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**Kostyantyn Niemets**  
D.Sc. (Geography), Professor,  
V. N. Karazin Kharkiv National University,  
4 Svobody Sq., Kharkiv, 61022, Ukraine  
kon.nemets@yandex.ru



**Liudmyla Kliuchko**  
PhD (Geography), Associate Professor,  
V. N. Karazin Kharkiv National University,  
4 Svobody Sq., Kharkiv, 61022, Ukraine  
lyuda\_klyuch@mail.ru



**Ganna Kulieshova**  
PhD (Geography), Associate Professor,  
V. N. Karazin Kharkiv National University,  
Svobody Sq., Kharkiv, 61022, Ukraine  
aakulieshova@mail.ru

## FEATURES OF SOCIAL AND GEOGRAPHICAL RESEARCHES OF HEALTH CARE SYSTEM OF THE BORDER REGION

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**Abstract.** Article is devoted to consideration of features of social and geographical research of Health Care system as an important component of the social sphere of the border region. On the example of Kharkiv region (Ukraine), the existential analysis of Health Care system is executed, considering priority value of this component in social development of the region. Dynamics and territorial distribution on districts of Kharkiv region of the main indicators of Health Care system, in particular number of doctors, provision of doctors and hospital beds per 10 thousand of population, manning level of doctors and medical attendants of medical institutions doctors, number of out-patient clinics of the general family medicine has been analyzed.

Important aspect of social and geographical research is the analysis of spatial features of development of the territory. Maps which show intraregional distinctions in development of Health Care system are presented in the research. The special attention is paid to detection of features of Health Care system development in the border districts of the region and their comparison to the general regional tendencies.

It is noted that by reorganization and optimization of regional Health Care system, it is necessary to consider not only indicators of healthcare institutions functioning, but also features of geo-demographic situation in the region and migration, specifics of social and economic development, transport availability at medical institutions, a skill level of the experts providing medical services, the quality of medical institutions' equipment etc.

For this purpose, carrying out complex social and geographical researches of Health Care with application of original methods of research, in particular IFI-modeling, a graphic-analytical method of multidimensional classification of social and geographical objects, modeling of a trajectory of social-geosystem development are applied.

**Keywords:** Border Region; Health Care System; Social & Geographical Research; Social & Economic Development.

**JEL Classification:** I19; O18; R10; R12

### **Немець К. А.**

доктор географічних наук,  
професор кафедри соціально-економічної географії і регіоназнавства, Харківський національний  
університет імені В. Н. Каразіна, Україна

### **Ключко Л. В.**

кандидат географічних наук,  
доцент кафедри соціально-економічної географії і регіоназнавства, Харківський національний  
університет імені В. Н. Каразіна, Україна

### **Кулешова Г. О.**

кандидат географічних наук,  
доцент кафедри соціально-економічної географії і регіоназнавства, Харківський національний  
університет імені В. Н. Каразіна, Україна

### **ОСОБЛИВОСТІ СУСПІЛЬНО-ГЕОГРАФІЧНИХ ДОСЛІДЖЕНЬ СИСТЕМИ ОХОРОНИ ЗДОРОВ'Я ПРИКОРДОННОГО РЕГІОНУ**

**Анотація.** У статті окреслено роль та значення прикордонних регіонів у розвитку України. Виконано аналіз розвитку регіональної системи охорони здоров'я на прикладі Харківської області як важливого прикордонного регіону країни. Встановлено територіальні відмінності розвитку цієї складової соціальної сфери регіону, окрему увагу приділено аналізу розвитку системи охорони здоров'я прикордонних районів. Визначено, що для комплексного суспільно-географічного аналізу соціально-економічного розвитку прикордонного регіону в цілому та окремих його складових, і зокрема системи охорони здоров'я, необхідно застосувати оригінальні методи дослідження, а саме ІФВ-моделювання (створення моделі поля інтегральної функції впливу – ІФВ), метод моделювання траєкторії розвитку соціогеосистем, графоаналітичний метод багатовимірної класифікації суспільно-географічних об'єктів.

