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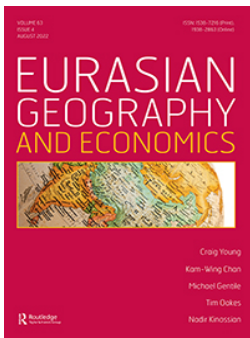
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# Lost in transformation: comparative analysis of healthcare provision dynamics within urban systems of European Russia and France

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## ABSTRACT

Since the 1990s, many countries have implemented healthcare reforms underlined by New Public Management principles and technological transformations. Although studies have examined these reforms from different viewpoints, the spatial implications of healthcare reforms have received limited attention. Scholarship focused predominantly on regional variations of healthcare provision overlooking the sharp contrasts between cities where most healthcare facilities are de facto located. Addressing this research gap, we investigate the long-term dynamics of healthcare provision on the urban level, tracing the differences (if any) between cities of different sizes and administrative statuses. The study adopts a comparative approach. We draw our data from two countries: France and Russia (mainland France and European Russia). Findings indicate that, despite some variations, healthcare reforms in both countries follow similar paths, resulting in fewer hospital beds that have been partially replaced by places in day hospitals. At the same time, we also observe diverging country-specific trends in terms of redistribution of healthcare provision. In France, some cities completely lost their hospital equipment but those cities that remained equipped tend to a uniform distribution. In European Russia, on the contrary, all cities remain equipped but there is a drastic polarization depending on size and administrative status.

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## Introduction

Since the 1990s, in various countries around the world healthcare systems and healthcare provision have undergone significant changes (Kuhlmann and

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Annandale 2012). Some scholars link these to the retrenchment or the “hollowing” of the state – shift from a welfare state to a neoliberal state (Barnett 1999, 2000; Brenner et al. 2003). The latter is manifested in the New Public Management (NPM) reforms and austerity policies (Evans 2020; Jessop 1994; Pierson 1995; Pollitt et al. 2011). Selectively adopted, NPM reforms and austerity measures have long been a part of neoliberal governance, implying the imposition of the effects of reduced tax bases and public services privatization onto the local level (Harvey 2006; Peck 2012, 2014). In parallel with neoliberal restructuring, healthcare has undergone a major technical transformation known as “ambulatory turn” (Cour des Comptes 2018; Hofmarcher, Oxley, and Rusticelli 2007; Holcman 2015). Innovation in anesthesia, less invasive surgery, and more efficient care organization have led to shorter hospital stays for a number of current medical operations in e.g. ophthalmology, orthopedics, and urology.

Given the profound shifts within the sphere, transformation of healthcare provision has been addressed in numerous scholarly publications. Along with the influence of NPM and “ambulatory turn” scholars worldwide have investigated the changes in healthcare expenditures and accessibility of medical services (Reibling 2010; Wendt 2014), interventions of information technologies and telemedicine for diagnosis, treatments, and patients’ trajectories (Ekeland, Bowes, and Flottorp 2010; Lupton 2014), changes that occur in healthcare organizations and professions (Scott et al. 2000). At the same time, the spatial implications of mutually reinforcing technological and policy-related transformations in healthcare remain understudied (for some exceptions see, e.g. Barnett 1999, 2000; Carriere, Roos, and Dover 2000; Liu et al. 2001; Perucca, Piacenza, and Turati 2019). This is especially true for the urban level, despite the long-standing acknowledgment that cities have been regarded as essential spatial units for services and amenities, “centers of consumption” (Glaeser, Kolko, and Saiz 2001) that cater to the needs of their own population and the population of surrounding areas (e.g. Berry and Parr 1988; Burger et al. 2015; Christaller 1933; Meijers 2007). However, the deepening trend of uneven spatial development due to the global redistribution of capital flows, reshuffling power relations, and new policymaking rationalities alters the capacities of cities as both places of production and consumption (Harvey 2006; Sassen 2014).

Drawing on previous debates, the objective of the current paper is to explore the long-term dynamics of healthcare provision at the urban level, that is the similarities and variations in provision between cities of different size and administrative status. Inspired by global urban theory debates “starting from anywhere, making connections” (Robinson 2016) we draw our data from somewhat dissimilar countries and bring into dialog Global North and the so-called post-socialist “Global East” (Chan et al. 2018; Müller 2020). Our analysis is based on the data from the Russian and French urban systems, specifically those of mainland France and the European part of Russia. Though Russia and France are

quite different in governance modes and processes of decision-making, they are at the same time both highly centralized states with a strong tradition of planning and welfare support that have been to a varying degree reshaped by neoliberalization since the 1990s. Drawing comparisons between the two urban systems will allow us to trace both general and country-specific patterns of healthcare provision change on the ground-level, adding to the discussion of NPM practical outcomes (Alonso, Clifton, and Díaz-Fuentes 2015; Pollitt 2005).

In this research, dynamics of healthcare provision are analyzed through the stocks (number) and density (number per capita) of hospital beds and places in day hospitals<sup>1</sup> within cities. The analysis is primarily quantitative and considers beds and places as a proxy for the availability of healthcare services for users. We acknowledge that the quality of treatment is not necessarily associated with quantitative provision. Analysis of the quality of treatment would require a different research approach, including primary qualitative data collection, that was not feasible during this project. Our approach is longitudinal, and we therefore used the entire set of data available to us for each of the case study countries. The study covered 22 years for Russia and 18 years for France; these timeframes represent the period during which statistical data on the urban level is available.<sup>2</sup>

The structure of the paper is as follows. Section two presents the theoretical framework of the research highlighting the global trends in healthcare restructuring. Section three outlines the dataset and methodology. Section four provides the results of the study and is followed by the conclusions that conduct a critical overview.

## **Public management reforms in healthcare**

### ***Reforms to healthcare provision under neoliberal rationality***

Healthcare systems have been in the process of transformation during the last decades across many different countries in various dimensions (Currie and Spyridonidis 2016). In most countries of the Global North, neoliberalism has become the leading principle for managing the public services sphere in general, and healthcare provision in particular (McGregor 2001). NPM emerged as a general theory or doctrine that the public sector can be improved by the importation of business concepts, techniques, and values (Pollitt et al. 2011). NPM is strongly associated with austerity policies that have first emerged as a reaction to the economic crisis of the 1970s (Gabe et al. 2020). Since the 1980s, both the rhetoric of austerity and the measures taken to reform the healthcare system—predominantly manifested in the cuts of healthcare expenditures—have been reinforced with every crisis (Bambra 2019; De Falco 2019; De Vogli 2011; Evans 2020).

