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Development inequalities of Romanian physical public healthcare infrastructure: the case of hospital beds

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The main aim of this paper is to analyse the spatial dynamic of public hospital beds in Romania (1992-2018) in order to grasp the potentially uneven development of the health care infrastructure following state policies of austerity and cost reduction. The paper uses quantitative data and descriptive statistics to show the reduction of public hospital beds after 1990 in line with the state's health care reform aiming to decrease the use of hospital services and strengthen the role of alternative types of care. The results show that public hospital beds significantly decreased (approx. by 40%), mostly in smaller towns and rural areas. The main conclusion of the paper is that the neoliberal healthcare policies generated patterns of uneven spatial development. Public hospital beds were used in the paper as an indicator of public healthcare physical infrastructure, and across time they follow a pattern of clustering in more prosperous and more competitive areas.

Key Words: *physical public healthcare infrastructure, hospital beds, spatial analysis, Romania.*

Introduction

A central pillar of human rights is access to healthcare (United Nations, 1948). The quest for equity of access is considered to be a fight for better human rights.

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The World Health Organization (2015) states that all people are entitled to access healthcare that is timely, acceptable, affordable and of reasonable quality. The issue of equity in accessibility generated the motivation for the present study, although accessibility per se is not the topic of the paper. Physical accessibility to healthcare is fundamental to a functional health system (Evans et al., 2013), but it is a complex variable that is linked to other several factors, such as the spatial distribution of the physical healthcare infrastructure, the socio-economic status, patient's health status, or the possession of a personal car (Gulliford et al., 2002; Comber et al., 2011). The present paper focuses on the spatial distribution of the physical public healthcare infrastructure, which is studied in the context of the neoliberal path of development of the present-day states.

It is well understood today that the neoliberal model of development is related to socio-economic inequalities. In the realm of inequality in accessing public services, there is a solid body of works that link unequal policies of neoliberalism to accessibility to public healthcare (McGregor, 2001; Granados & Rodriguez, 2015; Legido-Quigley et al., 2016; Rotarou & Sakellariou, 2017). However, the relationship between the spatiality of the physical public healthcare infrastructure and the neoliberal state policies has not been yet addressed, even to more minor degrees. For this reason, this paper aims to reveal the territorial effects of neoliberal policies on the physical public healthcare infrastructure. In this regard, the present paper analyses the spatial dynamic of public hospital beds in Romania across three decades during 1990-2018.

After the 1989 Revolution, Romania shifted from state socialism towards a free market-based development and neoliberal political economy (Ban, 2016). This results in an uneven distribution of resources correlated with the uneven spatiality of capitalism, in so much that the physical public healthcare infrastructure tends to be increasingly concentrated in the richer areas and disappear from the poorer ones. In this regard, in the present paper, public hospital beds must be understood as a public good with economic costs attached to it and has a vital material dimension that serves as an indicator for healthcare policies and their economic reasons. The hypothesis of the paper states that the number of public hospital beds evolve in time showing spatial inequalities as more developed areas polarize and capitalize more infrastructure at the expense of less developed areas.

The first section of the paper describes the background for analysis — the spatial dynamic of the physical public healthcare infrastructure under neoliberalism. The second section describes the healthcare system in Romania and its post-socialist development. Afterwards, following the methodological section, the attention shifts to the spatial analysis of the public hospital beds in Romania between 1990-2018. The paper ends with the conclusion section.

The public healthcare uneven distribution under neoliberalism

For the analysis of the public hospital beds in Romania between 1990-2018, the paper used a framework that describes the conditions for the uneven spatial development of public healthcare infrastructure under the current political

economy of neoliberalism. This section firstly describes how neoliberalism may lead to uneven spatial developments. Afterwards, the conditions for inequality in the distribution of physical public healthcare infrastructure are presented. In the final part of the section, the existing evidence on the territorial disparities in the physical public healthcare infrastructure are mentioned.

Neoliberalism is a concept currently used to describe the global capitalist economy and the main political and economic model of development in most countries. Although neoliberalism is intensely variegated geo-politically and geo-economically (Brenner & Theodore, 2002), there are some fundamental characteristics to a neoliberal political and economic project. The neoliberal economy is based on the idea of the free market proposed by the old liberal principle of laissez-faire. The state shifts from the welfare model and considerably reduces its public spending, including those in the field of social protection and public healthcare. In essence, the neoliberal model of development is based on a theory that states that human well-being can be best advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade (Harvey, 2005). The common criticisms brought to the neoliberal model of development is that it is responsible for several problems of the contemporary world, such as socio-economic inequalities, global poverty, diminishing social security, or deep financial crises.

