of whites. Regarding occupation and income, there was an increase in entrepreneurialism among physicians and maintenance of high income, in relative terms, especially among those who combined the occupations of employee and employer.

CONCLUSIONS: The possibility of examining individualized characteristics of occupation and income, along with physicians' many professional ties, which albeit in a limited manner can be done through PNAD, contributes towards deepening the comprehension of the patterns and changes in Brazilian physicians' integration in the labor market since the implementation of the *Sistema Único de Saúde* (SUS – National Health System).

DESCRIPTORS: Physicians, supply & distribution. Job Market. Population Surveys. Brazil.

INTRODUCTION

Among the technological, managerial, institutional and policy changes that have occurred within the Brazilian healthcare system since the implementation of the *Sistema Único de Saúde* (SUS – National Health System), the employment market for healthcare professionals – or, in broader terms, the healthcare workforce – has been analyzed from various databases and methodological perspectives. This topic has been prominent within the agenda for healthcare systems in Latin America since the 1950s. At that time, among other important sectoral transformations, the creation of the Chilean National Health Service in 1952, inspired by the British universal model that was instituted in 1948, imposed theoretical, conceptual and institutional challenges on the training of

Instituto de Estudos em Saúde Coletiva. Universidade Federal do Rio de Janeiro. Rio de Janeiro, RJ, Brasil

Correspondence:
Ronir Raggio Luiz
Prédio do IESC
Pç. Jorge Machado Moreira, 100
Cidade Universitária
21941-598 Rio de Janeiro, RJ, Brasil
E-mail: ronir@iesc.ufrj.br

Received: 06/21/2008
Revised: 01/05/2009
Approved: 01/14/2009

human resources, especially in relation to training for physicians that would be considered appropriate for the expansion of the public provision of healthcare services.[6]

In Brazil, according to Nunes,[12] the pioneering work of Donnangelo on the relationships between the pattern of state intervention and the employment market for physicians, based on a survey among physicians in the city of São Paulo in 1971, defined three different types of participation in the employment market, either separately or as combinations of these types: self-employed, salaried workers and owners of private companies. The predominance of combined forms (56.8% of the sample) and the observations of an association between higher income levels and control over the means of production signaled changes in the stratification patterns among physicians, in terms of income, prestige and professional qualification. The concept of social organization of medical practice formulated by Donnangelo[4] was also the inspiration for studies looking back on the historical nature of changes in medicine and medical employment. Nogueira,[10,11] Schraiber,[15] Campos[1] and Paim,[13] among others, detailed the singularities of the process of technical division of medical employment and its social, economic, legal, political and ideological repercussions, thereby systematizing the process of linking employment with the organization and institutionalization of medical practice.

Beginning in the mid-1980s, information on the medical employment market started to be gathered from official sources, coming from systematic surveys and registers with national coverage, such as the *Pesquisa Assistência Médico-Sanitária* (AMS – Medical-Health Care Survey) of the *Instituto Brasileiro de Geografia e Estatística* (IBGE – Brazilian Institute for Geography and Statistics), the *Relação Anual de Informações Sociais* (RAIS – Annual Report on Social Information) of the Ministry of Labor and Employment and the *Cadastro Nacional de Estabelecimentos de Saúde* (CNES – National Register of Health Establishments). The observation units for these sources – health establishments or establishments in general – made it possible to quantify and categorize physicians' employment positions. Specific surveys, also of national scope, have been conducted by teaching and research institutions and by professional bodies, such as those by the *Fundação Oswaldo Cruz* (Oswaldo Cruz Foundation) and the *Conselho Federal de Medicina*, (CFM – Federal Medical Council) in 1995[a] and in 2002-2003.[b] There have also been localized surveys, such as the one by the Regional Medical Council of São Paulo in 2007,[c] that have brought out individualized information on the integration of healthcare professionals into the employment market.

The recent reappearance of the problem of human resources on the agenda of sectoral priorities within the context of implementation of SUS and reorganization of private healthcare services has focused on transformations in the ways in which healthcare professionals are hired. Furthermore, the conjugated effects from adopting the uniform principles of the unified legal framework for hiring public employees, which has been implemented within a scenario of budget restrictions, fiscal adjustments and increased flexibility of the rules for bringing workers into private healthcare establishments, has resulted in growth of outsourcing and of various forms of unregulated occupation within the sector.[7]

Thus, accompanying the changes in the Brazilian healthcare system, the focus of studies has settled on the magnitude and detailing of the medical employment market; changes in hiring methods; increased precariousness; and conflicts generated through tensions between spheres of power and professional bodies. More recently, the debate among government institutions, professional representative bodies and private companies regarding the forecasts for the need for specialists and the polemic regarding the quantity and quality of institutions for training physicians in Brazil has had input from the deepening of the analyses on the provision, demand for and ways of integrating physicians in the employment market.