Although neoliberalism takes multiple forms, its common characteristic in the sphere of healthcare is the contradictory combination of managerialism dominance in public regulation with a strong influence of market principles on financing and provision (Martin et al. 2015). Evidence from a variety of international contexts demonstrates that NPM reforms lead to the formation of “hybrid” forms of public sector, i.e. creation of quasi-markets and growing control of executive bodies (Denis, Ferlie, and Van Gestel 2015). Within healthcare, reforms based on shared principles were adopted across various countries, and scholars have identified at least three distinctive tenets of neoliberal policies that cross national boundaries. These are as follows: prioritization of free markets (or at least privatization), individualism, and decentralization (De Falco 2019; McGregor 2001). First, the trend toward privatization can be demonstrated through the growing number of public-private medical services, adoption of cost-efficiency logic in sustaining state-funded healthcare institutions and the associated implication that this results in “optimization” of services. Second, individualism can take various forms as an organizing principle in healthcare. In general, it is being realized as “responsibilization” of citizens for their health that results in the increase in out-of-pocket payments for healthcare services. Third, decentralization is a regulatory principle that shapes the infrastructure and spatial configuration of healthcare. According to McGregor (2001), decentralization is supposed to bring about “a more rational” and unified healthcare service that caters to local preferences; improve implementation of healthcare programs; reduce inequalities between different population groups; contain costs as a result of streamlining; improve integration and coordination of healthcare activities between public and private agencies. However, in practice decentralization takes the form of devolving central government responsibilities for healthcare to local levels (ibid), which leads to economic overburden of the “poorest” level of governance and the smallest healthcare facilities. The latter results in the quantitative cuts and qualitative decrease of healthcare provision (McGregor 2001; Novkuns kaya 2022). Thus, implementation of NPM and austerity politics in healthcare often leads to uneven spatial distribution of medical infrastructure and personnel within countries. For instance, studies of NPM arrangements and their effects on local healthcare provision in New Zealand (Brabyn and Beere 2006), U.S.A (Holmes et al. 2006; Wishner et al. 2016), UK (Imison 2011; Hassenteufel and De Maillard 2017), and Canada (Liu et al. 2001) found transition toward “better cost control” correlated with deterioration of access to healthcare for residents of remote areas and small cities.

Along with neoliberal restructuring, technological transformation known as “ambulatory turn” took place in hospitalization patterns supporting the political strive toward efficiency. Implementation of new technologies allowed hospital patients, particularly in surgery, to be admitted and discharged within 1 day (OCDE 2017). Ambulatory transformation improved the quality of certain types

of care and the rapid return of patients to their homes for convalescence. Directly linked with novel approaches in anesthesia and surgery, it contributed to an increase in hospital “productivity”, allowing more operations in a shorter time.

### **Healthcare reforms in France since 1990s**

Although neoliberal rationalities were generally adopted by the French Ministry of Finance in the 1980s (Pollitt et al. 2011), the idea of “administrative failure” did not emerge in the public debate before the 1990s. From then on, there was a spreading belief that NPM could provide the tools to “modernize” French administrations, “downsize” the central state (*l'État*), modify its competences, and improve its “efficiency” (Pollitt et al. 2011). In 1995, a circular by Alain Juppé (President Jacques Chirac’s Prime Minister) entitled “Reforming the State and public services” initiated these changes, introducing public services retrenchment. In 2007, the General Review of Public Policies (*Révision Générale des Politiques Publiques*) adopted the principles of NPM, aiming at rationalization of public expenditure. However, reforms operated more through the evaluation and reorganization of public services and administrations, rather than privatization.

Since the 1990s, successive reforms have affected the healthcare sector in France. In 1990, under a center-left government, hospitals developed a project-based approach to management and structuring and became subjected to contracting. In 1996, the government decided that annual health expenses would be limited under the National Objective of Health Insurance Expenditure (*Objectif National des Dépenses d'Assurance Maladie*) fixed in a yearly financial law. Reducing expenditure became a priority from the 2000s onwards (Granger and Pierru 2012; Lerouillois and Vinclet 2002). In accordance with Plan Hospital 2007 and 2012, a medical information system was organized (*Programme Médical Système Information*) to help count and precisely price all medical acts performed in hospitals. From 2005 onwards, hospitals were financed mostly through activity pricing (*Tarification à l'Activité = T2A*), i.e. based on the number of activities performed. T2A led hospitals to a process of selecting least costly patients and producing more activity in order to increase their own resources (Belorgey 2010). The outlined reforms enhanced competition between hospitals and generated closure of less financially efficient ones (Delas 2011). Since 2009, the *Hôpital Patient Santé Territoire* Law organized the supervision of hospitals determining their bed capacities, financial resources (through the General Operating Grants, *Dotation Globale de Fonctionnement*), and the reorganization of work between public hospitals and private clinics in which care is also partly funded by the public health insurance system.

### **Healthcare reforms in Russia since 1990s**

The starting “rationality” for healthcare restructuring in Russia differed from that in France. The Soviet system of healthcare, so-called Semashko system [система Семашко], with only state funded services regulated in a top-down manner by the Ministry of Health was in deep crisis by the last decade of state socialism (Shishkin 2018; Younger 2016). Following the dissolution of USSR, the new Russian state lacked sufficient resources to provide necessary healthcare services that resulted in considerable deterioration of both key health indicators and the conditions for healthcare provision. Healthcare restructuring in Russia took shape against the background of long-standing internal crises of the Semashko system, collapse of state socialism with its norms and standards in healthcare and hygiene (Dunn 2008), as well as severe resource scarcity due to the economic crises that followed the transition to capitalism.