**Ключові слова:** прикордонний регіон; система охорони здоров'я; суспільно-географічне дослідження; соціально-економічний розвиток.

**Немец К. А.**

доктор географических наук, профессор кафедры социально-экономической географии и регионоведения, Харьковский национальный университет имени В. Н. Каразина, Украина

**Ключко Л. В.**

кандидат географических наук, доцент кафедры социально-экономической географии и регионоведения, Харьковский национальный университет имени В. Н. Каразина, Украина

**Кулешова А. А.**

кандидат географических наук, доцент кафедры социально-экономической географии и регионоведения, Харьковский национальный университет имени В. Н. Каразина, Украина

**ОСОБЕННОСТИ ОБЩЕСТВЕННО-ГЕОГРАФИЧЕСКИХ ИССЛЕДОВАНИЙ СИСТЕМЫ ЗДРАВООХРАНЕНИЯ ПРИГРАНИЧНОГО РЕГИОНА**

**Аннотация.** В статье рассмотрены роль и значение приграничных регионов в развитии Украины. Выполнен анализ развития региональной системы здравоохранения на примере Харьковской области как важного приграничного региона страны. Выявлены территориальные отличия в развитии данной составляющей социальной сферы региона, особое внимание уделено анализу развития системы здравоохранения приграничных районов. Установлено, что для комплексного общественно-географического анализа социально-экономического развития приграничного региона в целом и отдельных его составляющих, в частности системы здравоохранения, необходимо применять оригинальные методы исследования, а именно ИФВ-моделирование, метод моделирования траектории развития социogeосистем, графоаналитический метод многомерной классификации общественно-географических объектов.

**Ключевые слова:** приграничный регион; система здравоохранения; общественно-географическое исследование; социально-экономическое развитие.

**1. Introduction**

The border regions are specific territorial units, being on the state periphery, and their social and economic development substantially depends on functions of frontier. Openness or existence of the certain restrictions in crossing of frontier caused by features of foreign policy's strategy of the state and its neighbors affect social and economic development of the border regions.

The role and value of Ukrainian border regions in today's conditions considerably amplifies. On the one hand, there are the western regions which directly border with the European Union countries and have opportunity to take part in projects and programs with EU financial support. Considerable prospects are opened by cross-border cooperation between the neighboring border regions in economic, social, cultural, humanitarian, nature protection and other spheres. On the other hand, boundary regions of the eastern Ukraine are today in a condition of social and economic crisis and military conflict that has an adverse effect on general development of the country.

Problems and prospects of border regions development are connected with their participation in cross-border cooperation. Unfortunately, accurately it is quite difficult to define effect from cross-border cooperation. Real results of cooperation are between the neighboring regions. The most noticeable results at the local level when it is possible to track dynamics, growth of investments, creation of new workplaces, increase of the population income etc. Process of cross-border cooperation is connected with implementation of programs and projects of cross-border character. It is important to form and analyze cross-border statistics. However, for a long time this issue remains open, and features of maintaining cross-border statistics are not still coordinated between the countries. An exception is only basic information, such as the area of the territory, frontier extent, the population which is necessary for any cross-border activity, and also for development of strategy and programs of social and economic development of border regions. There have been specified induces to search new approaches and methods of border regions research and cross-border cooperation [1].

Research of boundary regions, identification of problems and priority directions of economy and the social sphere development, definition of perspective growth points are important scientific and practical tasks in aspect of regional social and economic development.

