

# A Conceptual Model of Adaptive Value Management of Project Portfolios of Creation of Hospital Districts in Ukraine

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## Abstract

An analysis of the state of the health care system of Ukraine was performed and the expediency of changing approaches to managing projects for the creation of hospital districts was substantiated. The expediency of developing a conceptual model of adaptive value management of project portfolios for creating and developing hospital districts is substantiated. There is proposed a conceptual model of adaptive value management of project portfolios for the creation and development of hospital districts involves five stages, at which ten main, five auxiliary, and four service processes are systematically performed. Interrelationships between management processes and their results are determined. They are the basis of the formulation of management tasks and the development of tools for their solution. An assessment of the existing state of the creation of hospital districts in Ukraine was carried out. Contradictions were identified in the declared Lviv hospital district. It is established that under the existing configuration of the Lviv Hospital District, part of rural communities remains medically unprotected. The obtained results of the conducted studies indicate that the reform of the health care system in Ukraine is being carried out with many errors due to the approach to management. Further research should be conducted in the direction of the development of models, methods, and algorithms for the implementation of management processes specified in the conceptual model, which belong to the methodology of adaptive value management of portfolios of projects for the creation of hospital districts.

## Keywords 1

Conceptual model, project portfolio, management, hospital district, value.

## 1. Introduction

Today, the health care system of Ukraine functions inefficiently. This leads to low-quality treatment of patients and increased mortality, compared to developed countries of the world [1-3]. This especially applies to the population of rural territorial communities, which are far from hospitals of various levels and do not have their base for the treatment of the most common diseases. At the same time, to get out of the existing undesirable state of the health care system under the coordination and management of the Cabinet of Ministers of Ukraine, the Ministry of Health of Ukraine, the National Health Service of Ukraine, regional state administrations, authorities of regional administration and local self-government, the formation and implementation of state policy in the field of health care is ensured thanks to the implementation of particular programs and projects. Among them, special attention is paid to the projects of creation and development of hospital districts in certain regions, which require portfolio management.

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Effective management of portfolios for the creation and development of hospital districts requires solving several scientific and applied management problems. This necessitates the development of a mechanism that will ensure the implementation of appropriate management processes. One such unsolved problem is the development of a conceptual model of adaptive value management of portfolios of projects for the creation of hospital districts, which is based on the methodology of portfolio management, takes into account the specific features of the project environment of individual regions and current regulations regarding the architecture and value of the operation of hospital districts. The development of the specified conceptual model will ensure adequate initiation of projects for the creation and development of hospital districts with maximum value for stakeholders and adaptation to their specific project environment. Based on the conceptual model of adaptive value management of portfolios of projects for the creation of hospital districts, the management processes of harmonizing the configuration of projects for the creation and development of hospital districts with the configuration of their project environment will be performed based on the modeling of the specified projects. The results of modeling will ensure the formation of portfolios of projects for the creation and development of hospital districts with maximum value for stakeholders in a given specific project environment.

## **2. Literature analysis and problem statement**

The national strategy for reforming the healthcare system in Ukraine envisages a change in its architecture [4-6]. In particular, it is proposed to ensure the strengthening of primary medical care due to the recognition of family doctors as autonomous subjects due to the implementation of the private practice of the functioning of the primary link of medical care according to the analog of Great Britain, the Netherlands, Denmark, etc. This especially applies to rural areas. For this purpose to, this end, in 2018, the Law of Ukraine "On Improving the Availability and Quality of Medical Services in Rural Areas" was adopted [7]. The main directions of the development of the health care system in the territory of rural territorial communities are prescribed there. It is proposed to develop primary medical care in rural areas through the creation of primary medical (medical and sanitary) care centers, paramedic-midwifery or paramedic centers, dispensaries, medical centers, medical offices, mobile medical offices, pharmacies, as well as general practice hospitals, in which family doctors, specialist doctors, and entrepreneurs will provide primary medical care to the population. At the same time, the development and implementation of programs and projects related to particular areas of medical care in rural areas, as well as the provision of resources and infrastructure development are regulated.

In addition, it is proposed to reform the hospital network of individual regions of the state by combining hospitals into a single hospital space. For this purpose, the resolution of the Cabinet of Ministers of Ukraine dated November 30, 2016 No. 932 "On approval of the Procedure for the establishment of hospital districts" was adopted [8]. It provides for the creation in certain regions of first-level MultiCare intensive care hospitals (providing secondary (specialized) medical care and emergency medical care to the population), second-level MultiCare intensive care hospitals (providing secondary (specialized) medical care to the population in a 24-hour and day hospital or an outpatient setting), as well as hospital districts, which are functional associations of health care facilities located in a separate territory (providing secondary (specialized) medical care to the population in a separate territory). At the same time, hospital districts are created for guaranteed timely access of the population to quality services of secondary (specialized) medical care. They are formed on a separate territory with the union of various medical institutions, which have centers in the form of intensive care hospitals of the 1st level (providing medical assistance for at least 120 thousand people) or 2nd level (providing medical assistance for at least 200 thousand . persons), depending on the number of residents. It is also regulated that the center of the hospital district can be a separate settlement with a 2nd level intensive MultiCare hospital and a population of more than 40,000 people. It is also regulated that the center of the hospital district can be a separate settlement with the second-level intensive MultiCare hospital and a population of more than 40,000 people. The territorial location of the hospital district should ensure the arrival of patients to intensive

MultiCare hospitals within 60 minutes and the radius of their service area should not exceed 60 km on existing paved roads.