David Harvey (1999) argues that uneven spatial development is generated by the structural forces and the unequal social relations of contemporary capitalist societies and out of the power of capital to mobilize and develop certain places to the detriment of others, thus creating new deeply unequal economies, institutional arrangements, social relationships, infrastructures, built environment and a whole list of other spatialities. A series of causes generate uneven development 1) capital accumulation in a particular space; 2) preexisting built environment; 3) local policies and institutions; 4) consumption preferences; 5) historical class, political, social relations that favour some places over others (Harvey 2006). The action of these variables in time and space generates uneven development. The uneven spatial distribution of public hospital beds is the consequence of changing state policies to reduce state spending and diminishing its role in social security. Neoliberal healthcare policies are not just guided by general economic principles of austerity or competitiveness, but such principles are placed at the very centre of the healthcare system (McGregor, 2001). At the global level, the reduction in the number of public hospital beds was justified mainly by intentions to lower public expenditure (Saltman & Figueras, 1998; Kroneman & Siegers, 2004). The negative impact of such austerity measures on public healthcare services has been described in previous studies (Economou et al., 2014; Rotarou & Sakellariou, 2017; Sakkellariou & Rotarou, 2017).

Cutting the public healthcare budget also leads to shrinkage in the physical public healthcare infrastructure. One such example, in the European Union, the public hospital beds declined between 2012-2017 by 5%, meaning 66,419 units (Eurostat(a), N.D.). Although data on the number of beds in public hospitals

aggregated at a continental or global level are extremely scarce, cover limited periods of time, and make no distinction between public and private, there is general knowledge on the shrinkage of the physical healthcare infrastructure during the past decades.

Globally, the number of beds in public or private hospitals per 1,000 individuals declined from 4.1 in 1985 to 2.7 in 2011 (World Bank(a), N.D). The shrinkage of the public healthcare infrastructure happens unevenly; some spaces lose more public hospital beds, while others lose less or even grow. In the neoliberal state, it, like any other infrastructures, is maintained where economic costs are low and coverage of the infrastructure is high. This means that public hospital beds are concentrated in areas that have more resources, meaning economic and human capital (medical staff, physicians) for their maintenance, and where there is a greater concentration of patients, meaning in the larger, more developed and competitive urban spaces.

The literature analysing spatial inequalities in the physical public healthcare infrastructure is largely underdeveloped. Also, in most of these studies, the inequalities are not placed within the broader historical context of the changing state policies under the economic and political project of neoliberalism. The relationship between state neoliberalism, its austerity and shrinkage policies, and the spatial development of public healthcare infrastructure had not been yet thoroughly studied. However, in most of these studies, the local economic context is identified as a decisive variable in explaining territorial inequalities in the public healthcare infrastructure, and the main conclusion is that wealthier areas also have more infrastructure and better services. To some degree, these findings underpin the reasoning in this paper.

Few works analysed the patterns of the spatial distribution of hospital beds. Such a study, conducted in China, using data for 2012, found substantial inequalities in the distribution of hospital beds correlated with local economic development (Pan & Shallcross, 2016). The more impoverished areas of western China had less infrastructure than the more developed areas east of the country. The private infrastructure, which consisted only of a small share (10% of the total beds), developed only in wealthier areas, thus increasing inequalities. Another study in Portugal two decades ago identified a substantial unequal spatial allocation of public funds for healthcare as most of the funds were clustered in the coastal and urbanized areas (Dixon & Mossialos, 2000). Using data from 2011, one study on Romania identified spatial inequalities consisting of hospitals and physicians clustered in developed urban areas (Dumitrache et al., 2016). The few studies dealing with this topic do not also address the spatial inequalities in a temporal perspective in order to correlate them with the ongoing longitudinal transformations of creation and destruction in contemporary neoliberalism.

Public healthcare in Romania

The health status of Romanians improved significantly after 1990. However, health status in Romania is considerably below the EU average. Life expectancy

at birth increased from 70 years in 1990 to 75 in 2017, but it still is much lower than the 81 average in the EU (2017). In addition, infant mortality at birth has decreased in the last decade, from 12 (per 1,000 live births) in 2007 to 6.7 in 2017, but it still is higher than the 3.6 average in the EU (Eurostat(b), N.D).

Healthcare in Romania has been covered for the last three decades almost entirely by the public sector. It has a high degree of centralization, as the Ministry of Health is responsible for running the system. After 1990, Romania discarded the Soviet-type Semashko model of public healthcare, which was replaced by a social healthcare insurance model managed and regulated by the state (Vlădescu et al., 2008). Through this model, the Ministry of Health tries to apply the fundamental right to access healthcare, which is officially guaranteed by the Constitution. Insured individuals are entitled to an extensive set of benefits, while those uninsured are entitled to a minimum treatment package. However, the Romanian public healthcare system is limited by many shortcomings. After several reforms, many of which unsuccessful, the system is poorly funded and inefficient in using public resources (Vlădescu et al., 2016).