Privatization of healthcare in Russia started in the 1990s with the emergence of private ambulatories and clinics, as well as fee-based services within state-funded facilities. Furthermore, during this period decentralization took place with state authorities delegating responsibility for healthcare provision to the regional level. In 1993, Mandatory Health Insurance was introduced aiming at decreasing the state regulation over healthcare (Younger 2016). As a result of above changes at the turn of the 20<sup>th</sup> century Russian healthcare became extremely heterogeneous in terms of quantity (accessibility) and quality both across regions and within regions in the center-periphery dimension (Cook 2017). Although not explicitly framed by NPM policies – prioritization of free markets, individualism, and decentralization – the outcomes of *laissez faire* healthcare provision restructuring in Russia in 1990s early 2000s were very much in line with neoliberalism.

A new set of policies, introduced in the mid-2000s within the so-called “statist” political framework, aimed to address uneven access to healthcare (Cook 2011; Matveev and Novkunskeya 2020). In 2006, a Foreground National Project “Healthcare” (*Natsionalnyy proekt “Zdravookhranenie”* [Национальный проект “Здравоохранение”]) was launched targeting improvement of the quality and accessibility of healthcare services, the material provision of medical care, and the working conditions of healthcare practitioners. The project was implemented through additional state subsidies to the regions. Moreover, with the presidency of Dmitry Medvedev, at the beginning of the 2010s, a new program of “modernization” continued the trend of “statist” reforms. These included state subsidies to healthcare facilities to improve their material and technical base, implement information systems, and enhance standardization of healthcare provision. Yet, even at the time of active state support in the form of budgetary inflows into the healthcare system, the “proportion of state expenditures on healthcare was 3.7% of GDP – slightly higher than the 3.4% average for upper middle-income countries” (Shishkin 2018, 232). For instance, in 2007 in



France at the time of the General Review of Public Policies, healthcare spending accounted for 9% of GDP.

In the early 2010s, a rearrangement of the Mandatory Health Insurance system took place with all state-funded healthcare facilities shifting to single-channel financing by 2015. As a result, budget subsidies were stopped, and Mandatory Health Insurance became the only provider of financing to healthcare facilities (Shishkin, Sazhina, and Selezneva 2015). The standardization of healthcare in Russia took the form of “activity pricing” and built on “money follows a patient” principles; as such, it closely followed the logic of NPM. The system quantified the number of beds and services provided, and explicitly linked this quantification to the concept of healthcare “optimization”.

## Data, methods, and scale

### Data on healthcare facilities

France’s Directorate for Research, Studies, Assessment, and Statistics compiles the Annual Statistics on Healthcare Establishments (*Statistique Annuelle des Établissements de santé*, SAE) each year, providing data on medical, surgical, and obstetrical (MSO) hospital beds and places. The SAE is produced following an annual, exhaustive, and mandatory survey of public and private healthcare establishments located in France, conducted by the Ministry of Health’s statistical units. In this paper, we use the term hospital in order to talk about both public hospitals and private clinics since both of them offer public services covered by the social security system. The data covers the period 2000–2018.

For Russia, we use official data on hospital beds (1991–2013) and hospital places (2009–2013) from the database “Multistat. Economy of Russian cities” [Мультистат] which was updated by the Russian State Statistical Agency (*Federalnaya sluzhba gosudarstvennoy statistiki* [Федеральная служба государственной статистики], Rosstat) until 2013. It comprises data on MSO beds and places in public hospitals.<sup>3</sup> “Multistat” does not provide data on private hospitals that offer full (short- or long-time) care; however, these represent a negligible number in Russia (less than 1% of the total number of hospitals that provide full care) and, thus can be ignored. After 2013, when Rosstat stopped sustaining the “Multistat” database, it became impossible to obtain acute information on hospital beds and places on the urban level.

### Scale and set of observations

#### Cities as functional urban areas (France)

We chose functional urban areas as the level to analyze the evolution of healthcare provision within the French urban system.<sup>4</sup> By using functional delineation of cities, rather than morphological or administrative ones, we

take into account the attraction that a city exerts on its surrounding area, notably through the location of higher-tier functions. Only mainland France has been included in the overview, as overseas departments and regions face very specific sets of issues, including a relatively small number of cities equipped with hospitals. This makes analyzing them simultaneously with the rest of France complex. Seven hundred and seventy-one urban areas were identified for mainland France in 2010 by the French National Institute of Statistics and Economic Studies (Insee). We divided the sample of urban areas into four groups according to population size: (smallest <20,000; small 20–50,000; medium-sized 50–200,000; large >200,000).

### ***Cities as urban agglomerations (Russia)***

Rosstat does not provide data on functional urban areas; therefore, we used the closest possible analog identified based on morphological properties according to Cottineau and Frost (2018). The original dataset included information on 718 municipal units with urban status located within 46 regions of the European part of Russia (Southern, Central, North-Western, and Privolzhskiy Federal Districts with<sup>5</sup> a commensurate density of urban system in relation to mainland France). After removing incomplete time series, the resulting dataset included data on 502 municipal units with urban status in 44 regions of European Russia. This stands for half of all cities in Russia. The data were aggregated into 437 urban agglomerations. We divided the observations into 4 groups defined by the same thresholds as in the case of France.

The term “city” will be used as a synonym for both functional urban area (France) and urban agglomeration (Russia) unless stated otherwise. Further in the text, we will refer to the urban system of mainland France as the French one, and to the urban system of European Russian as the Russian one.

### ***Hypotheses, indicators, and methods***

Drawing on the arguments of Section 2, we base our analysis on the assumption that in both Russia and France healthcare provision has undergone somewhat similar changes including implementation of NPM principles and technological shifts. The following three hypotheses were tested in our research: i) within both urban systems, the number and density of hospital beds have been decreasing due to cuts ii) in both urban systems, the number and density of places have been increasing due to “ambulatory turn” iii) the above changes were not uniform, leading to increased quantitative inequalities between cities in terms of healthcare provision (divergence hypothesis).