The foreign experience of the functioning of the health care system shows that outpatient treatment, which provides prevention and the provision of emergency medical care to residents of certain territories, including rural communities that are far from intensive care hospitals, is being developed and supported in all OECD countries.

Adequate project management involves forecasting the changing project environment for each of the projects during the creation of hospital districts in an individual region. In addition, the state of use of the product of individual projects based on their simulation is evaluated. This leads to the need to conduct specific research and develop a conceptual and service model of adaptive value management of project portfolios for the creation of hospital districts in an individual region [9-12]. Without taking into account the state of the specific project environment of individual projects implemented during the creation of hospital districts for a given region, as well as without intelligent forecasting of the value indicators of these projects, it is impossible to adequately form an effective portfolio of projects and, accordingly, qualitatively justify the structure of hospital districts in the desired state.

Considering foreign research, it is possible to note certain scientific works [13-15], which partially take into account the changing components of the project environment and intellectual forecasting of population diseases in terms of individual diseases. However, they mostly refer to developed countries, which do not always adequately reflect the conditions of the health care system of individual regions of Ukraine. In addition, they do not relate to the creation of hospital districts and, accordingly, they did not explore the possibility of implementing projects to create a hospital network in individual regions of the state thanks to the unification of hospitals into a single hospital space. Consequently, they do not provide adequate justification for the structure of hospital districts in the desired state for a given region, taking into account their specific design environment [16-20].

To objectively substantiate the structure of hospital districts for individual regions, a methodology and conceptual model of adaptive value management of project portfolios for their creation should be developed [21-23]. It is the specified conceptual model that reflects cause-and-effect relationships between management processes with their specificity. In particular, they are focused on creating maximum value for stakeholders by adapting the configuration of hospital districts to a particular changing design environment simulated with the use of computational intelligence [24-26]. In addition, the implementation of processes of intelligent forecasting of value indicators of projects is foreseen [27-30]. This ensures the creation of effective portfolios and, accordingly, high-quality substantiation of the configuration of hospital districts in the desired state.

### **3. The purpose and objectives of the research**

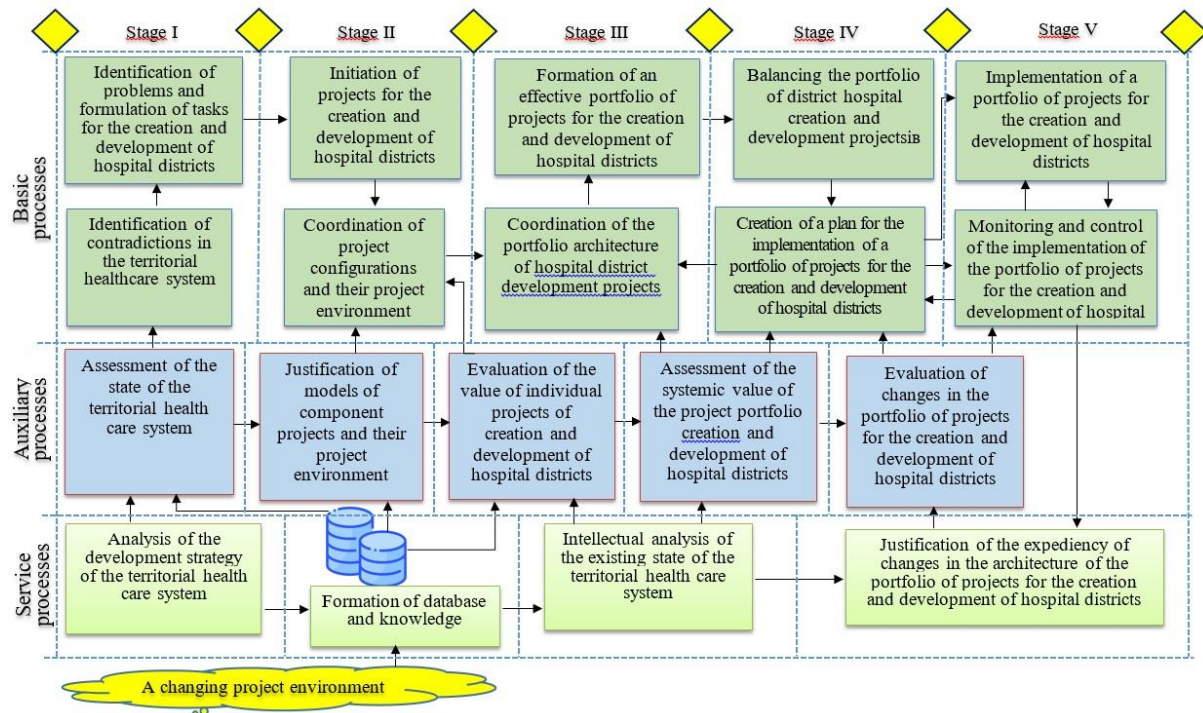
The purpose of the study is to substantiate the conceptual model of adaptive value management of portfolios of hospital district creation projects which will ensure maximum value for stakeholders thanks to the adaptation of the configuration of hospital districts to a special changing project environment that ensures the creation of their effective portfolios and, accordingly, qualitative justification of the configuration of hospital districts in the desired state.