The rich and diversified national production of knowledge on human resources and healthcare, the creation of the Department of Employment and Education Management within the scope of the Ministry of Health in 2003 and the establishment of a network for monitoring human resources have reaffirmed the importance of this topic and stimulated the emergence of local research groups. In recognition of the importance and specific features of investigations on employment and healthcare professionals, the databases on medical employment have almost always been analyzed by researchers and technical experts who are qualified to make inferences regarding the complex social processes underlying the statistics, starting from partial empirical evidence.

The two sources of information most consulted regarding the employment market for physicians are the

[a] Machado MH, Rego S, Oliveira ES, Pinto LFS, Lozana J, Sertã F, Teixeira M, Vieira M, D'ávila C. Perfil dos médicos no Brasil. Rio de Janeiro: FIOCRUZ/CFM-MS/PNUD; 1996.

[b] Conselho Federal de Medicina. O médico e o seu trabalho: aspectos metodológicos e resultados do Brasil. Brasília; 2004 [cited 2008 Jun 20]. Available from: http://www.portalmedico.org.br/include/biblioteca_virtual/medico_e_seu_trabalho/trabalho.PDF

[c] Conselho Regional de Medicina do Estado de São Paulo. O trabalho médico no estado de São Paulo. São Paulo; 2007 [cited 2008 Jun 18]. Available from: http://www.cremesp.org.br/library/modulos/centro_de_dados/arquivos/mercado_de_trabalho.pdf

AMS, carried out by IBGE since 1976, and the RAIS, which was instituted through Decree no. 76,900,[a] with the aim of providing control requirements regarding employment contract activities in Brazil, and is maintained by the Ministry of Labor and Employment. The two surveys among Brazilian physicians conducted in 1995 and 2002-2003 and the registration data held by the medical councils, along with information coming from isolated investigations, complement the analyses on the predominant traits of the structure and dynamics of physicians' employment. These sources, especially the official ones, record distinct dimensions of the employment market. Whereas AMS counts the employment positions that exist, RAIS gives the numbers of workers (physicians) with formal links.

Therefore, given the differences in the nature and coverage of the records on the numbers of physicians, the frequencies recorded by these three sources (IBGE, RAIS and CFM) are not automatically comparable. The number of employment positions recorded by the AMS/2005 (476,604),[b] which excludes employment in private offices, was significantly greater than the approximately 360,000 physicians recorded by CFM[c] and than those 297,724 formally employed recorded by RAIS/2005.[d] These discrepancies coming from the different types of observation of the three sources make it recommendable to acquire prior recognition of their advantages and disadvantages regarding coverage and adequacy for analyses on the medical employment market.

The National Household Sampling Surveys (*Pesquisas Nacionais por Amostra de Domicílios*, PNADs), which also include information on occupation, types of linkage to the employment market, income and other demographic and social data, broken down at the individual level, are less often accessed for analyses on the healthcare workforce than the AMS and RAIS data are. Researchers probably make little use of PNAD data on the integration of healthcare professionals, for methodological reasons. The sampling design of the PNAD is not aimed at obtaining representativeness for specific professional categories. Secondarily, there are operational, instrumental and theoretical problems relating to the processing and analysis of large and complex databases. From the PNADs of 1988, 1993, 1998 and 2003, it can be estimated that there were, respectively, 172,412, 178,755, 228,882 and 263,604 physicians in Brazil. These numbers indicate lower frequencies of physicians than shown by the databases cited above.

The aim of the present study was to examine employment trends and the income makeup of Brazilian physicians based on the PNADs, and to determine the magnitude of the impact of decentralization of the public healthcare system on the links between physicians and the public sector. Thus, considering the continuous nature and reorganization of private healthcare entrepreneurialism following the implementation of SUS, the focus of the analysis is turned towards examining the integration and remuneration of Brazilian physicians, as a proxy for the limits and perspectives for putting the proclaimed universal right to healthcare into effect.

METHODS

Microdata from the PNADs covering 1988, 1993, 1998 and 2003, were analyzed. These corresponded to 298,368 in 1988, 322,205 in 1993, 344,975 in 1998 and 384,834 in 2003. These microdata were made available by the IBGE on CD.