In 2016 the 5% share of expenses for healthcare from the national GDP was far below the average of 10% in the EU states (Eurostat(c), N.D). In 2015, the share of out-of-pocket payments for health care represented 21% of the total healthcare costs, higher than the EU average of 16% (OECD, 2017). The number of physicians per 1,000 individuals is also lower in Romania than the EU average — 2.3 versus 3.6 (The World Bank(b), 2015). There are also significant socio-economic inequalities and urban-rural divides in accessing healthcare (Duma et al. 2014).

Although still largely centralized, many of the reforms of the three decades have led to a more decentralized and pluralistic system (Vlădescu et al., 2016). Other recent efforts have focused on reducing costs. In this context, state policies encouraged the multiplication of healthcare providers. The share of private hospitals in the country increased massively from 1% (n=3) in 2000 to 36% (n=209) by 2017. The rise of private hospitals came at a time when many public hospitals were closing down.

This was consistent with the neoliberal policy idea that private capital may better serve population needs than the state. Between 2010 and 2017, 134 new private hospitals were built. The increase in the share of private hospitals was also intensified by an austerity measure directed against public hospitals by the Ministry of Health in 2011 when 67 public hospitals that were considered inefficient were shut down (Government of Romania, 2011).

Another area of reform was the shifting from in-patient and hospital care to primary care. One action of this policy was to reduce the number of beds in public hospitals to strengthen the role of primary care. After discussing this framework, the attention is shifted to the spatial distribution of hospital beds. In this sense, the next section discusses methodological considerations of the spatial analysis regarding the data and statistical tools employed.

Methodology

The aim of the paper is to analyse the spatial distribution of public hospital beds in Romania, and to some minor extent those in the private sector, in order to reveal the patterns of uneven development throughout the 1990-2018 period. The data used for the number of public hospital beds and private hospital beds (including healthcare centres) in Romania are available on the website of the Romanian National Institute of Statistics (Institutul Național de Statistică, 2019). The data was aggregated at the level of localities corresponding to the Level 1 of Local Administrative Units (LAU) definition in the EU. The analysis employs common descriptive statistics, such as frequencies or percentages, and graphic representation such as charts and maps.

The framework of the uneven spatial development used for understanding the distribution of physical public healthcare infrastructure suggests that the infrastructure tends to cluster in the more developed and competitive spaces. For this reason, the analysis requires the use of an indicator for economic development. In this regard, the size of the locality in terms of its population was used. The reasoning was that urbanization and the concentration of economic capital for any economic activity lead to a concentration of population. Hence, the localities with public hospital beds were divided into the following classes based on the population at the 2011 national census — 1) Bucharest (nearly 2 million inhabitants); 2) cities with more than 100,000 inhabitants (N=19); 3) medium cities with 20,000 to 99,999 inhabitants (N=72); 4) localities under 20,000 inhabitants (N=173) and 5) rural localities (N=225). The Romanian authorities define the localities in categories 1 to 4 as urban localities (Table 1).

Spatial analysis of public hospital beds in Romania between 1990 and 2018

The evolution of public hospital beds (raw numbers and per 1,000 individuals) at the national level for the 1990-2018 period is displayed in Figure 1. The data indicate a massive decrease of 40% from 207,001 in 1990 to 125,034 in 2018. Per 1,000 individuals, the number of beds decreased from 7.9 to 6.2. This decrease is present in most countries nowadays, and it is determined by a combination of cost reduction and primary-care oriented policies.

Table 1. Classes of locality and descriptive statistics

Class	Mean	Maximum	Minimum	Total N
Bucharest	1,883,425	1,883,425	1,883,425	1
Large urban (>100,000 inhabitants)	198,194	324,576	102,411	19
Medium urban (20,000-99,999 inhabitants)	41,824	98,776	20,630	72
Small urban (< 20, 000 inhabitants)	10,014	19,568	2,165	173
Rural	4,399	12,223	614	225