To achieve the goal, the following tasks should be solved:

1. to propose a conceptual model of adaptive value management of project portfolios for the creation and development of hospital districts;
2. assess the current state of the creation of hospital districts in Ukraine and justify the feasibility of developing a methodology of adaptive value management of project portfolios for the creation and development of hospital districts.

#### 4. Conceptual model of adaptive value management of project portfolios for the creation of hospital districts

To carry out quality management processes of project portfolios for the creation of hospital districts, based on taking into account the state of the changing project environment, a should be developed a mechanism that provides solutions to several specific management tasks [31-35]. This necessitates the development of models, methods, and algorithms that ensure the implementation of the specified management processes. First of all, to implement adaptive value management of project portfolios for the creation of hospital districts, it is necessary to develop a conceptual model (Figure 1).



**Figure 1:** Conceptual model of adaptive value management of portfolios of projects for the creation of hospital districts

The development of a conceptual model of adaptive management of the value of portfolios of projects for the creation of hospital districts was carried out based on assumptions:

- 1) a separate hospital district is created in a given administrative territory (district, region, or region) that has a limited territory and takes into account the current regulatory and legislative requirements (ensures the arrival of patients to intensive MultiCare hospitals within 60 minutes and the radius of their service area should not exceed 60 km under the existing paved roads);
- 2) a limited number of patients who need high-quality primary and secondary (specialized) medical care live in the given territory;
- 3) the center of the hospital district can be a separate settlement with an intensive MultiCare hospital of the second level and a population of more than 40,000 people;
- 4) certain variants of the configuration of the changing project environment lead to the implementation of a limited number of reconstruction projects and the creation of intensive care hospitals of the first level (providing medical care for at least 120 thousand people) or second level (providing medical care for at least 200 thousand people), depending on the number of residents;
- 5) the presence of various options for projects of reconstruction and creation of hospitals forms alternative options for the architecture of portfolios of projects for the creation of hospital districts;
- 6) a separate variant of the portfolio architecture of hospital district creation projects includes a limited number of reconstruction and hospital creation projects;

7) separate projects of reconstruction and creation of hospitals included in the portfolio of projects for the creation of hospital districts are evaluated based on calculations of their value indicators, taking into account the changing project environment;

8) models and methods have been developed to determine the indicators of the value of reconstruction projects and the creation of hospitals and the systemic value of portfolios of projects for the creation of hospital districts, taking into account their specificities;

9) methods have been developed for the management processes of coordinating the configuration of reconstruction projects and the creation of hospitals with the configuration of their project environment that take into account their peculiarities;

10) the processes of determining the effective architecture of the portfolio for the creation of hospital districts and their balancing based on the results of the evaluation of the system value for stakeholders are carried out;

11) the processes of creating a plan for the implementation of a portfolio of projects for the creation and development of hospital districts and its implementation are cyclical and are carried out based on justifying the feasibility of changes in the architecture of the portfolio of projects for the creation and development of hospital districts due to changes in the project environment.

It is the specified model that makes it possible to meaningfully reflect the structure of processes of adaptive value management of portfolios of projects for the creation of hospital districts ( $PR_{PM}$ ).

A feature of the proposed model is the display of the main ( $PR_{BA}$ ), auxiliary ( $PR_{AU}$ ) and service ( $PR_{SE}$ ) processes of adaptive value management of portfolios of projects for the creation of hospital districts:

$$PR_{PM} = \{PR_{BA} \cup PR_{AU} \cup PR_{SE}\}, \quad (1)$$

where  $PR_{PM}$  – are processes of adaptive value management of portfolios of projects for the creation of hospital districts;  $PR_{BA}$  – are the main processes of adaptive value management of portfolios of projects for the creation of hospital districts;  $PR_{AU}$  – are auxiliary processes of adaptive value management of portfolios of projects for the creation of hospital districts;  $PR_{SE}$  – are service processes of adaptive value management of portfolios of projects for the creation of hospital districts.