The initial choice of years to investigate was mainly due to the existence of special information on healthcare in the PNADs of 1998 and 2003 (health supplement), thus determining a time interval of five years. It was deemed methodologically convenient to keep to this time spacing, and thus the PNADs of 1993 and 1988 were also included. The 1988 survey coincided with the implementation of SUS and therefore represents a "t0" that was adequate for the purposes of the study.

The database comprised records of individuals whose principal occupation (when there was more than one) or sole occupation was "physician". Through selection of only the code for "physician" as the primary occupation (code "2231" for the PNAD of 2003 and "151" for the others), the four surveys generated a sample consisting of 1,886 physicians: 382 in 1988, 400 in 1993, 531 in 1998 and 573 in 2003. Another option used for selecting physicians was through interviewees' declarations that their second occupation was "physician", in the PNADs of 1993, 1998 and 2003 only. The 1988 survey did not detail any second occupation. In this case, by selecting the records with the code of "physician" for the first or second occupation, a database of 1,586 physicians was obtained: 426 in 1993, 559 in 1998 and 601 in 2003.

[a] Ministério do Trabalho e do Emprego. Decreto nº 76.900, de 23 de setembro de 1975. Regulamenta a Lei nº 6.226, de 14 de julho de 1975, que dispõe sobre a contagem recíproca de tempo de serviço público federal e de atividades privada, para efeito de aposentadoria, e dá outras providências. *Diario Oficial Uniao.* 24 dez 1975.

[b] Instituto Brasileiro de Geografia e Estatística. Estatísticas da saúde: assistência médico-sanitária 2005. Rio de Janeiro; 2006 [cited 2008 May 10]. Available from: http://www.ibge.gov.br/home/estatistica/populacao/condicaodevida/ams/2005/ams2005.pdf

[c] Ministério da Saúde. DataSUS. Indicadores e Dados Básicos. IDB 2007. Brasília; 2007 [cited 2008 May 10] Available from: http://tabnet.datasus.gov.br/cgi/deftohtm.exe?idb2007/e01.def

[d] Ministério do Trabalho e Emprego. Relação Anual de Informações Sociais - RAIS. Brasília; 2005 [cited 2008 Apr 11]. Available from: http://www.mte.gov.br/rais/default.asp

Thus, comparing this with the option of selecting only the first occupation, 26 physicians were incorporated for 1993, 28 for 1998 and 28 for 2003. In accordance with the investigations of interest, both sample sets were analyzed: one with the 1988 PNAD (1,886 physicians) and the other without it (1,586 physicians).

The following social, demographic and occupational variables were selected: sex; color or race, dichotomized as white and non-white (mixed, black, Asian and indigenous); location among the five Brazilian regions; whether more than one occupation was held; the position held as the first or second occupation, using the categories of "employee", "employer" and "self-employed" as the categories for medical work and, residually, "other non-remunerated worker"; remuneration from the first or sole occupation; and total income, including all the interviewee's sources. The interviewees' ages were categorized as up to 29 years, 30 to 54 years and 55 years and over. For physicians in the "employee" category, the employment sector was analyzed (whether private, federal, state or municipal). Finally, the physicians were classified in terms of the origin of their overall income, as "exclusively public", "exclusively private" and "mixed" (both public and private).

The physicians' remuneration was corrected monetarily, and this also took into account that in 1988 and 1993, there were different currencies in circulation in Brazil (*cruzado* and *cruzeiro real*, respectively). Thus, the remuneration values in the PNADs of 1988, 1993 and 1998 were converted to values for the year 2003. This conversion could be done by multiplying the interviewees' remuneration in the years cited, by a correction factor derived from inflation/deflation and from currency conversion. The IBGE's *Índice de Preço ao Consumidor Ampliado* (IPCA – Expanded Consumer Price Index) was used to simultaneously perform the calculations of inflation and currency conversion. The physicians' income in 1988, 1993 and 1998 was corrected to 2003 values by means of the following multiplications, taking September as the reference month:[a]

1988 → 2003: income in 1988 x 0.013561424;

1993 → 2003: income in 1993 x 0.027014545;

1998 → 2003: income in 1998 x 1.5116135.

The chi-square test was used to analyze the categorical variables of interest. The analyses were carried out considering the "relative weight" of the physicians in the samples from each year. After correction to the year 2003, the interviewees' remuneration from their first or sole occupation and their income from all sources were basically explored by calculating mean and median values for the categories of interest.