Several indicators were constructed to assess the spatial dynamics of healthcare provision. First, stocks (beds and places) at the beginning and end periods make it possible to measure changes in absolute terms. Second, density (beds and places) at the beginning and end periods makes it possible to investigate

the change in healthcare provision per capita. Densities, however, do not reflect the fact that healthcare within the city may be accessed by a larger number of people who live in surrounding places and municipalities. The third indicator is that the average annual growth rate (AAGR) of the stocks and density makes it possible to capture changes in relative terms. For all indicators, measures of central tendency (mean, median) and dispersion (minimum, maximum, standard deviation, coefficient of variation, the first and ninth decile) were calculated. These elements provide the basis for discussion of our first and second hypotheses.

The divergence hypothesis was tested using sigma convergence (Bourdin 2013). Sigma convergence (reduction in dispersion measures such as variation coefficient, interdecile length) was measured between cities, between groups of cities of different population sizes, as well as different administrative statuses independently for each country. If the sigma convergence increases, the divergence hypothesis is invalidated.

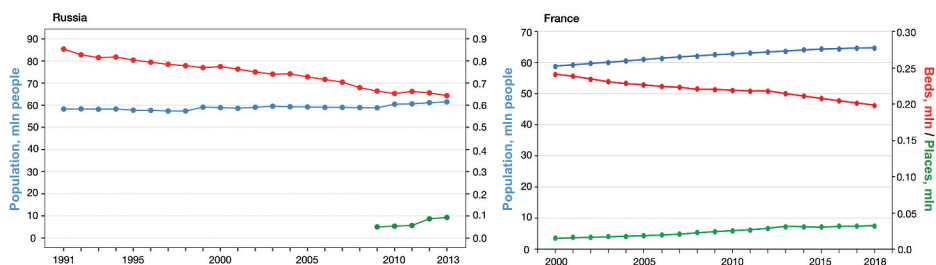
## Results

### General observations

#### *Decrease in hospital beds: stocks and density*

In European Russia, the total number of beds decreased from 853,628 to 642,986 between 1991 and 2013; this represents a  $-1.27\%$  annual change. In mainland France, a decrease took place from 241,275 to 198,513 between 2000 and 2018; this represents  $-1\%$  annual change (Figure 1). The median number of beds per city decreased by 1.9 within the Russian sample (from 500 to 263) and by 1.2 within the French one (from 118 to 98) (Table 1).

Statistical distribution parameters of bed stocks tell the same story of decrease at the city level in both countries. The average annual growth rates (AAGR) of  $-2\%$  in the two countries clearly supports hypothesis one (see Table 1). The median between the two countries is also comparable ( $-2\%$  in



**Figure 1.** Changes in population, hospital beds and places in European Russia (1991–2013) and in mainland France (2000–2018). Data: Multistat; Insee; SAE.

**Table 1.** Beds and European Russia and mainland France, stock. Calculations based on Multistat; SAE.

	Russia			France		
	1991	2013	average annual rate of change (%)	2000	2018*	average annual rate of change (%)
Min	50	8	-9%	4	3	-16.7%
Max	143,478	123,134	+19%	46,823	35,350	+9.7%
Median	500	263	-2%	118	98	-1.1%
Mean	1,953	1,471	-2%	457	415	-1.5%
1st decile	200	68	-5%	13	15	-4.3%
9th decile	3,997	2,720	+0.5%	785	744	0.2%
Standard deviation	7,863	6,744	3%	2,188	1,772	2.3%
Coefficient of variation	403%	458%	145%	479%	427%	150.4%
Total	853,628	642,986	-1.27%	241,275	198,513	-1.1%

\*Cities where hospital beds were eliminated have been taken out of the sample for 2018. If they would have been included, 60 in total, the min for 2018 would be 0 and the minimal average annual rate of change would be -100%.

European Russia, -1% in France) as are the first decile (-5% in European Russia, -4% in France) and the 9th decile (+0.5 in European Russia, 0% in France).

Against the background of changing urban populations (see Figure 1), bed densities in both countries decreased (Table 2). In European Russia, median bed density dropped from 168 to 96 beds per 10,000 people, and in France, between 2000 and 2018, from 54 to 42 beds per 10,000 people. Moreover, all calculated statistical parameters show a decrease in bed densities; whether we look at less equipped (1st decile) or most equipped (9th decile) cities. The decrease in bed density is stark across both countries.

In the case of Russia, the trend of decreasing bed stocks and density was constant despite the political and economic instability of the 1990s. During this period, the healthcare system evolved largely by inertia. But despite this, no

**Table 2.** Density of hospital beds in cities of European Russian and mainland France (per 10,000 people). Calculations based on Multistat; SAE.

	Russia			France		
	1991	2013	average annual rate of change (%)	2000	2018*	average annual rate of change (%)
Min	35	19	-7%	4	1	-16.6%
Max	1,455**	483	20%	456	205	5.8%
Median	168	96	-2%	54	42	-1.5%
Mean	184	104	-1.5%	62	46	-1.8%
1st decile	109	61	-4%	19	14	-4.3%
9th decile	267	149	0.7%	108	79	0.2%
Standard deviation	95	49	3%	43	28	2.3%
Coefficient of variation	52%	48%	179%	70%	61%	122.2%

\*Calculations for 2018 include all cities with hospital beds except for the Noyal-Pontivy functional urban area. Here, the density of beds is "artificially" high (1,017 beds per 10,000 inhabitants) due to the merger of establishments in two nearby urban areas - Pontivy and Plémet-Loudéac.

\*\*Grayvoron in Belgorod oblast (around 5,000 people in 1991) where the high hospital bed density is due to a presence of a mental hospital for 500 patients being included into the statistical account.

statistically significant changes or breaks in the pattern were detected. It should be noted, however, that in the period 1990–1998, across the urban system of European Russia the average annual change rate in bed density was slightly higher compared to other periods. This can be attributed, to a large degree, to the statistical effect associated with decreasing base (total stocks) against a constant downward trend.

### *Increase in hospital places*

In both countries the drop in hospital beds was partially compensated for by an increase in the number of hospital places. In European Russia, from 2009 to 2013, the total number increased from 50,200 to 93,000 ( $\times 1.8$  in 4 years), as in France, where between 2000 and 2018, the number hospital places increased from 15,538 to 32,694 ( $\times 2.1$  in 18 years) (see [Figure 1](#)). At the city level, there is a clear upward trend with the median AAGR in the number of hospital places in both countries at roughly 5% ([Table 3](#)). In European Russia, half of analyzed cities had over 46 places in 2009 and over 55 in 2013. The figures for France are 49 places in 2000 and more than 94 in 2018.