The main processes ( $PR_{BA}$ ) of adaptive value management of project portfolios for the creation of hospital districts directly relate to the formation of effective project portfolios based on value assessment and making changes to them due to changes in the project environment [36-40]. As a result of the implementation  $PR_{BA}$ , dynamic plans for the implementation of project portfolios for the creation of hospital districts with architecture that ensures maximum value and adaptability to the existing state of the project environment (types, number, and dynamics of morbidity of the population in the given territory, the available medical and material base for patient care, regulatory and legislative basis, the amount of financing of reforms in the medical field in the given territory, etc.). The processes  $PR_{BA}$  include:

$$PR_{BA} \Leftrightarrow \langle P_{IC}, P_{IP}, P_{CP}, P_{PR}, P_{PA}, P_{FP}, P_{BP}, P_{PI}, P_{ID}, P_{MC} \rangle, \quad (2)$$

where  $P_{IC}$  – is identification of contradictions in the territorial healthcare system;  $P_{IP}$  – is identification of problems and formulation of tasks for the creation and development of hospitals;  $P_{CP}$  – is coordination of project configurations and their project environment;  $P_{PR}$  – is initiation of projects for the creation and development of hospital districts;  $P_{PA}$  – is coordination of the portfolio architecture of hospital district development projects;  $P_{FP}$  – is formation of an effective portfolio of projects for the creation and development of hospital districts;  $P_{BP}$  – is balancing the project portfolio for the creation and development of hospital districts;  $P_{PI}$  – is creation of a plan for the implementation of a portfolio of projects for the creation and development of hospital districts;  $P_{ID}$  – is implementation of a project portfolio for the creation and development of hospital districts;  $P_{MC}$  – is monitoring and control of project portfolio implementation.

Auxiliary processes ( $PR_{AU}$ ) of adaptive value management of project portfolios for the creation of hospital districts ensure the implementation of the main ones and only contribute to their

implementation and do not take direct participation in the formation of plans for the implementation of portfolios of projects for the creation of hospital districts.

The processes  $PR_{AU}$  include

$$PR_{AU} : \Leftrightarrow \langle P_{AS}, P_{SM}, P_{AV}, P_{SV}, P_{AC} \rangle, \quad (3)$$

where  $P_{AS}$  – is an assessment of the state of the territorial healthcare system;  $P_{SM}$  – is substantiation of models of component projects and their project environment;  $P_{AV}$  – is evaluation of the value of separate projects of creation and development of hospital districts;  $P_{SV}$  – is assessment of the systemic value of the portfolio of projects for the creation and development of hospital districts;  $P_{AC}$  – is assessment of changes in the portfolio of projects for the creation and development of hospital districts.

Service processes ( $PR_{SE}$ ) of adaptive value management of project portfolios for the creation of hospital districts relate to the assessment of the dynamic project environment, forecasting its changes and the expediency of changes in the architecture of the portfolios of projects for the creation of hospital districts. This ensures the implementation of the main and auxiliary processes of the specified management.

The process  $PR_{SE}$  include

$$PR_{SE} : \Leftrightarrow \langle P_{DS}, P_{DK}, P_{IA}, P_{JA} \rangle, \quad (4)$$

where  $P_{DS}$  – is an analysis of the development strategy of the territorial healthcare system;  $P_{DK}$  – is the formation of a database and knowledge;  $P_{IA}$  – is an intellectual analysis of the existing state of the territorial healthcare system;  $P_{JA}$  – is substantiating the expediency of changes in the architecture of the project portfolio.

The main difference between the main  $PR_{BA}$ , auxiliary  $PR_{AU}$  and service  $PR_{SE}$  processes of adaptive value management of project portfolios for the creation of hospital districts is that the results of the activity  $PR_{BA}$  systematically ensure the formation of effective project portfolios and the introduction of changes in their architecture as needed [41-44]. The processes  $PR_{AU}$  ensure the determination of the value components of both individual projects for the creation of hospital districts and the system value of their implementation in the portfolio. At the same time, the processes  $PR_{SE}$  provide an assessment of the current state and forecasting of the changing components of the project environment, both for individual projects of creating hospital districts and systemically for their portfolios. The execution of the processes  $PR_{SE}$  makes it possible to determine the changing trends of the changing project environment, which is the basis for adapting the configuration of hospital district creation projects to their environment and, accordingly, ensuring the creation of maximum value for their stakeholders.

The proposed conceptual model (Figure 1) provides for the systematic implementation of 5 stages. The first stage, there are carried out management processes ( $PR_I$ ), which ensure the identification of problems and the formulation of tasks for the creation and development of hospitals, which involves the implementation of processes of all levels that are interconnected

$$PR_I : \Leftrightarrow \langle (P_{DS} P_{DK}) \rightarrow P_{AS} \rightarrow P_{IC} \rightarrow P_{IP} \rangle. \quad (5)$$

The management of portfolios of projects for the creation and development of hospital districts begins with service processes, which include the processes of analysis of the strategy for the development of the territorial healthcare system ( $P_{DS}$ ) and the formation of a database and knowledge ( $P_{DK}$ ).

To carry out the process of analysis of the strategy for the development of the territorial healthcare system ( $P_{DS}$ ) (Strategy for the development of the healthcare system of the state and its administrative regions), a meaningful description of project products and the need for their inclusion in the portfolio of creating hospital districts is carried out. At the same time, an analysis of the main values received by stakeholders is carried out. The formation of base data and knowledge ( $P_{DK}$ ) is carried out from statistical data of individual communities, districts and regions regarding diseases of the population and the results of their treatment. This provides knowledge about the changing design environment of