RESULTS

Table 1 presents a trend of expanding presence of women among the physicians and a trend of increasing numbers of professionals aged 55 years and over. On the other hand, it indicates preservation of high proportions of whites and, in terms of distribution between the regions, continuation of strong concentration in the southeastern region. The participation of women among the physicians grew significantly: 30.9% in 1988, 35.8% in 1993, 46.7% in 1998 and 47.6% in 2003. The presence of physicians of white skin color remained stable over the four survey years studied (86.4%, 84.8%, 88.5% and 88.0%) and much higher than the general Brazilian population of white color/race (around 53% according to the 2003 PNAD). The proportion of physicians with more than one occupation decreased during the 1990s and did not change at the beginning of the 2000s (61.0% in 1988, 52.0% in 1993, 47.8% in 1999 and 46.3% in 2003). The proportion of physicians who were employers also increased significantly, from 6.3% in 1988 to 15.4% in 2003.

Regarding the classification of the physicians according to the sources of their income, there was no statistically significant variation in its distribution. Around 30% of the physicians declared that their income came exclusively from public sources. The proportion whose income was exclusively from private sources was between 40% and 47%. Considering only the physicians in the "employee" category, most of them remained linked to the public sector (more than 65% in the three years evaluated). While the private sphere remained stable, there was a movement within the public sector from federal and state links to municipal links. The municipal sphere employed 16.2% of the physicians in 1993 and this proportion rose to 34.5% in 2003 (Table 2).

Considering the number of inhabitants per physician, a slight overall improvement for Brazil was observed. The data for the northern, southern and central-western regions indicated a declining trend, especially from 1993 onwards, while the northeastern region showed stability. However, it cannot be said that there was convergence of the indicators of number of inhabitants per physician between the Brazilian regions. The northern and northeastern regions always had much higher indicators than those recorded for the southeastern region (around three times higher, or more) (Figure 1).

[a] Banco Central do Brasil. Correção de valores. Brasília; [undated] [cited 2008, May 10]. Available from: http://www4.bcb.gov.br/pec/correcao/indexCorrige.asp?u=corrige.asp&id=correção

The data on the physicians' median income categorized according to different types of integration in the employment market suggest that the professionals with more than one occupation, and especially those who mixed the conditions of employee and employer or self-employed, had much higher incomes (more than R$ 4,600.00) than did those who declared that they had a single occupation (maximum of R$ 2,700.00). For the different combinations of integration, no trend of declining or growing income over time was observed. Except for the category "employed (one occupation)", median income considering all income was shown to be considerably higher than the income relating to the first occupation (around twice as high), although less markedly so in the category of "self-employed or employer" (Figure 2).

Comparing the median income of Brazilian physicians with that of two segments of the population – the occupied Brazilian population with 12 or more years of schooling (i.e. with university-level education) and the entire economically active Brazilian population with an income – it was observed that even if only the main or sole occupation was considered, the physicians had much higher income levels, especially those with more than one employment linkage. Between 1988 and 1993, the income of physicians and the population with at least 12 years of schooling declined. However, from 1993 onwards, while the median income of the population with greater schooling continued to decline, physicians' incomes did not (Figure 3).

In Table 3, separation of the income sources according to the physicians' employment links (public, private or mixed) shows that the income of those with exclusively private links was considerably higher than the

Table 1. Brazilian physicians' sociodemographic and employment linkage characteristics. Brazil, 1988-2003.

Variable	PNAD								p
	1988		1993		1998		2003		
	n	%	n	%	n	%	n	%	
Sex									
Male	264	(69.1)	257	(64.3)	283	(53.3)	300	(52.4)	<0.001
Female	118	(30.9)	143	(35.8)	248	(46.7)	273	(47.6)	
Color or race									
White	330	(86.4)	339	(84.8)	470	(88.5)	504	(88.0)	0.326
Nonwhite [a]	52	(13.6)	61	(15.3)	61	(11.5)	69	(12.0)	
Age (years)									
Up to 29	67	(17.5)	83	(20.8)	77	(14.5)	118	(20.6)	
30 to 54	288	(75.4)	283	(70.8)	404	(76.1)	366	(63.9)	<0.001
55 or more	27	(7.1)	34	(8.5)	50	(9.4)	89	(15.5)	
Region									
Northern	12	(3.1)	11	(2.8)	15	(2.8)	17	(3.0)	
Northeastern	46	(12.0)	72	(18.0)	90	(16.9)	81	(14.1)	
Southeastern	250	(65.4)	252	(63.0)	310	(58.4)	342	(59.7)	0.183
Southern	53	(13.9)	43	(10.8)	74	(13.9)	93	(16.2)	
Central-western	21	(5.5)	22	(5.5)	42	(7.9)	40	(7.0)	
Another occupation held									
Yes	233	(61.0)	208	(52.0)	254	(47.8)	268	(46.8)	<0.001
No	149	(39.0)	192	(48.0)	277	(52.2)	305	(53.2)	
Position in occupation [b]									
Employee	258	(67.5)	272	(68.0)	338	(63.7)	361	(63.0)	
Self-employed	99	(25.9)	84	(21.0)	107	(20.2)	115	(20.1)	<0.001
Employer	24	(6.3)	41	(10.3)	84	(15.8)	88	(15.4)	
Total	382	(100.0)	400	(100.0)	531	(100.0)	573	(100.0)	