In the observed Russian cities, the median of places per 10,000 people increased from 16 to 20 between 2009 and 2013. In the French case, half of all cities had at least three hospital places per 10,000 people in 2000 and 7 in 2018. This increase can be understood both as evidence of “ambulatory turn”, as well as an indicator of a strong orientation toward cost-efficiency given the parallels processes of reduction in hospital beds and length of stay in hospitals.

Although both Russia and France showed similar tendencies in terms of trends in stocks and density of beds and places, the two cases are remarkably different with regard to absolute values. Stocks and densities of hospital beds and places are, at an absolute level, significantly higher in European Russia in comparison to mainland France. This is true for maximum values, as well as for the median and average densities per city ([Tables 3, 4](#)). At the starting and concluding points of analysis, the density of hospital beds and places in the

**Table 3.** Stock of hospital places in European Russia and mainland France. Calculations based on Multistat; SAE.

	Russia			France		
	2009	2013	average annual rate of change (%)	2000	2018	average annual rate of change (%)
Min	2	2	–39%	1	1	–8.9%
Max	3,737	14,870	416%	3,470	6,326	20.5%
Median	46	55	5%	12	27	5.1%
Mean	116	214	20%	49	94	5.2%
1st decile	14	15	–8%	2	5	0.9%
9th decile	231	407	61%	90	198	9.9%
Standard deviation	270	867	48%	210	370	3.9%
Coefficient of variation	232%	405%	240%	430%	395%	74.8%
Total	50,200	93,000	18%	15,538	32,694	4.2%

cities of European Russia was estimated as being 2–3 times as high as that in French cities. There are two possible explanations that are not mutually exclusive. First, this may be the effect of differences between the two urban systems and the scale of analysis: perimeter of urban agglomerations in Russia is smaller than actual service area that includes a vast countryside so that the served population may be underestimated. Second, the characteristic feature of the Semashko healthcare system in the Soviet Union was its emphasis on quantity rather than the quality of healthcare provision; more beds meant wider coverage and resulted in growth of budget revenues (Mokhov 2020). The observed “excess” of beds and places in Russian urban cities over the French ones may therefore be attributed to the Soviet legacy. However, an apparent legacy may in fact be better understood as a response to quite contemporary processes and conditions. The true causes of this comparative “overcapacity” require further investigation.

### ***Trends in healthcare provision within urban systems***

Given that France and Russia underwent similar healthcare reforms, our third hypothesis implies a similar outcome of these reforms across contexts. It suggests that within each urban system, there will be increasing differences in healthcare provision between cities. To test this, we will first look at the evolution in the number of cities equipped with hospital beds and places, followed by sigma convergence analysis of bed and place densities, and finally analyze the means by size categories and administrative status of cities.

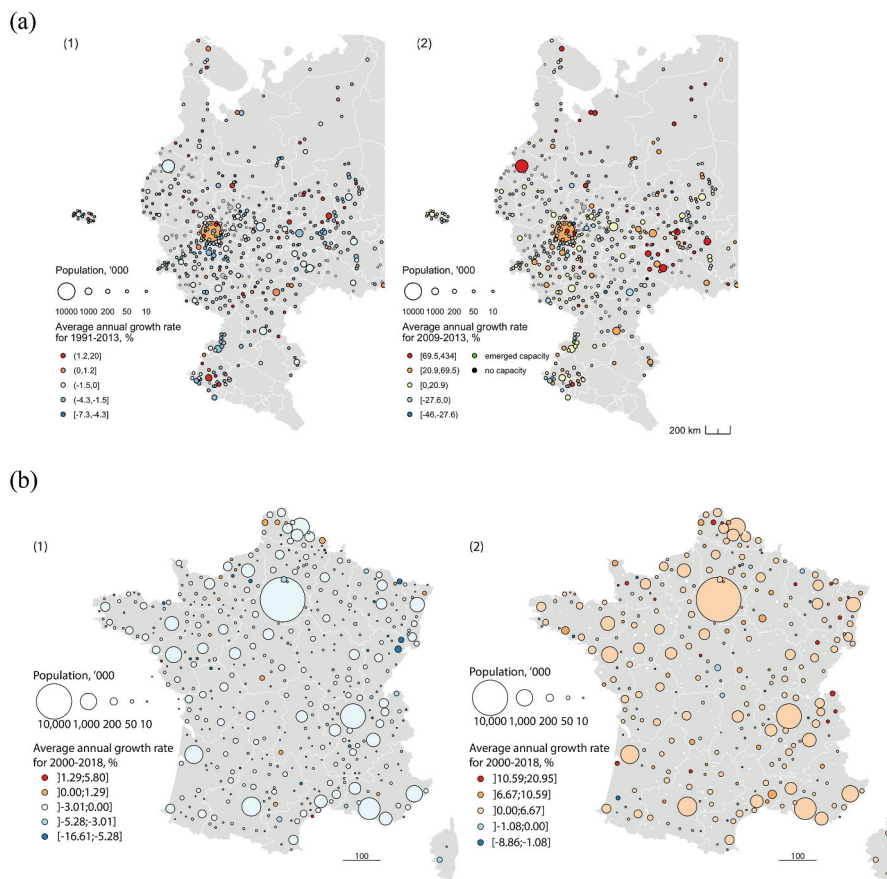
#### ***Number of equipped cities***

In the Russian urban system, all the observed cities were equipped with beds (437) and the vast majority also had places (434), while in France the number of cities equipped with hospital beds dropped from 523 to 472 and the number of cities equipped with places increased from 317 to 346 (Table 5). Thus, despite the overall similar trends discussed in Section 4.1, the French urban system seems clearly less stable and equitable in terms of healthcare provision compared to the Russian one. Hospital beds are being concentrated in a smaller number of cities over the period; and though the number of cities with hospital places slightly increases, still only 45% of them are equipped.