the area where the hospital district is being created. Based on the processes  $P_{DS}$  and  $P_{DK}$ , the auxiliary process of assessing the state of the territorial healthcare system ( $P_{AS}$ ) according to value indicators is performed. It is the basis of the implementation of the main management processes of identifying contradictions in the territorial healthcare system ( $P_{IC}$ ), as well as identifying problems and formulating tasks for the creation and development of hospitals ( $P_{IP}$ ). The process  $P_{IC}$  is carried out on the basis of system and factor analysis of the territorial healthcare system using developed models. They ensure the establishment of cause-and-effect relationships between separate groups of factors of the value of the creation and development of hospital districts and the identification of the peculiarities of their impact on the value for individual stakeholders. In addition, the results of the process  $P_{IC}$  ensure the establishment of existing contradictions between the values of individual stakeholders, which are the basis of the formulation of existing problems and tasks for a given territory. At the second stage of managing portfolios of projects for the creation and development of hospital districts, management processes ( $PR_{II}$ ) which ensure coordination of project configurations and their project environment are performed

$$PR_{II} \Leftrightarrow \langle P_{PR} \rightarrow P_{CP} \leftarrow (P_{SM} \cup P_{AV}) \leftarrow (P_{DK} \cup P_{IA}) \rangle, \quad (6)$$

Based on the results of the process of identifying problems and formulating tasks for the creation and development of hospital districts ( $P_{IP}$ ), the process of initiating projects for the creation and development of hospital districts ( $P_{PR}$ ) is carried out. During the execution of the process  $P_{PR}$ , the identification features of hospital construction projects of different levels, which will ensure the creation of value for stakeholders with adaptation to their specific project environment should be substantiated. In addition, the results of service processes ( $P_{DK}$ ) (availability of a complete database and knowledge),  $P_{IA}$  (characteristics of the existing state of the territorial healthcare system), as well as auxiliary processes of substantiation of the models of component projects and their design environment ( $P_{SM}$ ) and evaluation of the value of individual projects of creation and development of hospital districts ( $P_{AV}$ ) should be available to perform the process of matching project configurations and their design environment ( $P_{CP}$ ). The results of the process  $P_{PR}$  (possible scenarios for the creation of hospitals of different levels and project implementation options), as well as auxiliary processes  $P_{SM}$  (substantiated models of component projects and their project environment) and  $P_{AV}$  (indicators of the value of individual projects of the creation and development of hospital districts) ensure the implementation of the process of coordinating project configurations and their project environment  $P_{CP}$ . The implementation of the specified process requires the development of a specific management mechanism, which takes into account the uniqueness of certain types of projects for the creation of hospitals of different levels which have their own specific configuration objects and are implemented in their changing project environment, which requires adaptation to it. The main hypothesis of this mechanism is that for a given administrative territory (district or oblast) which is characterized by the predicted volumes of certain types of diseases of the population of different age groups which requires medical assistance at different levels, it is always possible to implement projects for the creation of MultiCare hospitals of intensive treatment of the first and second levels that will provide the desired value for stakeholders. The configuration of the products of the projects for the creation of intensive care hospitals of the first and second level (the type and parameters of the hospital, its territorial location and capacity, etc.) is determined by the value of the implementation and the existing budget. At the same time, the implementation of the process of coordinating project configurations and their project environment  $P_{CP}$  requires modeling them. This will make it possible to determine the rational parameters of the configuration objects (the type and capacity of the hospital, its territorial location, material resources and the number and qualifications of medical staff, etc.), which will ensure the receipt of products of projects for the creation of intensive care hospitals of the first and second level with the maximum value for stakeholders. The third stage of project portfolio management involves the implementation of a number of management processes ( $PR_{III}$ ), which

ensure the formation of an effective portfolio of projects for the creation and development of hospital districts:

$$PR_{III} : \Leftrightarrow \langle (P_{DK} \cup P_{IA}) \rightarrow (P_{SM} \cup P_{AV} \cup P_{CP} \cup P_{PA}) \rightarrow P_{FP} \rangle. \quad (7)$$

Based on the results of service processes of database and knowledge formation  $P_{DK}$ , as well as intellectual analysis of the existing state of the territorial healthcare system  $P_{IA}$ , additional processes of assessing the value of individual projects  $P_{AV}$  and the systemic value of the portfolio of projects  $P_{SV}$  for the creation and development of hospital districts are performed. The results of the processes  $P_{AV}$  and  $P_{SV}$ , as well as the main process of coordination of project configurations and their project environment  $P_{CP}$  ensure the implementation of the main process of coordination of the architecture of hospital district development project portfolios  $P_{PA}$ .

During the execution of the specified process, the formation of individual variants of the portfolio architecture of projects for the creation and development of hospital districts, the number of which depends on the number of possible projects for the creation of intensive MultiCare hospitals of the first and second level, which are included in the composition of the specified portfolio is carried out [48-49].

The result of the main process  $P_{PA}$  of aligning the architecture of portfolios with the configuration of projects for the creation of intensive MultiCare hospitals of the first and second levels is the determination of their types and quantities, which under the predicted changing project environment will provide maximum value for stakeholders. Based on the results of the process  $P_{PA}$ , the main process of forming an effective portfolio of projects for the creation and development of hospital districts  $P_{FP}$  is carried out, a set of projects (portfolio architecture objects) and their priorities are established.