**2. Brief Literature Overview**

Attention of many scientists is focused on the research of various aspects of border regions development. Some of the national and Russian authors have considerable scientific achievements in issues of social and economic researches of boundary regions and cross-border cooperation. Among them are A. Balyan [2], M. Dolishnyi [3], N. Mikula [4], T. Tereshchenko

[5] and others. Also, in this research works of the following foreign scientists were taken into consideration: J. Gabbe (2008) [6], M. Perkmann (2003) [7], R. Ratti (1993) [8], J. Scott (2000) [9] etc. It's important to provide the social and geographical researches which are carried out on the basis of geographical, system and synergetic approaches and have interdisciplinary character allow complex investigation of the boundary regions, their separate subsystems. It is a basis for the territorial development potential determination. That is especially important for regional social and economic strategy development.

**3. Purpose**

To open features of social and geographical research of Health Care system as an important component of the social sphere of the border region on the example of Kharkiv region.

**4. Results**

Border regions of Ukraine have certain specific features and differ among themselves on a number of characteristics. It is connected with their economical and geographical placement, natural and geographical conditions, features of geopolitical, social and economic, ethno-cultural development, and also with mental traits.

Boundary region is understood as administrative area, which directly borders with the neighboring states. However, it is possible to consider as the boundary region territories of lower hierarchical level, in particular, administrative districts [4].

One of the important in political, economic, scientific and cultural sense is Kharkiv boundary region which is located in the northeast of Ukraine and occupies 5.2% of Ukrainian territory [10]. There are 27 administrative districts at Kharkiv region. Six districts are located along the frontier, namely: Zolochiv, Derhachi, Kharkiv, Vovchansk, Velykyi Burluk and Dvorichna districts.

Several indicators characterize development of Health Care system. In particular, there are financing of branch, number of doctors and the paramedical personnel, medical institutions and hospital beds and provision of the population with services.

The Health Care system of Kharkiv region is presented by complicated infrastructure and differences in network development. There are 511 healthcare institutions of various forms of ownership and submission which function in the region. There is an effective system of preparation of competent medical personnel. At the same time, continuous insufficient funding of branch leads to decline in quality of service for the population. Therefore, the regional health system at the expense of all levels' budgets annually receives no more than 45-47% of needed financial resources for its stable functioning and ensuring appropriate level of medical services. Expenses of budgetary funds counting on one inhabitant made UAH 934.6 in Kharkiv region (\$116 in 2013) [10, 11].

In 2013, number of doctors in Kharkiv region (excluding dental mechanics) made 12540 people. In general, over the last

5 years in Kharkiv region the tendency to reduce the number of doctors is observed. The most notable reduction took place in 2012, connected with the economic crisis and reduction of jobs.

Average value of provision of the population with doctors in Ukraine in 2013 was 48 doctors per 10 thousand people. Kharkiv region took the 4th place on an indicator of provision with doctors (57.6 doctors per 10 thousand people).

Important aspect of social and geographical research is analysis of spatial features of territorial development. Research of Health Care system of Kharkiv region allowed establishing territorial disproportions in provision of the population with the doctors within the districts. In particular, the greatest values of this indicator are noted in the central and western districts of Kharkiv area (Nova Vodolaha, Chuhuiv, Krasnohrad, Pervomaiskyi districts) (Figure 1). Borders of area, except Zolochiv district, have below the regional average level of provision with doctors, which makes 20.9 doctors per 10 thousand people. So, in Dvorichna district provision of the population with doctors makes 15.7 doctors per 10 thousand people, Velykyi Burluk district – 18.8, Vovchansk district – 19.1, Kharkiv district – 18.5, Derhachi district – 19.6 [11].