These frequencies refer only to physicians who declared these positions as their sole or main occupation
PNAD: *Pesquisa Nacional por Amostra de Domicílios* (National Household Sampling Survey)
[a] Mixed, black, Asian or indigenous
[b] Excludes 15 physicians with an occupation described as "other non-remunerated worker" (1988 = 1; 1993 = 3; 1998 = 2; 2003 = 9)

Table 2. Distribution of Brazilian physicians' links regarding income sources and employment sector. Brazil, 1988-2003

Income and employment links	PNAD 1993		1998		2003		p
	n	%	n	%	n	%	
Income source[a]							
Exclusively public	122	(30.2)	152	(28.0)	160	(28.8)	
Mixed (public and private)	117	(29.0)	135	(24.9)	165	(29.7)	0.229
Exclusively private	165	(40.8)	255	(47.0)	231	(41.5)	
Total	404	(100.0)	542	(100.0)	556	(100.0)	
Employment sector[b]							
Private	92	(32.4)	133	(37.4)	124	(32.2)	
Federal	67	(23.6)	51	(14.3)	48	(12.5)	< 0.001
State	79	(27.8)	102	(28.7)	80	(20.8)	
Municipal	46	(16.2)	70	(19.7)	133	(34.5)	
Total	284	(100.0)	356	(100.0)	385	(100.0)	

[a] Physicians who declared these sources for their first or second occupation, excluding those without income information
[b] Refers only to physicians in the "employee" category in the first occupation

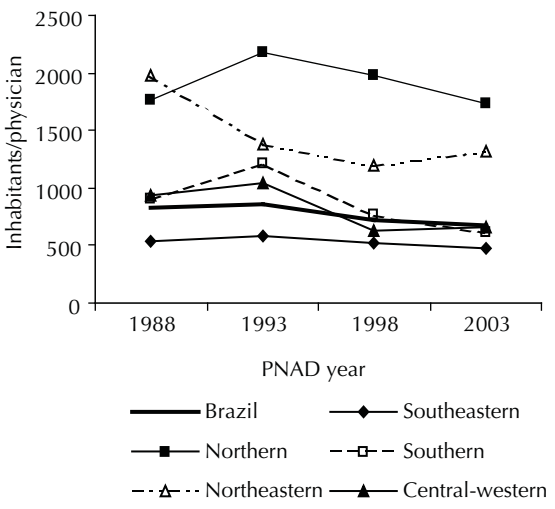
income of those with exclusively public links in 1993 and 1998, but the values became close in 2003. It can also be seen that the private portion of the mixed links was higher than the public portion. The sum of income from public sources (public portion of the mixed group and the exclusively public group) was lower than the sum of income from private sources (private portion of the mixed group and the exclusively private group). This pattern was observed independent of the summary measurement used (mean or median). Mean values systematically higher than median values indicated asymmetrical distribution to the right for the physicians' income.

DISCUSSION

The analysis on the extracted PNAD data regarding physicians' occupations and income raises questions about the process of juxtaposing changes or accentuating historical trends in this employment market. Some of these questions about certain dimensions of the employment market in the healthcare sector have been answered based on the processing of the PNAD information. In the study by Dedecca et al,[3] the PNAD data from 1992 and 1997 provided support for measuring employment through stratification of the healthcare sector based on establishments. The basis was the size and degree of closeness to final healthcare activities. Póvoa & Viegas[14] used a location-based decision model that was fed by data from the 1997 and 2001 PNADs, to detect variables associated with Brazilian physicians' geographical distribution. Neither of these studies went deeply into examining the relationships between physicians' occupations and income.