At the fourth stage of management of portfolios of projects for the creation and development of hospital districts, management processes ( $PR_{IV}$ ), which ensure the formation of a plan for the implementation of the specified portfolio are performed

$$PR_{IV} : \Leftrightarrow \langle (P_{IA} \cup P_{JA}) \rightarrow (P_{SV} \cup P_{AC}) \rightarrow P_{BP} \rightarrow P_{PI} \rangle. \quad (8)$$

Based on the results of the service processes of the intellectual analysis of the existing state of the territorial healthcare system  $P_{IA}$  and the justification of the feasibility of changes in the architecture of the project portfolio  $P_{JA}$ , additional processes of assessing the systemic value of the project portfolio  $P_{SV}$  and their changes  $P_{AC}$  are performed. The results of the processes  $P_{SV}$  and  $P_{AC}$ , as well as the main process of project portfolio balancing  $P_{BP}$ , ensure the implementation of the main process of creating a plan for the implementation of a portfolio of projects for the creation and development of hospital districts  $P_{PI}$ . As a result of the implementation of the main process  $P_{PI}$ , plans for the implementation of projects for the creation of intensive MultiCare hospitals of the first and second levels and their portfolio are substantiated. At the same time, the creation of a plan for the implementation of a portfolio of projects for the creation and development of hospital districts is a dynamic process and it is carried out cyclically, taking into account changes in the changing project environment, which determines the feasibility of changes in the architecture of the project portfolio and the implementation of the corresponding additional process  $P_{AC}$ .

The final fifth stage of managing portfolios of projects for the creation and development of hospital districts involves management processes ( $PR_V$ ) which ensure the implementation of the portfolio and its constant monitoring and control:

$$PR_V : \Leftrightarrow \langle P_{JA} \rightarrow P_{AC} \rightarrow P_{PI} \rightarrow P_{MC} \rangle. \quad (9)$$

Based on the results of the service process of justifying the feasibility of changes in the architecture of the project portfolio  $P_{JA}$ , an additional process of evaluating changes  $P_{AC}$  is performed. At the same time, on the basis of the main process  $P_{PI}$  (plans for the implementation of projects for the creation of intensive MultiCare hospitals of the first and second levels and their portfolios), the processes of project portfolio implementation  $P_{ID}$  and their monitoring and control  $P_{MC}$  are



systematically implemented. The main process of monitoring and controlling portfolios of projects for the creation and development of hospital districts provides constant monitoring of the changing project environment and recording of its changes, which determine both the value of individual projects for the creation of intensive MultiCare hospitals of the first and second levels, as well as the systemic value of their portfolio. In addition, this process ensures quality control of the implementation of individual portfolio projects and the formation of their products. Based on the results of the main process  $P_{MC}$ , there is a return to the service process of justifying the feasibility of changes in the architecture of the project portfolio  $P_{JA}$  and the additional process of evaluating these changes  $P_{AC}$ . If there is a deviation from the planned value, the main process  $P_{PI}$  of adjusting the plans for the creation of intensive MultiCare hospitals of the first and second levels and their portfolios is carried out. Moreover, based on the results of the process  $P_{PI}$ , there is a return to the process and coordination of the portfolio architecture of hospital district development projects.

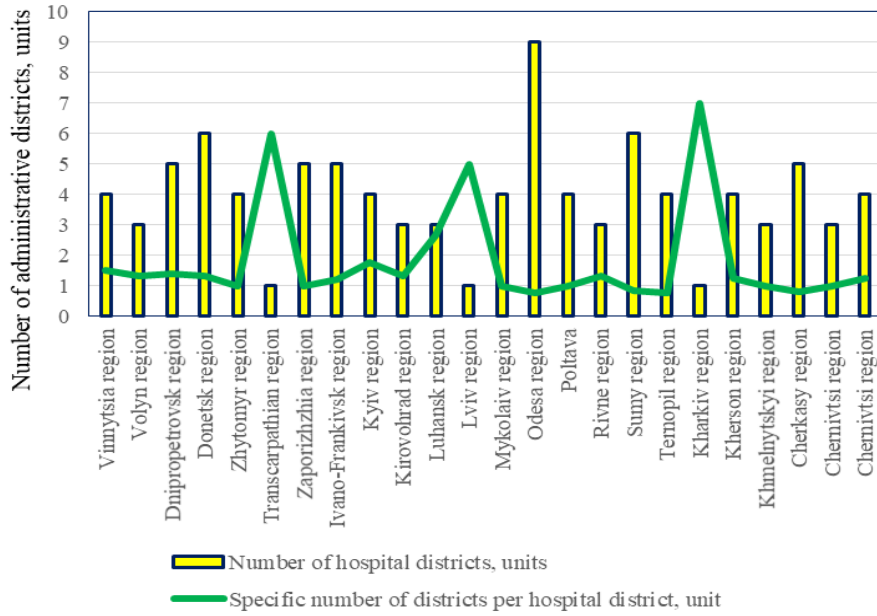
## **5. The results of the assessment of the existing state of the creation of hospital districts in Ukraine and to justify the feasibility of developing the methodology of adaptive value management of their project portfolios**