Source: Computed by the author using population data from 2011 National Census.
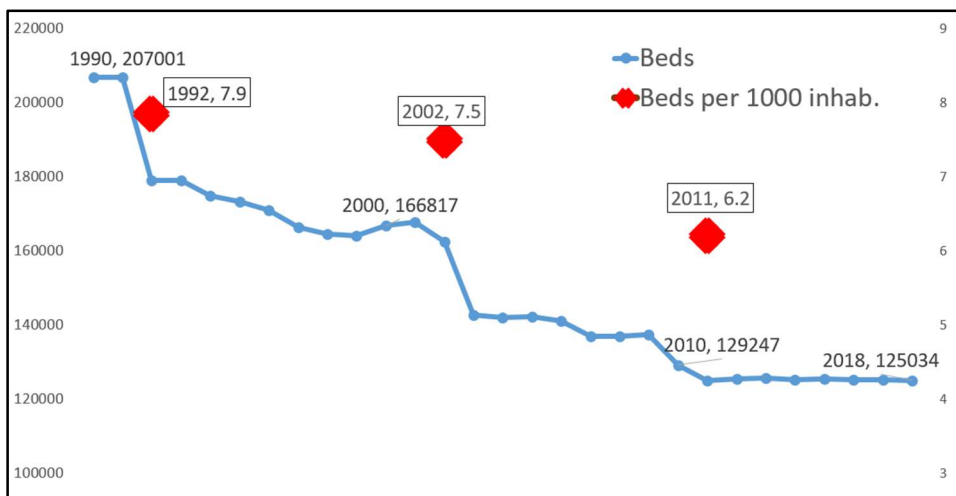
Figure 1. Public hospital beds in Romania, 1990-2018

At some points, the trend stagnates or increases slightly, but the general pattern over many years is a continuously decrease. The steepest decline was during the transition to the market economy when the state restructured and reduced its roles — 73% of the total decrease is recorded between 1990-2003. Another sharp decrease is recorded during the financial crisis — 16% between 2009-2011. In recent years, the number of beds remained largely the same.

The dynamic of the total number of public hospital beds in Romania has important variations concerning also the different medical specializations. While these are not spatially explored in the paper, such variations are important to understand and to fully grasp the context of restructuration within Romanian healthcare policies. The most important change in terms of medical specialization is the drop in the share of hospital beds for gynaecology and pediatry from 30% in 1990 to 18% in 2005. After 2005 (data from the national statistical authority is available only aggregated for both public and private), this share declined to 16% in 2018. This decrease in gynaecology and pediatry fits with the general pattern of declining birth rates in post-socialist Romania (Mureşan, 1996). As the medical system adapted to the new post-socialist medical needs of the population, the number of beds for internal medicine specializations increased from 19% in 1990 to 21% in 2005, those in neurology from 2% to 4% and those in surgery from 14% to 16% for the same years.

One first step in the present analysis is to decipher the spatial distribution of public hospital beds in terms of their existence or absence. The number of localities with public hospital beds decreased by 42%, from 454 in 1990 to only 262 by 2018. The decrease is consistent throughout the period up to 2011. Afterwards, the situation remains essentially the same. However, it is important to mention that, within this massive trend of infrastructure reduction, there are also short periods when in some localities, the infrastructure develops for the first time. Also, some localities exit the dataset at one point and enter it at another point in future time. There were some periods with abrupt decrease — 1991-1992

(454 to 417), 2002-2003 (376 to 344), 2010-2011 (310 to 253). These rifts are explained by the reduction of the infrastructure in poorly developed and small localities where it was already poorly developed and scarce. In these localities, the government decided to cut expenses and increase efficiency, which in most cases meant the shutting down of the only public hospitals in that locality.

This opens the perspective of analysing the decrease in the number of localities with public hospitals by classes of locality's size. The development of the number of localities with public hospitals recorded at four years of interest — 1990, 2000, 2010, 2018 — is cross-tabulated with the size of locality in terms of population in Table 2. The table shows the number of localities with public hospitals for each class of locality size and for each year of interest, while for the time intervals are displayed percentage decrease or stagnation as there is no percentage increase. A pattern identified is the stability and continuity of medium and large urban localities. None of the public hospitals of the 19 localities with over 100,000 inhabitants was closed. In the context of the reduction of infrastructure throughout the entire country, the stability of these large and medium-sized urban settlements marked for the entire analysed period the increase of the weight of these categories — 4% to 7% for the large urban (without Bucharest) and 16% to 27% for the medium sized localities.

In 1990, rural localities had the highest share — 43%, meaning 193 localities. By 2018, the infrastructure shrinkage in these localities generated a decrease of 69% in this group and a decrease of their share from the national total to 23%, meaning 59 localities. The decrease in rural localities with public hospitals was constant throughout three decades. Each of the time ranges in Table 2 displays significant decreases in the class of rural localities. During the 1990s, the policies for infrastructure reduction generated, in most cases, the closing of the only public hospital in many rural localities. Of the 71 localities that closed all their public hospitals in the 1990s, 63 of them are in rural milieux.