#### ***Density of hospital beds and places***

In both countries, divergence may be questioned looking at the evolution of variation coefficient (V.C.) – sigma convergence indicator. If the V.C. for the final period of observations is less than that of the initial period, we may conclude that convergence of healthcare provision between cities takes place; if it increases, this indicates divergence and a rising polarization within the system.

Regarding bed densities, in the Russian urban system, V.C. decreased from 52% (1991) to 48% (2013) and in the French one taking into the account only equipped cities from 70 (2000) to 61% (2018) (Table 2). These figures confirm a trend toward convergence in both systems. However, this convergence occurs in a situation of an overall reduction in hospital bed densities (and stocks) within both urban systems. In France, the decrease of hospital bed densities is quite even, with only a few cities that exhibit a high level of decrease (Figure 2). In European Russia, on the contrary, the dynamics are very differentiated with some cities, predominantly large ones, even showing growth in bed densities (Figure 2).



**Figure 2.** (A) Average annual growth rate of (1) bed density (1991–2013) and (2) place density (2009–2013) in the observed Russian cities. Calculations based on Multistat. (b) Average annual growth rate of (1) hospital bed densities and (2) hospital place densities (2000–2018) in the observed French cities. Calculations based on SAE and Insee. *Notes:* breaks between classes were determined with standard deviation method; grey circles indicate cities within the study area but not included in the sample due to missing data. *Notes:* breaks between classes were determined with standard deviation method.

**Table 4.** Density of hospital places in European Russia and mainland France, per 10,000 inhabitants. Calculations based on Multistat; SAE.

	Russia			France		
	2009	2013	average annual rate of change (%)	2000	2018	average annual rate of change (%)
Min	0.28	0.45	−46%	0.3	0.4	−8.6%
Max	134	163	434%	26	104	20.9%
Median	16	20	5%	3	7	4.6%
Mean	20	25	21%	4	8	4.9%
1st decile	4	7	−7%	1	3	0.6%
9th decile	39	47	64%	6	14	10.0%
Standard deviation	16	18	48%	3	7	3.9%
Coefficient of variation	81%	73%	232%	76%	88%	80.8%

**Table 5.** Number of cities equipped with beds and places per period. Calculations based on Multistat; SAE.

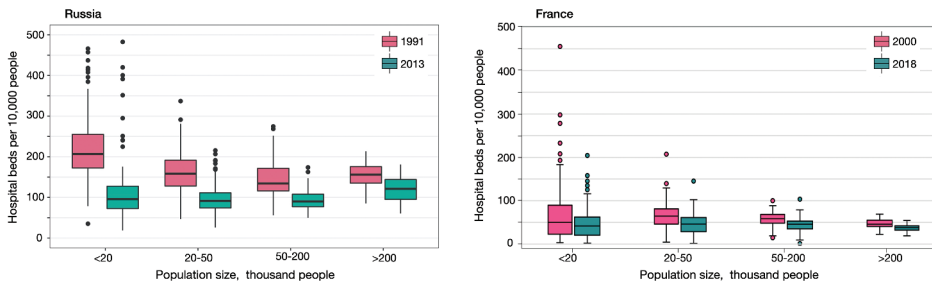
	Russia (within the sample of 437 urban agglomerations in 44 regions of European Russian)		France (of total number of French FUA)	
	1991 (beds) 2009 (places)	2013	2000	2018
Number & Percentage of cities with hospital beds	437 (100%)	437 (100%)	523 (68%)	472 (61%)
Number & Percentage of cities with hospital places	432 (98.9%)	434 (99.3%)	317 (41%)	346 (45%)

Regarding place densities, in the Russian urban system the V.C. decreased from 81% (2009) to 73% (2013), while in the French one an increase is observed – from 76 (2000) to 88% (2018) (Table 4), indicating convergence among observed Russian cities and divergence among those in France. In most observed Russian and French cities AAGR of hospital place densities is positive (Figures 2 and 2b). This contrast between the predominantly positive AAGR of hospital place densities and the negative AAGR of hospital bed densities within the two urban systems is an important similarity of the ongoing healthcare provision transformation.

#### ***Means and V.C. For the density of hospital beds and places by city size***

In the Russian case, the density of beds and places seems to have a relation to population size. In the 1990s, the highest average bed density was observed in the smallest (<20 thousand people) cities – over 200 beds per 10,000 people, while large cities had around 150 beds per 10,000 people (Figure 3). By 2013, the relationship between hospital beds and population size reversed so that the large cities had the highest average bed density of 119 beds per 10,000 people, while other cities had less than 100 beds per 10,000 people on average. Thus, during the studied period, there was a “redistribution” of hospital beds across the urban system in favor of large cities and at the expense of smaller ones.



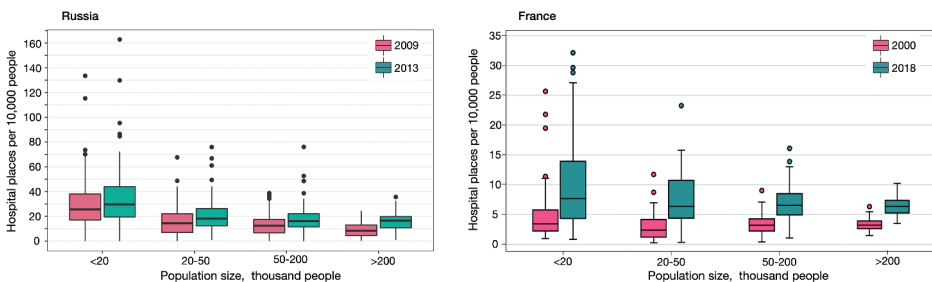


**Figure 3.** Hospital bed densities in the observed cities by population size category. Left in European Russia (1991 and 2013); Right in mainland France (2000 and 2018). Calculations based on Multistat; SAE. \*Four Russian cities with bed density over 500 in 1991 are not included in the plot.

In contrast, in France there were less significant variations in average bed densities among cities of different sizes during the observed period. Bed density for cities of different sizes all revolve around 50 (Figure 3). In 2000, the average density of hospital beds ranged from 48 beds per 10,000 people (large cities) to 66 beds per 10,000 people (small cities). In 2018, this gap decreased, with a range from 38 beds per 10,000 inhabitants (large cities) to 45 beds per 10,000 inhabitants (small and medium-sized cities). The narrowing range of bed densities indicates a trend toward uniformity.