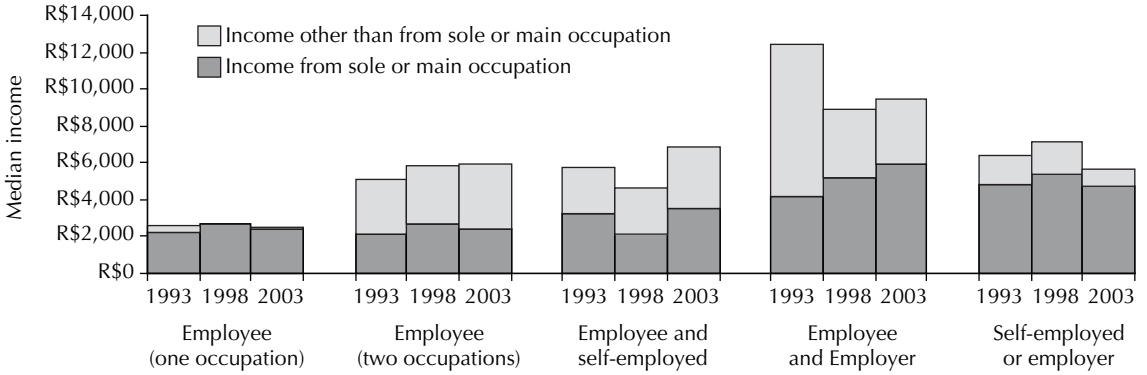
Thus, the scarcity of studies based on PNAD with the aim of obtaining support for inferences regarding the medical employment market, and the limitations inherent to the design of such investigations, means that no definitive conclusions or structured hypotheses can be put forward. Nonetheless, they provide a basis for making conjectures. The need for caution is reinforced by the limitation to only the PNADs of 1988, 1993, 1998 and 2003.

Thus, examination of the PNAD data suggests that there has been a set of strategies for protecting physicians'



Source: PNAD 1988, 1993, 1998 e 2003

Figure 1. Inhabitants per physician (declared as the sole or main occupation), according to Brazilian regions. Brazil, 1988-2003



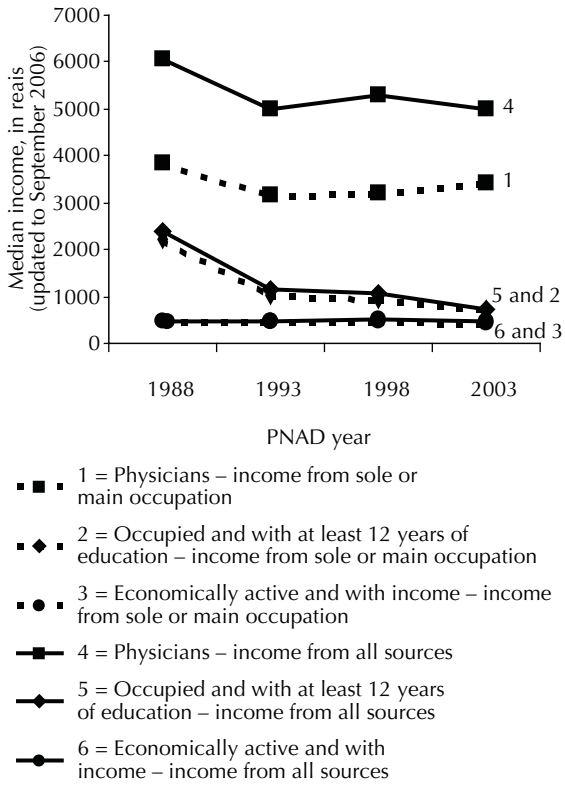
Source: PNAD

Figure 2. Brazilian physicians' median income according to occupation type and PNAD. Brazil, 1988-2003

incomes. Such strategies seem to have been based on bringing together the preservation of structural determinants, such as the immunity of the access barriers to medical schools faced by the majority of young Brazilians, as seen through the low access and continuing exclusion of the black population, with traits relating to the recent dynamics of the integration of physicians in the employment market. The maintenance of the primacy of white physicians and the exacerbation of the income differentials between physicians and other segments of the population, and the significant proportion of physicians with several linkages, seem to confirm the high symbolic or material distinction of the value of physicians' employment. Brazilian physicians' mean income was 8.7 times greater than the per capita gross domestic product (GDP) for the same year.