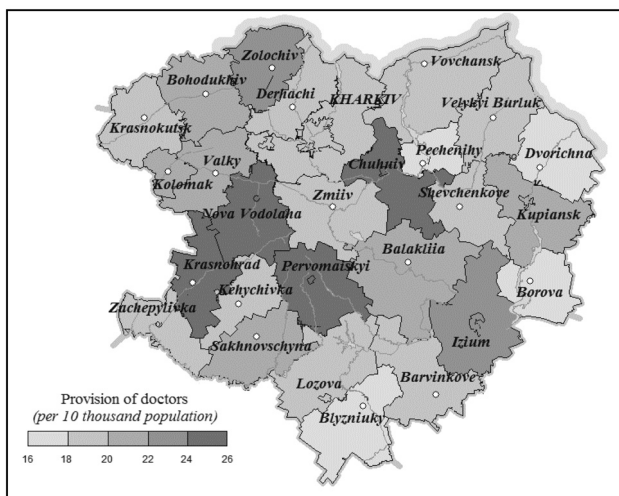


Fig. 1: Provision of the population with the doctors in the districts of Kharkiv region, 2013

Source: Composed by the authors using the data [11]

Among total number of doctors, 8656 people, or 69.0%, have qualification category in Kharkiv region. It is higher in comparison with the indicator across Ukraine (67.6%). The highest category have 36.6% of doctors, I category – 22.8%, II category – 9.6%. It is necessary to pay attention that among border districts, 90 the highest category doctors work in Kharkiv district, or 1.96% of the total number of higher category doctors in the region, in Derhachi district – 59 doctors (1.29%), in Vovchansk district – 30 doctors (0.65%), in Zolochiv district – 17 doctors (0.37%), in Dvorichna district – 9 doctors (0.2%), in Velykyi Burluk district – 8 doctors (0.17%) (Figure 2).

The number of the paramedical personnel in Kharkiv region in 2013 were 21449 people, among which 35.5% (7609 people) are from the medical institutions of the districts, 7.64% (1639 people) are from the medical institutions of the border districts. Provision of paramedical personnel in Kharkiv region was 78.6 people per 10 thousand people (the 20th place in Ukrainian rating), there is less than nation-wide value (97.4 people per 10 thousand population). Recommended ratio of Munich Declaration of WHO (2000) is 1 doctor per 4 nurses. In 2013, in Ukraine were 2.03 paramedical personnel per 1 doctor, in Kharkiv region there were 1.71:1 [11, 12].

Kharkiv region has some differentiation in provision of paramedical personnel in a section of districts. Among the borders, the smallest indicator is noted in Kharkiv (29.3 people per 10 thousand people), Derhachi (37.9) and to Zolochiv (53.1) districts.

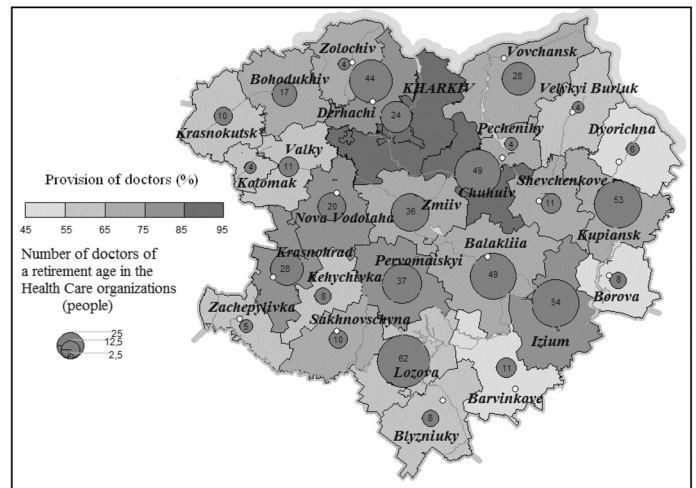


Fig. 2: Provision of doctors for the population in the districts of Kharkiv region, 2013

Source: Composed by the authors using the data [11]

The indicator of manning level of medical attendants in Kharkiv region in general is below (90.92) corresponding Ukrainian indicators (95.8). However, among such border districts as Vovchansk (105.72) and Velykyi Burluk (98.27) the manning level indicator is above the national value, and in Zolochiv (95.17), Kharkiv (94.29) and Derhachi (92.56) districts are above regional value (Figure 3).