We performed an analysis of the strategy of development of territorial healthcare systems of Ukraine. It has been established that the National Health Reform Strategy for Ukraine for the period 2015-2020, as well as in the Draft of Strategy for the Development of the Healthcare System until 2030 specify indicators for assessing the value of medical reform. These include ensuring an increase in life expectancy by 3 years, namely for men and women to 70 and 80 years, respectively, a reduction in maternal and child mortality (7.4%) to the EU average (3.7%), a third reduction in mortality from non-infectious diseases, reduction of the level of disability, reduction of morbidity and disability from various types of disease, etc. At the same time, healthcare system reforms began in 2017 and continue to this day in Ukraine. In November 2019, the Cabinet of Ministers of Ukraine approved the procedure for creating hospital districts with changes in June 2020 [45-47]. This order provides for the creation of hospital councils as advisory services under regional councils. Currently, hospital districts have been created in each of the regions of the state. Based on the analysis of the resolutions of the Cabinet of Ministers of Ukraine regarding the creation of hospital districts in certain regions and the indicators of the created administrative-territorial units on the territory of the state, we assessed the current state of their creation in certain regions of Ukraine. This made it possible to build a histogram of the number of created hospital districts in the section of individual regions of Ukraine and trends in the specific number of administrative districts per hospital district (Figure 2).

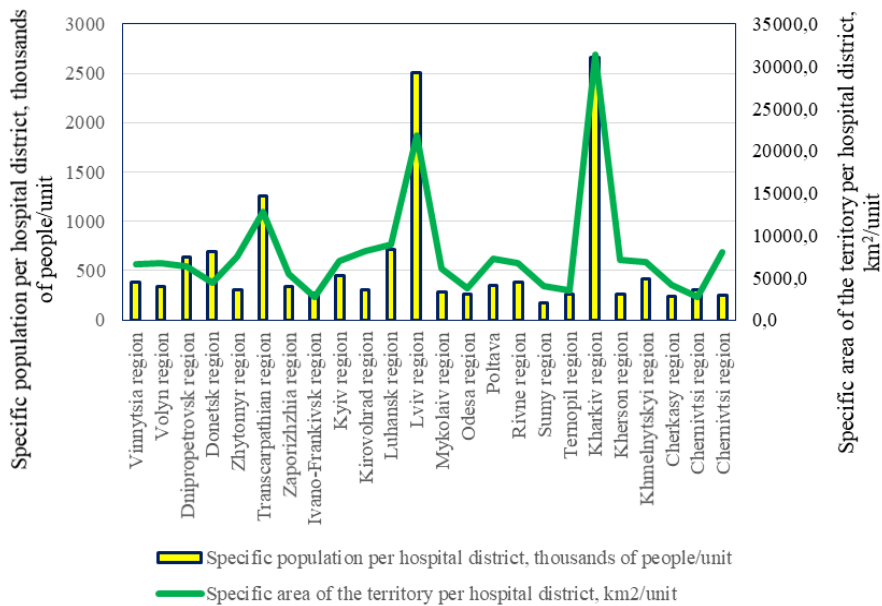
It was established that in three regions of Ukraine (Zakarpattia, Lviv and Kharkiv) there is a high ratio of the specific number of administrative districts per one hospital district. This is explained by the fact that only one hospital district was created in each of the specified regions. At the same time, in the majority of regions, the specific number of administrative districts per hospital district is within 1...2 units. We performed an analysis of the indicators of the specific population and area of the territory falling on one hospital district, in the section of individual regions of Ukraine (Figure 3).

It was established that the situation is similar with the indicators of the specific number of population and area of the territory falling on one hospital district in the section of individual regions of Ukraine (Figure 3). In particular, in the Zakarpattia, Lviv and Kharkiv regions, high values of the specific population and territory area per one hospital district are observed. The specific population of one hospital district exceeds the average values by 2.1 times in Zakarpattia region, by 4.3 times in Lviv region and by 4.5 times in Kharkiv region. According to the specific area of the territory included in one hospital district, there is an excess of the average values by 1.6 times in Zakarpattia region, by 2.7 times in Lviv region, by 3.9 times in Kharkiv region. All of the above indicates the need for a more detailed analysis of the creation of hospital districts in individual regions.

For further identification of contradictions in territorial healthcare systems, we selected the Lviv hospital district, which is one of them in the territory of the Lviv region (Figure 4).



**Figure 2:** Trends in changes in the number of created hospital districts and the specific number of administrative districts per hospital district in individual regions of Ukraine