Density of hospital places according to city size showed little change during the observed periods. Within all categories of cities both in European Russia and in France there is an increase (Figure 4). However, in European Russia, the highest place densities remained in the small cities, whereas in France, the densities were very close between all categories.

Both in the Russian and French urban systems, large cities were on average more similar in terms of bed densities, whereas stronger disparities were observed among the smallest and small cities. The same is applicable to the densities of places that ranged within these categories from very low to very high. Overall, in European Russia, V.C. for bed densities increased within all



**Figure 4.** Hospital place densities in the observed cities by population size category. Left in European Russia 2009 and 2013; Right in mainland France in 2000 and 2018. Calculations based on Multistat; SAE.

**Table 6.** “Convergence effect”: coefficient of variation by size categories for the density of hospital beds. Calculations based on Multistat; SAE.

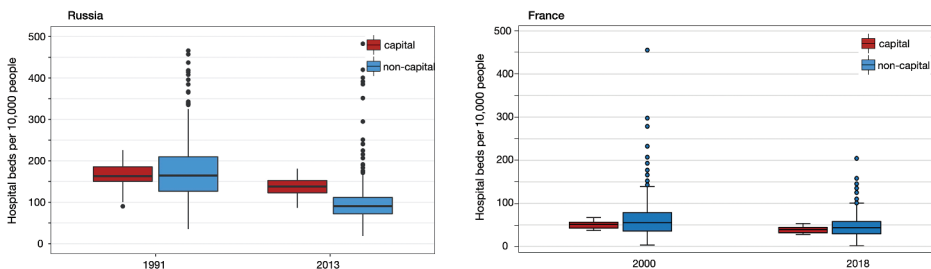
	Russia		France	
	1991	2013	2000	2018
<20	57%	61%	<b>86%</b>	<b>72%</b>
20-50	33%	37%	47%	56%
50-200	<b>29%</b>	<b>26%</b>	26%	34%
>200	20%	26%	21%	20%

categories of city sizes, except for medium-sized cities (50–200,000 inhabitants) where it dropped negligibly from 29% to 26% (Table 6). For France, the results are more mixed, with a trend toward convergence of hospital bed densities within the categories of smallest and small cities (taking into the account only the equipped ones), divergence between medium-sized cities, and stability within the category of large cities (Table 6).

#### *Means for the densities of hospital beds and places by administrative status*

In European Russia, the trend toward decreasing bed densities is stronger in non-capital than in provincial (regional) capital cities (Figure 5). In 1991, the density of beds did not differ in regional capitals and “ordinary” cities. But in 2013, the variation is striking: regional capitals are on average one and a half times more equipped with beds than non-capital cities. Unlike European Russia, the administrative status of cities in France did<sup>6</sup> not play a role in the dynamics of bed densities (taking into the account only the equipped cities). Both in 2000 and 2018, the distribution of hospital bed densities between capital and non-capital cities was on average similar, even though the dispersion of the distribution is greater for non-capital cities because of their size (450 non-capital cities against 22 capital cities).

The previous subsection noted that large cities in European Russia became more equipped over the studied period; the findings of this section with regard to increasing tendencies to equip capital cities may explain the those of the



**Figure 5.** Hospital bed densities in the observed cities by administrative status in European Russia (here municipal units, not agglomerations) and mainland France (FUA “chef-lieu”). Calculations based on Multistat; SAE.

previous subsection. Most large cities are regional capitals. Thus, the redistribution of beds in favor of large cities and at the expense of smaller ones was *de facto* a redistribution in favor of capital cities at the expense of non-capital ones. This suggests a dramatic shift in the territorial provision of healthcare in Russia and the principles it is built on in contrast to a somewhat equalization in the case of France.

The indicators and analysis offer complementary sights for the ongoing transformation. When looking at the number of equipped cities, the Russian urban system seems more stable, as the French system has been polarized with concentrations of beds in selected cities and a slight diffusion of places. When looking at the means for the densities of beds and places by size and status categories, divergence occurs in the Russian system with a trend toward higher densities in large and capital cities. In France, in contrast, there seems to be a convergence, resulting in similar densities across cities of different size and status.

## Conclusion

Despite some variations, reforms to healthcare provision in Russia and France since the 1990s follow comparable paths. Proliferation of neoliberalism into this sphere in France began with the introduction of public services contracting in 1995. In Russia, it was experienced against the backdrop of a transition from state socialism to capitalism that started in 1991. Despite the introduction of a more “statist” political framework for healthcare restructuring in Russia in mid-2000s, cost-efficiency remained a guiding principle for healthcare provision. The pursuit of NPM principles in healthcare which included quantifying and pricing activities, reporting, and budget control (both framed in explicit policies and during the *laissez faire* period in Russia) corresponded to a significant decrease in the stocks and density of hospital beds within the researched urban systems of both countries. Against the backdrop of decreasing number of hospital beds in both urban systems, an increase in the number of hospital places was observed with a notable shift to ambulatory care. The latter may be both a result of the technical transformation of healthcare (“ambulatory turn”) and an effect of NPM since within its logic shorter stays in hospitals seem to be more cost efficient. We, however, acknowledge, that not every case of marketization, public services retrenchment, opposition to social welfare, and “government through calculative choice” signifies neoliberalism (Collier 2011). Thereby, a more in-depth and nuanced analysis with parallel mobilization of quantitative and qualitative approaches is required for a deeper understanding of observed tendencies and their alignment with meta rationalities.