In 2013, Kharkiv region was completed with 20941 stationary hospital beds that were 664 beds less, than in 2009. Provision of hospital beds in 2013 made 76.7 beds per 10 thousand people against 78.1 beds in 2009 (state value was 80.5 beds). Provision of the population with hospital beds significantly differs in the districts of Kharkiv region (Figure 4).

In the Kharkiv district, provision of hospital beds is nearly 4.5 times less, than averagely in the region and makes 18.58 beds per 10 thousand people, in Derhachi district it is 19.45 beds. Some districts is centers of agglomeration and large number of the population lives there. Quite low indicator of provision is in Vovchansk district (27.83 beds per 10 thousand people). A little higher rates of the population provision with hospital beds in other border districts, in particular, in Dvorichna (37.83), Zolochiv (38.99) and Velykyi Burluk (53.92) districts.

In the context of regional Health Care system modernization according to the strategic directions of a state policy priority, there is development of a primary link of the medical care corresponding to an order of medical care organizing in the European countries.

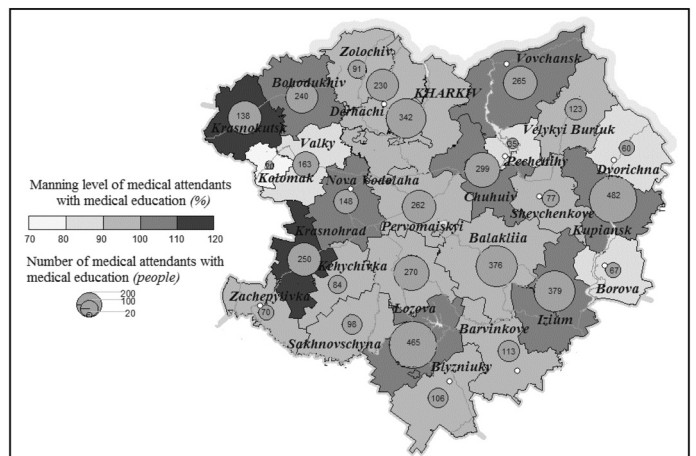


Fig. 3: Manning level of medical attendants for the population of Kharkiv region's districts, 2013

Source: Composed by the authors using the data [11]

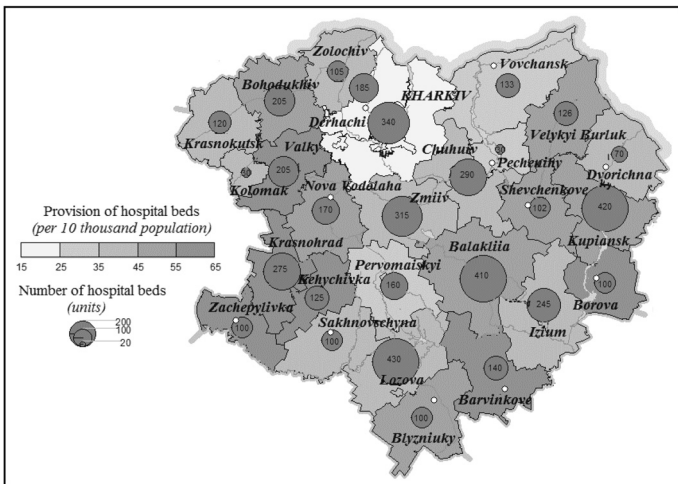


Fig. 4: Provision of the population with the hospital beds in the districts of Kharkiv region, 2013

Source: Composed by the authors using the data [11]

For the beginning of 2014, in Kharkiv region have been functioning 32 legally independent centres of primary medical and sanitary help which part were 331 medical out-patient clinics of the general family medicine and 498 feldsher's stations. From among all out-patient clinics, 298 (90%) are the isolated structural divisions, including 251 (100%) rural and 47 (59%) city clinics.