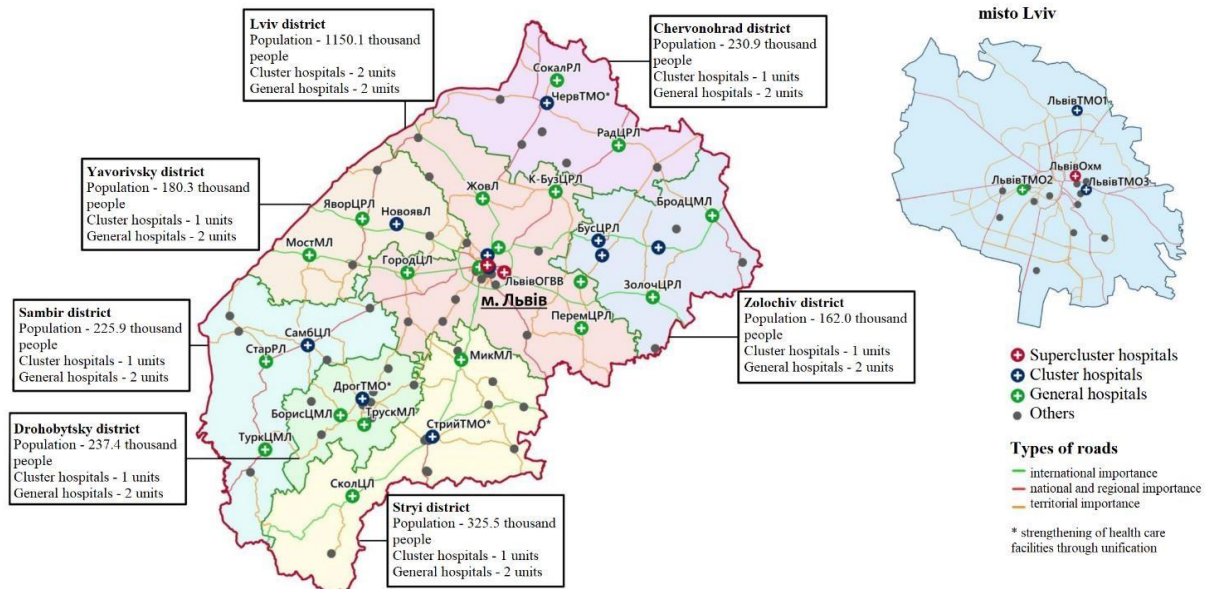


**Figure 3:** Trends in changes in the specific population and area of the territory falling on one hospital district in the section of individual regions of Ukraine

Based on the analysis of the state of creation of the Lviv Hospital District [8], it can be concluded that a significant part of rural communities remains partially medically unprotected.

In particular, there is a contradiction with the approved Procedure for the Establishment of Hospital Districts [9], which stipulates the duration of arrival of patients to intensive MultiCare hospitals of the first and second levels should not exceed the regulated value of 60 minutes (or 60 km). At the same time, this cannot be achieved for rural communities located in mountainous and rural areas that are remote from the regional center. This is mainly due to the territorial location of intensive care hospitals of the 1st and 2nd levels to the settlements of rural communities and the unsatisfactory condition of roads in rural communities which remote from the regional center. The second contradiction, which concerns the social and financial component of achieving the desired value of the declared reforms in the medical sector, is the fact that part of the rural population does not

have its own transport. Moreover, there is no direct transport connection in some rural communities. Certain categories of the population cannot use hired transport due to the high cost of travel, etc. The above indicates that residents of certain rural communities and certain categories of the population will be practically deprived of access to intensive MultiCare hospitals. In the presence of the above-mentioned contradictions, it is impossible to qualitatively identify projects for the creation of intensive MultiCare hospitals of the first and second levels in individual territories and, accordingly, to implement programs for the development of hospital districts.



**Figure 4:** Configuration of the existing state of the Lviv Hospital District

The obtained results of the conducted studies indicate that the reform of the healthcare system in Ukraine is being carried out with many errors due to the chosen approach to management.

It is expedient to use the proposed adaptive value management of portfolios of projects for the creation of hospital districts in Ukraine, which will make it possible based on the developed conceptual model to systematically perform management processes and ensure the implementation of project portfolios for the creation and development of hospital districts with maximum value for stakeholders and adaptation to their specific project environment. Further research should be conducted in the direction of the development of models, methods, and algorithms for the implementation of management processes specified in the conceptual model, which belong to the methodology of adaptive value management of portfolios of projects for the creation of hospital districts.

## 6. Conclusions

1. The proposed conceptual model of adaptive value management of project portfolios for creating and developing hospital districts involves five stages, at which ten main, five auxiliary, and four service processes are systematically performed. The determined relationships between management processes and their results are the basis of the formulation of management tasks and the development of mechanisms for their solution.

2. The assessment of the existing state of the creation of hospital districts in Ukraine shows that in some regions there are high values of the indicators of the specific population and the area of the territory falling on one hospital district. 2. All of the above indicates the need for a more detailed analysis of the creation of hospital districts in individual regions. To identify contradictions in territorial healthcare systems, we chose the Lviv hospital district, which is the only one in the territory of the Lviv region. It was established that under the existing configuration of the Lviv Hospital District, part of rural communities remains medically protected.

3. The obtained results of the conducted research indicate that the reform of the healthcare system in Ukraine is being carried out with many errors due to the chosen management approach. It is expedient to use the proposed adaptive value management of portfolios of projects for the creation of hospital districts in Ukraine, which will make it possible to systematically perform management processes based on the developed conceptual model. Further research should be conducted in the direction of the development of models, methods, and algorithms for the implementation of management processes specified in the conceptual model, which belong to the methodology of adaptive value management of portfolios of projects for the creation of hospital districts.

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