Table 2. Localities with public hospitals per classes of locality

Year	Indicator	Bucharest	Large urban	Medium urban	Small urban	Rural	Total
1990	No. of localities	1	19	72	169	193	454
	Share from national total	0.2%	4%	16%	37%	43%	100%
2000	No. of localities	1	19	71	163	129	383
	Share from national total	0%	5%	19%	43%	34%	100%
	2000 vs. 1990			-1%	-4%	-33%	-16%
2010	No. of localities	1	19	71	144	75	310
	Share from national total	0%	6%	23%	46%	24%	100%
	2010 vs. 2000			0%	-12%	-42%	-19%
2018	No. of localities	1	19	71	112	59	262
	Share from national total	0.4%	7%	27%	43%	23%	100%
	2018 vs. 2010			0%	-22%	-21%	-15%
	2018 vs. 1990			-1%	-34%	-69%	-42%

Source: Computed by the author using population data from the 2011 National Census and data on hospital beds from the National Institute of Statistics.

The share of small urban localities with a population below 20,000 inhabitants increases in the three decades — from 37% to 43%. However, this is explained by the massive decrease of rural localities, since in the category of small urban localities, there is also a major decrease in the number of localities with public hospitals. During the three decades, small urban localities decrease by 34%. The decrease is solid, although it is two times smaller than that of rural localities. Unlike rural areas, in the small urban localities, the closing of all local public hospitals is made only gradually and as part of a process that took a longer time, as the pattern is strongest during the 2010s crisis.

During the analysed time frame the number of localities with public hospitals is reduced to half. However, this decrease develops unevenly. The closing of all local public hospitals is clustered in rural and small urban localities: two-thirds of rural localities and one-third of small urban localities. The temporal development of public hospital beds per classes of localities and their weight are displayed in Table 3. The reduction is most substantial during the first two decades — 19% between 1990-2000 and 23% between 2000-2010 but only 3% after 2010.

Indeed, the infrastructure is reduced throughout the three decades in all classes of localities. However, there are major spatial patterns within this reduction. No significant difference exists between the small-sized urban localities and rural ones — they lose 57-58% of their public hospital beds. The decrease gets smaller as the localities size grows — 40% in medium-sized urban, 30% in large-sized urban and only 19% in Bucharest. Although the medium and large-sized urban localities do not close all their local public hospitals, the infrastructure reduction is also present. The reduction is massive at the national level, but it does develop with solid spatial inequalities. Smaller localities lose a higher share of infrastructure than the more developed spaces.

Another prominent feature of the spatio-temporal developments described in Table 3 is the increasing spatial polarization. There is a longitudinal pattern generated during the three decades as public hospital beds tend to cluster more and more within the large urban areas, including Bucharest. Although these localities also reduce their infrastructure, their share from the national level increases. Large urban increases from 30% to 35%, and Bucharest increases from 12% to 16%. Rural spaces shrink their share from 10% to 7% and small urban from 19% to 13%. Medium-sized urban remains constant at 28%.

In all time intervals and classes of localities, the infrastructure of public hospital beds is reduced. However, there are spatial and longitudinal patterns within this narrowing. Between 1990-2000 and 2010-2018, the reduction was more clustered within the smaller localities. Between 1990-2000, the highest percentages of proportional decrease are in rural and small urban localities — 38% and 31%. In the other bigger urban spaces, the decrease is smaller. Medium-sized urban localities decrease by 19%, large-sized urban with 9% and Bucharest with 13%. The 2010-2018 reduction also has a larger impact on the infrastructure in rural and small urban localities — 11% in rural localities, 9% in small urban and only 1-2% in the other localities.

Table 3. Public hospital beds per classes of locality

Year	Indicator	Bucharest	Large urban	Medium urban	Small urban	Rural	Total
1990	No. of beds	24950	63098	58657	38625	21671	207001
	Share from national total	12%	30%	28%	19%	10%	100%
2000	No. of beds	21758	57478	47544	26523	13514	166817
	Share from national total	13%	34%	29%	16%	8%	100%
	2000 vs. 1990	-13%	-9%	-19%	-31%	-38%	-19%
2010	No. of beds	20465	44348	36045	18308	10081	129247
	Share from national total	16%	34%	28%	14%	8%	100%
	2010 vs. 2000	-6%	-23%	-24%	-31%	-25%	-23%
2018	No. of beds	20208	43861	35383	16572	9010	125034
	Share from national total	16%	35%	28%	13%	7%	100%
	2018 vs. 2010	-1%	-1%	-2%	-9%	-11%	-3%
	2018 vs. 1990	-19%	-30%	-40%	-57%	-58%	-40%

Source: Computed by the author using population data from the 2011 National Census and data on hospital beds from the National Institute of Statistics.