The correlation between the changes in hospital beds and places in day hospitals and population at the city level were calculated for both urban systems and proved to be nonlinear. This suggests that despite the diverging

trends in urban population dynamics – shrinkage of predominantly small and medium-sized cities and growth of large cities in Russia (e.g. Batunova and Gunko 2018; Batunova and Perucca 2020) and in France (e.g. Wolff et al. 2013)– quantitative changes to healthcare provision on the urban level are more linked to the shifting policy rationalities than to an explicit “fix” which follows demographic development. Similar trends toward diminishing hospital beds on the national and regional levels were evident in numerous countries and, thus, may be interpreted as a general feature of contemporary healthcare provision restructuring. As argued in prior research this tendency (re)enforces inequalities in access to care and, thus, has negative impacts on the state of public health (e.g. Brabyn and Beere 2006; Carriere, Roos, and Dover 2000; De Belvis et al. 2012; Franzini and Giannoni 2010; Liu et al. 2001; Matveev and Novkunskaya 2020; Perucca, Piacenza, and Turati 2019). Our research also supports the claim of (re)enforced inequalities in access. Despite the overall decrease in beds and increase in places in both urban systems, we observed a diversity of situations that strongly distinguishes cities according to their size. In the categories of smallest and small cities healthcare provision can vary greatly and residents of some small cities may be completely deprived of access to healthcare. At the same time for the largest cities (>200,000 inhabitants) levels of healthcare provision show minimal variance. This is applicable to both the density of hospital beds and hospital places.

Despite the similarities of the overall trends, each country has gone through a specific process regarding the changes to spatial distribution of healthcare provision. In France, administrative status of a city has not played a role in defining the dynamics of healthcare provision. Within the observed period healthcare provision became more concentrated with some cities fully losing hospital beds. At the same time among cities that remained equipped, convergence is observed – the difference in average numbers of bed densities among the cities of various sizes tends to decrease. A similar outcome has been observed by Lucas-Gabrielli and Tonnellier (2000) at the regional level regarding the dynamics of hospital bed densities between 1987 and 1997. This may be explained by policy of Regional Health Agencies pushing for a more even accessibility to hospital equipment across the territory, as well as by the efforts of local actors fighting against the closure of hospitals in small and medium-sized cities. Nevertheless, in France, small and medium-sized cities seemed to be the most affected ones by the implementation of NPM principles (for more details see Conti, Baudet-Michel, and Le Neindre 2020).

In Russia, within the observed period and case study area all cities retained their hospital beds. At the same time, a major centralization trend is observed, whereas large cities, primarily, regional capitals showed better performance in terms of bed density. By 2013, regional capitals in European Russia became on average one and a half times more equipped with beds than non-capital cities. This striking divergence aligns with the overall tendency since the new millennium toward

recentralization in Russia that is expressed in various public policies (Sheiman and Shevski 2017; Zupan and Gunko 2019). Since the 2000s, the new set of state policy measures in healthcare included additional investments in the material provision and renovation of medical facilities, construction of new technologically developed hospitals and centers, and implementation of a routing scheme (framed as regionalization of healthcare). In practice this meant an imposition of a multilevel hierarchical system of medical facilities that provide different services, and which vary in equipment and financing in accordance with their assigned status (Matveev and Novkunskaya 2020). Large cities, especially capitals, host “federal” and “regional” hospitals that are often more specialized and better equipped, whilst small cities have hospitals that only provide basic low-tech services. Even though our dataset terminates in 2013, the observed trend is confirmed by studies conducted on the regional level in Russia with empirical data dating to the end of 2010s (e.g. Matveev and Novkunskaya 2020; Novkunskaya 2022).

We can hardly bypass the crises of healthcare systems that resulted from the Covid-19 pandemic. The latter has put healthcare provision in the spotlight of policymakers and researchers, exposing the pros and cons of NPM implementation in healthcare. “All hell had broken loose ... Every available bed was occupied” (Gershkovich and Sauer 2020)—this quote from an interview published in the *Moscow Times* describes the dire situation in healthcare provision on the brink of the second wave of Covid-19 pandemic in the Russian capital. During 2020–2021, the media has widely reported construction of new healthcare facilities and establishment of field hospitals in Expo Centers and stadiums not only in Russia, but throughout various countries of the world (e.g. DW 2021; Global Times 2020; Euronews 2020; The *Moscow Times* 2020). The pandemic also revealed the lack of hospital equipment, as noted in the *Washington Post* for France: “It was a shock for citizens to discover that France – the world’s seventh-largest economy, widely praised for its remarkable health system – could end up struggling to cover the basic needs of its hospitals” (Diallo 2021). Can the state of emergency be attributed to the severe nature of the Covid-19 virus? Yes, but we believe that not to the full extent. As our analysis indicates, it has also much to do with the ongoing policies of public services restructuring and technical upgrading of healthcare. They have resulted in decreases of hospital equipment and emerging spatial inequalities in access, which became more pronounced during the pandemic turning some places into “hospital deserts” (Verhagen et al. 2020). Against this background, it becomes evident that “some goods and services should be placed outside of the market forces” (Brunet 2020).

## Notes

1. Day hospital (in Russian *dnevnoy statsionar* [дневной стационар]; in French *hospitalization de jour*) is an outpatient facility that patients attend for assessment, treatment, or rehabilitation during daytime.

2. The Semashko system – a model of healthcare organization introduced by Nikolai Semashko, the first Minister of Health in the USSR. It aimed to provide universal access to healthcare and was characterized by the domination of state-funded medical facilities, salaried health workers, and extensive governmental administration (Shishkin 2018). It was built as a multilevel system with rural, district, city, regional, and national hospitals, supplemented with numerous specialty care facilities, coordinated through a referral system from one level to another (Sheiman and Shevski 2017).
3. In Russia, Rosstat does not give a precise division of hospital beds and places by type for the urban level. Therefore, in some cities a minor number of other types of hospital beds may be included in the statistical data.
4. An urban area is a group of contiguous municipalities, encompassing an urban core providing at least 1,500 jobs (the urban unit), surrounded by peripheries, among which at least 40% of the employed resident population works in the urban core (Insee).
5. Federal District (Federalnyy okrug [Федеральный округ]) is the largest territorial unit in Russia, a non-constitutional part of its administrative-territorial division. There are five Federal Districts in European Russia. However, in the current study the territory of North-Caucasian Federal District was excluded due to the poor reliability of statistical data.
6. FUAs are classified according to their administrative status before the Territorial reform of 2015: if the FUA holds the regional prefecture it is considered as a capital city. The regional prefecture is the body representing the ministries and the state authority at the regional level. They were 22 regional prefectures in mainland France before the 2015 reform.

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## Disclosure statement

No potential conflict of interest was reported by the author(s).

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