Around the world, there is no rule regarding income disparities between physicians and other segments of the population. According to the Organization for Economic Cooperation and Development (OECD), cited by Fujisawa & Lafortune,[5] physicians' incomes in relation to the remainder of the population are very variable (a maximum ratio of 8.5 for specialist physicians in the Netherlands in 2005 and a minimum of 1.6 for those in Norway). In countries with universal healthcare systems, such as Sweden, in 2002, and the United Kingdom, in 2004, specialist physicians' incomes were 2.5 and 4.8 times greater than the per capita GDP and generalists' incomes were 2.2 and 3.8 times greater, respectively. In countries in which private health insurance predominates, physicians' incomes, especially among specialists and the self-employed, were much higher than the per capita GDP (6.5 times in the United States, in 2001, and 8.4 times in the Netherlands, in 2005).

The multiple links among Brazilian physicians and the public-private composition of their integration in the employment market that were recorded by the PNADs have also been observed in specific Brazilian cities. In



Source: PNAD 1988, 1993, 1998 e 2003

Figure 3. Median incomes for population groups. Brazil, 1988-2003

1992, an investigation on physicians' remuneration in public and private general hospitals in Belo Horizonte[2] (State of Minas Gerais), based on an intentional sample of 60 physicians, and in 2002, a cross-sectional cohort study supported by a random sample of physicians (around 300) in Salvador[9] (State of Bahia), showed the predominance of mixed forms of remuneration among physicians and their simultaneous public and private integration.

Table 3. Brazilian physicians' mean and median incomes according to source. Brazil, 1993-2003.

Income source[a]		PNAD					
		1993		1998		2003	
		Mean	Median	Mean	Median	Mean	Median
Exclusively public		R$ 3,500	R$ 2,555	R$ 3,826	R$ 3,392	R$ 4,251	R$ 3,661
Mixed	Public	R$ 3,664	R$ 1,849	R$ 2,479	R$ 2,143	R$ 2,720	R$ 2.128
	Private	R$ 4,045	R$ 2,555	R$ 4,874	R$ 3,159	R$ 3,824	R$ 2.956
Exclusively private		R$ 7,398	R$ 5,111	R$ 6,674	R$ 5,357	R$ 4,935	R$ 4,139

[a] The public sources refer to income from public employment (federal, state or municipal); the private sources refer to income from the occupations of private employee, employer and self-employed.

The various studies on physicians' integration in the employment market have not focused on the relationships between multiple occupations and income. The PNAD data suggest that, for Brazilian physicians to assure their relatively high income levels, within the context of underfunding of SUS, they have emphasized their entrepreneurial leanings. It is plausible to suppose that physicians' entrepreneurialism results from the need to regularize their links with private establishments and with health plan and insurance companies. The proliferation of service provider companies (organized legally as companies of healthcare professionals subcontracted by hospitals and health plan and insurance companies) became a visible phenomenon from the 1990s onwards.[5,a] In turn, this expedient took away pension rights and required physicians to remain active in the employment market for longer times.

Even though the PNAD data present limitations, their individualized characteristics of occupation and income, and especially the detailing of the relationships between income and physicians' multiple links that are made available, contribute towards deepening the understanding of Brazilian physicians' complex public-private integration. The estimates of the numbers of physicians and other characteristics such as the trends towards feminization of the profession and multiple employment links are compatible with those coming from other data sources, especially the CFM's records and surveys.

The movement of physicians' employment within the public sector from the federal to subnational sphere, because of the decentralization of SUS, was also detected in the IBGE's AMS. The dimensions of other attributes such as physicians' color and prolonged service in the employment market, extracted from the PNADs, seem to be in line with reality, although not included as variables of interest in other information sources.

Although none of the PNADs was methodologically designed for the purposes of the present study, it can be believed that the individuals selected constituted a representative sample of Brazilian physicians, in each of the years. However, for this, the sample weights (expansion factors) available in the database, resulting from the sampling design implemented by the IBGE, were considered. In the four PNADs, the sample weights ranged from 127 to 975, thus indicating that each physician sampled may be representing between 127 and 975 other Brazilian physicians. On the other hand, the intention of the design was concentrated more on statistical comparisons between the years than on specific expansion of the results to the whole population of physicians. In this respect, instead of sample weights, the main analyses were developed considering the relative sample weights for each year, by dividing the sample weights for each analysis unit (physicians) by the mean sample weight for that year. This strategy ensured representativeness for the sample size,[8] thus making it possible to calculate the statistical significances of the comparisons and analyses of interest. Hence, this procedure corrected potential bias of selection in the separate estimates and allowed the use of inferential statistical procedures, since it maintained the original sample sizes. However, the inferences may still have been biased because of the sampling complexity of the PNADs, given that complex samples tend to bias the estimated standard errors,[16,17] although there is no evidence that this might have been the case in the present study.