The 2000-2010 reduction, when the main efforts to move healthcare towards primary care were placed, rural areas have a similar percentage of decrease as those of the medium and large-sized urban, meaning 23-25%. A higher decrease is present in small urban localities. With the exception of Bucharest, this time interval recorded the highest rates of decrease among urban localities. From the analysis of the spatial evolution of public hospital beds between 1990 and 2018, a massive reduction of the physical public healthcare infrastructure was revealed. The smaller urban localities and the rural spaces had a greater share of reduced infrastructure than larger urban areas. It can be argued that the general pattern of reduction in the rural and small urban areas can be explained by a natural adjustment to the decrease in the Romanian population that was felt nationally albeit with spatial patterns (Popescu, 2013; Popescu 2016; Guțoiu 2019).

In this sense, Table 4 displays data on hospital beds per 1,000 inhabitants calculated for the same classes of localities for 1992 and 2011 — the first and last post-socialist national census. The proportion of decrease in the number of beds per 1,000 inhabitants is significantly imbalanced, as the indicator has considerable diminished its value in rural and small urban areas, even though the decrease in population in such spaces as is shown in the table is similar to the one in larger urban areas. Moreover, the value of the indicator for small urban and rural is even lower when considering all those localities, irrespective if they had or not hospital beds. In comparison, all large cities have public hospitals. In all rural localities, the number of hospital beds per 1,000 inhabitants decreased from 1,6 in 1991 to 1 in 2011.

This paper also interprets the spatial development of private hospital beds to see if they occupied areas that were emptied by public healthcare infrastructure or if they developed in close spatial connection with the existing public hospitals. In 2018 there were 8147 private hospital beds in Romania. However, there is a major spatial polarization within their distribution. There are 59 localities with private hospital beds in 2018 compared to the 262 ones having public hospital units.

Table 4. Public hospital beds per 1,000 inhabitants (computed from the population of localities with hospital beds in 1992)

	1992	2011	Beds decrease (2011-1992)	Population decrease (%)
Bucharest	10.9	10.6	-0.3	9
Large urban	12.7	11.8	-1	16
Medium urban	13.6	11.8	-1.8	21
Small urban	14.8	9.3	-5.6	16
Rural	16	9.2	-6.8	7

Source: Computed by the author using population data from the 1992 and 2011 National Censuses and data on hospital beds from the National Institute of Statistics.

Table 5. Private and public hospital beds in cities at 2018

City	Private		Public		Difference in share private-public
	Beds	% from national	Beds	% from national	
Bucharest	1,772	21.8	20,208	16.2	5.6
Iași	707	8.7	5,504	4.4	4.3
Cluj-Napoca	253	3.1	4,909	3.9	-0.8
Timișoara	320	3.9	3,526	2.8	1.1
Craiova	182	2.2	3,016	2.4	-0.2
Galați	0		2,627	2.1	
Târgu Mureș	227	2.8	2,434	1.9	0.8
Oradea	280	3.4	2,294	1.8	1.6
Brașov	452	5.5	2,173	1.7	3.8

Source: Computed by the author using data on hospital beds from the National Institute of Statistics

The first ten localities by public hospitals in 2018 accounted for 39% of total public hospital beds in Romania, while in the case of private hospital beds, the first ten localities account for 59%. This private infrastructure is polarized, spatially uneven and is developed alongside clusters of public infrastructures (Table 5). Seven of these first ten localities have a higher share of private hospital beds than a share of public hospital beds from the national total.

Figure 2 depicts values for the indicator number of beds per 1,000 inhabitants per localities. One major comment on the spatial distribution of the indicator's values is its largely uniform national distribution. This is the consequence of the socialist era development, when the public healthcare infrastructure was developed uniformly across the country. In the following decades, localities with at least 1 public hospital bed per 1,000 inhabitants disappear, and it appears that the reduction is largely uniform at a regional level.