In border districts of Kharkiv region provision of out-patient clinics of the general family medicine has certain territorial distinctions (Figure 5). So, in Kharkiv district large number (31) of these institutions function, making 9.4% of their general quantity in the region. In Dergachevsky district there are 19 out-patient clinics of the general family medicine (5.8%), in Vovchansk district – 18 (5.5%), in Zolochiv district – 10 (3.0%), in Dvorychna district – 8 (2.4%), in Velykyi Burluk district – 6 (1.8%).

Thus, there were created altogether 80, or 0.38 per 10 thousand people, medical out-patient clinics in the cities of the region. However, the standard is 2.14 per 10 thousand people (159 out-patient clinics). Providing standards in the city settlements of the regions within the next years, it is necessary to open about 80 more out-patient clinics. Implementation the recommended standards in Kharkiv means creation 272 out-patient clinics till 01.01.2020 [11].

In a section of districts of Kharkiv region, the analysis of dynamics was realized and territorial features of the network of feldsher's stations was revealed.

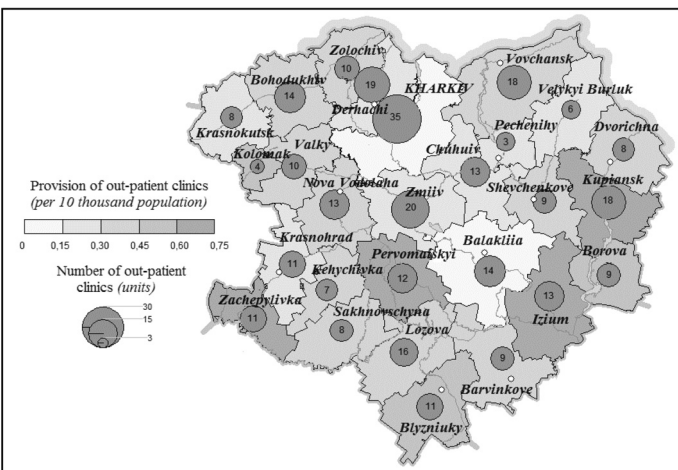


Fig. 4: Provision of the population with the hospital beds in the districts of Kharkiv region, 2013

Source: Composed by the authors using the data [11]

To sum up, the social and geographical analysis of Health Care system of Kharkiv region showed features of its development. It is necessary to pay attention that reorganizing regional Health Care system, should be considered not only the indicators of healthcare institutions functioning (such as number and provision of medical institutions, hospital beds, doctors, paramedical personnel, medical attendants), but also features of geo-demographic situations, depopulation and migratory processes in some districts, social and economic development, transport availability of medical institutions and services, a geographical position of the districts, qualification of the experts rendering medical services, modern medical equipment and devices of medical institutions, features of their financing etc.

5. Conclusions

The carried-out social and geographical analysis allowed establishing that development of Health Care system of the region is characterized by certain territorial disproportions. Considering complexity and heterogeneity of the border region's social sphere subsystem development, using of only traditional approaches and methods of research is insufficient today. We consider it expedient to apply special methods to identification of development tendencies of separate components of border regions' social and economic development, in particular Health Care systems, determination of territorial distinctions and potential «growing points» establishment.

Among special methods, it is possible to use IFI-modeling and others (method of definition of integrated function of influence of a certain objects' class which reflects all their spatial interactions features), a graphic-analytical method of multidimensional classification of social and geographical objects, modeling of a trajectory of social-geosystem development, which are in detail described in works [13, 14] and passed approbation during research of Kharkiv region and other regions of Ukraine. We are going to determine the capacity of Health Care system of Kharkiv region as one of key components of the social sphere on the basis of this specified original method using.

Application of original methods of social and geographical researches is important for the complex social and economic analysis of development of the border regions and research in certain social spheres. A necessary condition is observance of uniform approaches and using general methods of research of the border regions of the east and the west of Ukraine that will allow making comparative analysis, revealing peculiar features and tendencies of their development. That is especially important for modeling, forecasting and strategic planning.

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