The data analyzed indicate the effects of decentralization on the physicians' employment market, with the trend towards decreased remuneration from salaried work and involvement in private entrepreneurialism.

[a] Girardi SN, Carvalho CL, Girardi JB, Araújo JF. Configuração do mercado de trabalho dos assalariados em saúde no Brasil. In: Barros AFR, Santana JP, Santos Neto M, organizadores. Observatório de recursos humanos em saúde no Brasil: estudos e análise. Brasília: Ministério da Saúde, 2004. v.2.

REFERENCES

1. Campos GWS. Os médicos e a política de saúde – entre a estatização e o empresariamento: a defesa da prática liberal da medicina. 2.ed. São Paulo: HUCITEC; 2006.
2. Cherchiglia ML. Remuneração do trabalho médico: um estudo sobre seus sistemas e formas em hospitais gerais de Belo Horizonte. *Cad Saude Publica*. 1994;10(1):67-79. DOI: 10.1590/S0102-311X1994000100008
3. Dedecca CS, Proni MW, Moretto A. O trabalho no setor de atenção à saúde. In: Negri B, Giovanni G, organizadores. Brasil: Radiografia da saúde. Campinas: Unicamp. 2001.
4. Donnangelo MCF. Medicina e sociedade: o médico e seu mercado de trabalho. São Paulo: Pioneira; 1973.
5. Fujisawa R, Lafortune G. The remuneration of general practitioners and specialists in 14 OECD countries: what are the factors influencing variations across countries? Paris: Organisation for Economic Co-operation and Development; 2008[citado 2008 maio 15]. [OECD Health Working Papers, 41]. Disponível em: http://www.oecd.org/dataoecd/51/48/41925333.pdf
6. Garcia JC. Juan Cesar Garcia entrevista Juan Cesar Garcia. In: Nunes ED. As ciências sociais em saúde na América Latina: tendências e perspectivas. Brasília: Organização Pan-Americana da Saúde; 1986.
7. Girardi SN, Carvalho CL. Mercado de trabalho e regulação das profissões de saúde. In: Negri B, Faria R, Viana ALD, organizadores. Recursos humanos em saúde: política, desenvolvimento e mercado de trabalho. Campinas: Unicamp; 2002. p.221-51.
8. Lee ES, Forthofer RN, Lorimor RJ. Analyzing complex survey data. Newbury Park: Sage University; 1989.
9. Nascimento Sobrinho CL, Carvalho FM, Bonfim TAS, Cirino CAZ, Ferreira IS. Condições de trabalho e saúde dos médicos em Salvador, Brasil. *Rev Assoc Med Bras*. 2006;52(2):97-102. DOI: 10.1590/S0104-42302006000200019
10. Nogueira RP. Dinâmica do mercado de trabalho em Saúde no Brasil, 1970-83. *Educ Med Salud*. 1986;20(3):335-50.
11. Nogueira RP. Do físico ao médico moderno - A formação social da prática médica. São Paulo: Editora da UNESP; 2007.
12. Nunes ED. Cecília Donnangelo: pioneira na construção teórica de um pensamento social em saúde. *Cienc Saude Coletiva*. 2008;13:909-16. DOI: 10.1590/S1413-81232008000300013
13. Paim JS. Saúde, Política e Reforma Sanitária. Salvador: Instituto de Saúde Coletiva; 2002.
14. Póvoa L, Viegas M. Distribuição geográfica dos médicos no Brasil: uma análise a partir de um modelo de escolha locacional. *Cad Saude Publica*. 2006;22(8):1555-64. DOI: 10.1590/S0102-311X2006000800004
15. Schraiber LB. O médico e seu trabalho. São Paulo: HUCITEC; 1993.
16. Silva PLN, Pessoa DGC, Lilá MF. Análise estatística de dados da PNAD: incorporando a estrutura do plano amostral. *Cienc Saude Coletiva*. 2002;7(4):659-70. DOI: 10.1590/S1413-81232002000400005
17. Sousa MH, Silva NN. Estimativas obtidas de um levantamento complexo. *Rev Saude Publica*. 2003;37(5):662-70. DOI: 10.1590/S0034-89102003000500018