Some of the localities with the highest values of the indicator are small localities (rural and small urban) with only a few thousands of inhabitants. They host psychiatric hospitals that generally serve the entire region, for example, Săpoca (193 in 1992 and 95 in 2018), Nucet (173 in 1992 and 106 in 2018), Jebel (102 in 1992 and 117 in 2018) or Zam (172 in 1992 and 214 in 2018). Other localities with values around or above 50 are also remote countryside places hosting specialised hospitals such as pulmonology or balneotherapy that are generally placed within areas known for their fresh air.
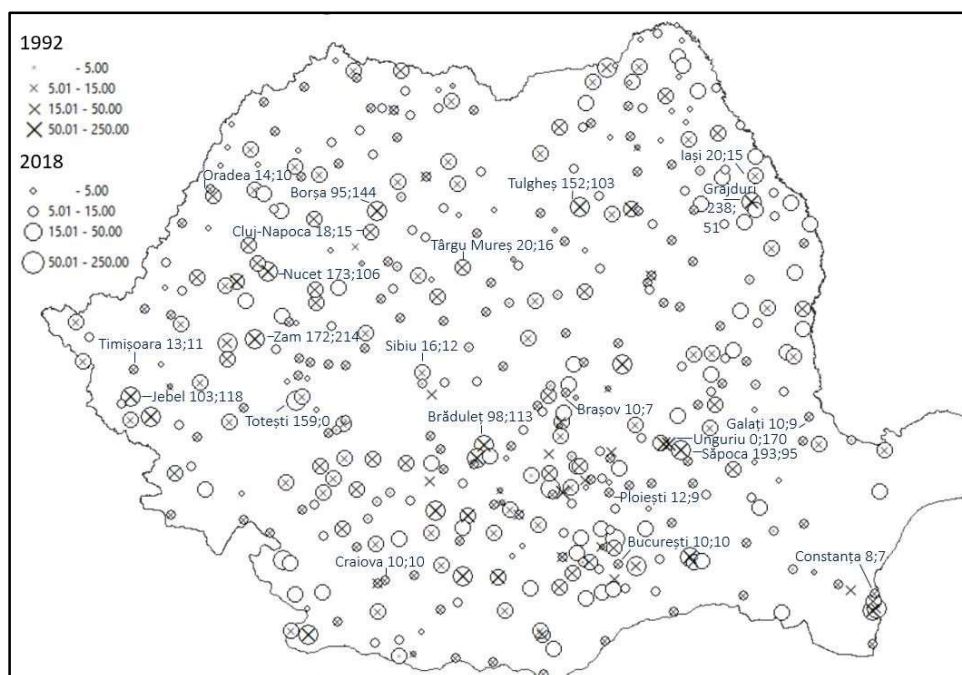
Figure 2. Public hospital beds per 1,000 inhabitants in localities in 1992 and 2018

The largest cities, are generally located within 10 to 20 beds per 1,000 inhabitants, such as Bucharest (10 in both 1992 and 2018), Iași (20 in 1992 and 15 in 2018), Cluj-Napoca (18 in 1992 and 15 in 2018) or Timișoara (13 in 1992 and 11 in 2018). In order to better grasp the spatial distribution of public hospital beds across the Romanian territory, the paper also contains an analysis of the number of beds per 1,000 inhabitants at the territorial-administrative level of counties (NUTS 3 in the EU statistical reference). In the Romanian territorial-administrative system, there are 42 units in the NUTS 3 consisting of 41 counties and the capital city of Bucharest. Table 6 shows the values of public hospital beds per 1,000 inhabitants for the 42 units in 1992 and 2018.

Although the paper's analysis is done at the level of localities, references to infrastructure at an upper territorial-administrative tier is needed since developments in the Romanian public health system are also stratified at county level. During the socialist regime, planning was centralized at the top of the country, but its spatial unfolding was done following the hierarchical territorial-administrative system of counties, as each county had and still has a city capital. In each county, the capital city usually had the most hospitals and hospital beds. The largest hospitals were built in the county capital and were intended to serve the population of the entire county. After the fall of the socialist regime, county capitals still have the main hospital, but the new larger hospital planned for building in recent years are designed to serve more extensive areas than the county level, such as the regional hospital from Cluj-Napoca and the metropolitan hospital of Bucharest, located in Romania's largest cities, both intended to be built in early 2020s.

Table 6. Public hospital beds per 1,000 inhabitants in counties (sorted by values of 2018)

County	Beds per 1,000 inh. 1992	Beds per 1,000 inh. 2018	Difference 2018-1992	County	Beds per 1,000 inh. 1992	Beds per 1,000 inh. 2018	Difference 2018-1992
Bucureşti	10.3	9.6	-0.7	Teleorman	6.6	5.1	-1.6
Cluj	10.6	8.7	-1.8	Braşov	7.5	4.8	-2.7
Covasna	10.3	8.0	-2.3	Botoşani	8.0	4.8	-3.2
Iaşi	10.6	7.1	-3.4	Prahova	6.9	4.8	-2.2
Timiş	11.0	7.0	-4.0	Galaţi	6.4	4.7	-1.7
Hunedoara	10.0	7.0	-3.0	Sălaj	6.8	4.6	-2.2
Gorj	8.5	6.4	-2.0	Satu Mare	5.5	4.6	-0.9
Dolj	7.1	6.4	-0.7	Olt	5.9	4.5	-1.4
Mureş	9.0	6.4	-2.6	Dâmboviţa	6.6	4.5	-2.1
Bihor	9.0	6.2	-2.8	Bistriţa-Năsăud	5.8	4.2	-1.5
Harghita	9.0	5.9	-3.1	Arad	8.4	4.1	-4.3
Sibiu	8.5	5.5	-3.0	Neamţ	6.1	4.0	-2.1
Alba	7.8	5.4	-2.4	Vaslui	7.3	4.0	-3.3
Caraş-Severin	8.1	5.4	-2.7	Bacău	5.6	3.9	-1.6
Brăila	7.3	5.3	-2.0	Suceava	6.2	3.8	-2.4
Vâlcea	6.6	5.3	-1.3	Călăraşi	5.7	3.7	-2.0
Constanţa	6.9	5.2	-1.7	Vrancea	5.4	3.4	-2.0
Maramureş	8.1	5.2	-2.9	Tulcea	6.9	3.4	-3.5
Argeş	6.4	5.1	-1.3	Ialomiţa	4.3	3.0	-1.3
Mehedinţi	7.6	5.1	-2.5	Ilfov	5.4	3.0	-2.5
Buzău	6.3	5.1	-1.2	Giurgiu	4.5	2.9	-1.6

Source: Computed by the author using population and hospital beds data from the National Institute of Statistics

Data portrayed in Table 6 shows significant variations between counties in terms of infrastructure landscape in 1992 compared to 2018. Alongside the capital city of Bucharest, which has the highest value in 2018 and it is nevertheless a special case since the other 41 counties also have rural and remote spaces sparsely populated, higher values are registered in counties that have large cities as county capital and are among the most developed counties of Romania, such as Timiş (capital city Timişoara), Cluj (c.c. Cluj-Napoca), Iaşi (c.c. Iaşi), Dolj (c.c. Craiova). In these counties, by far, the largest number of beds are located in the county capital. Other counties in the upper half of the chart are strongly urbanized and industrialized during the socialist era, such as Hunedoara or Caraş-Severin. To illustrate this, in 2018, 67% of beds in Timiş are located in Timişoara, while in Hunedoara, only 24% of beds are located in Deva, the county capital. Lower values are located in Southern and Eastern counties, which are generally less-developed than the Central and Western parts of the country. Secondly, the comparison between 2018 and 1992 shows negative values for all counties.

However, there appears to be no main pattern in this decrease. Shrinkage and above-average shrinkage are present for both counties with a higher or lower number of beds, irrespective of absolute value or per 1,000. This is largely consistent with the hypothesis of the paper that policies of infrastructure shrinkage were done mainly in reference to locality size and development level

since the decrease is nevertheless proportionally unfolded between counties, and the counties have a broadly similar structure of territorial-administrative units with the county capital city. For this reason, spatial polarization also increased within counties during the three decades of interest, not only at the national level. Timișoara increased its proportion of beds in Timiș from 53% in 1990 to 67% by 2018, Deva increased its proportion in Hunedoara from 18% to 24%, and Slobozia, the county seat of Ialomița, increased from 46% to 59%.

Conclusions

This paper examined the spatial dynamic of the physical public healthcare infrastructure in a neoliberal state. In this regard, the distribution of public hospital beds in Romania, a country with a primarily public healthcare system, was analysed between 1990-2018 at a time of transition from the socialist era to neoliberalism and full-blown development under neoliberalism. The framework employed suggested that the physical public healthcare infrastructure develops with spatial patterns of inequality because of the correlation between public healthcare policies and the forces of creation and destruction of capital.

The neoliberal state is driven by cutting expenditures and austerity policies and leaves behind the poorer and less economically developed areas, while the spaces more economically competitive also get a larger share of public resources. The analysis confirmed this reasoning. Throughout the three analysed decades, there was a massive reduction in the number of public hospital beds. However, this reduction developed with substantial spatial inequalities by a pattern of clustering within the larger urban areas, at the expense of smaller towns or rural areas. The paper also analysed the spatial distribution of private hospital beds as the private healthcare system greatly expanded during the last analysed decade. It was revealed that the private infrastructure developed in close connection with the spatio-temporal patterns of public hospital beds, which is clusterization in the major cities. Further studies should decipher this relation between private and public development and their spatial entanglements.

This case study demonstrated how the public physical healthcare infrastructure, operationalized through hospital beds, developed unevenly throughout the country within the framework of the contemporary neoliberal state. The state concentrates its infrastructure in more developed urban spaces that are also more economically competitive in the free market economy and reduces its infrastructure in poorer spaces of rural and small urban settlements. The present paper contributes to a broader debate on the material consequences in terms of the development of public healthcare infrastructure under the current neoliberal model development based on the reduction of expenditures. Future studies could expand on the subject by examining it in other national contexts or a comparative perspective.

The Covid-19 pandemic showed the necessity to rethink the neoliberal cost-efficiency healthcare policies, as many states dealt with problems in managing the

outbreaks because of their insufficient beds capacity. Placed within this context of more recent events, the paper's findings bring forth a strong necessity to develop a healthcare model that discards the neoliberal cost-efficiency model in terms of beds capacity and other resources.

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