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- ФАРМАКОЭКОНОМИКА ТУБЕРКУЛЕЗА: МЕТОДОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ПРОВЕДЕНИЯ ИССЛЕДОВАНИЙ
- ФИНАНСИРОВАНИЕ СИСТЕМЫ ЗДРАВООХРАНЕНИЯ НА РЕГИОНАЛЬНОМ УРОВНЕ. ВЗАИМОСВЯЗЬ КАЧЕСТВЕННЫХ И КОЛИЧЕСТВЕННЫХ ПОКАЗАТЕЛЕЙ С ВЕЛИЧИНОЙ ФИНАНСИРОВАНИЯ ЗДРАВООХРАНЕНИЯ

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FINANCING OF HEALTHCARE SYSTEM AT THE REGIONAL LEVEL. INTERRELATION OF QUALITATIVE AND QUANTITATIVE PARAMETERS WITH THE SCOPE OF HEALTHCARE FINANCING

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Abstract: *Main points on financing of healthcare at the regional level are presented, the interrelation between expenditures of regional budgets and the working-age mortality, between the average duration of one case of the temporary disability and the level of public satisfaction with the quality of healthcare is showed. A brief description of the analysis was performed, the types of behavior were highlighted, the results were presented and common trends were emphasized.*

Key words: *regional level healthcare financing, compulsory health insurance, FOM, TFOMS, working-age mortality, average duration of one case of the temporary disability, the level of public satisfaction with the quality of healthcare, «corridors» of behavior, «noise»*

The health system in its essence has one main goal - to increase life expectancy and improve the quality of health of the population. Its achievement depends on many components, such as government policy, funding, qualification of doctors, material and technical basis, historical features and behavior of the population. Implementation of the tasks and priorities of the healthcare system is impossible without specific authority and delineating the rights and responsibilities of individual government levels.

The territorial subjects of the Russian Federation continue to play one of the most significant roles in achieving this goal. They can consider more precisely not only the views and the needs of the population of a particular territory, features of socio-demographic status and patterns of morbidity in the region, but reallocate financial flows taking into account these specificities. At the Federal level, health care policy has a «national» character, and the situation in the regions can be described as a more «concrete». During the ongoing health care reforms, the territorial subjects level of the Russian Federation and as a consequence of their financial flows acquires an increasingly important role.

The health system in most regions exists on the basis of empirically developed models of the development of each specific territorial subject. On the one hand, it allows to take into account the peculiarities of the health preferences of end-users, consider the existing network of medical institutions and the leading nosology and typical problems for this territory. But on the other hand, the healthcare system ceases to be a single unified body, there is a selection of «progressive» and « lagging» regions of the country. While every citizen has the right to receive high quality free medical care of the same level throughout the country.

Executive authority of the territorial subject of the Russian Federation, namely the departments, ministries, agencies, the Main Department (in Moscow – Department of healthcare, in Vologda Region – Ministry of health, in Altai region – Main department of healthcare etc.) control the healthcare system at the regional level. Depending on the specific features of each territorial subject, the health management authorities can be as mono-specialized or combine other activities, for example, the social protection of the population. Some powers of attorney that are attributed to the agencies of federal significance are delegated to federal subjects (pharmaceutical activities, licensing of medical institutions of municipal and private healthcare systems, etc). In 2012 the list of activities was increased with the supply of medicines to people with hemophilia, cystic fibrosis, pituitary nanism, Gaucher disease, etc.

As these powers of attorney belong to the federal level, but delegated to the regions, financing is performed by the Federal budget funds, which are sent in the form of subsidies to the subjects of the Russian Federation.

The work of territorial healthcare authorities is focused on the coping with the challenges, namely:

- Development of laws and regulations of the territorial subjects on health protection of citizens and the control of its implementation;
- Investigation of the health condition of the population, analysis of the effectiveness of public health interventions;
- Organization of medical care in subordinated medical institutions;
- The use of preventative measures, the promotion of healthy lifestyles of a person;
- Provision of medicines;
- Making out the report on the work of medical institutions;
- Implementation of measures aimed at saving lives and protecting the health of citizens in emergency situations, etc[1].

It should be mentioned that the management of money flows is not the part of the tasks delegated to the health authorities at the level of subjects of the Russian Federation. Funding on the regional level is performed by the local ministries of finance. They transfer funds directly through the Federal Treasury in accordance with the adopted budget for the current year and during the planned period.

Thus, in the current system at the regional level in accordance with the Federal budget and extra-budgetary funds a regional budget is composed and the distribution of funds between budget items is performed on its level. That fact determines the scope of health care funding.

In the state bodies of power of healthcare of the Russian Federation subjects the funds are accumulated from regional budgets and transfers from the Federal budget which are then forwarded to the territorial programs of state guarantees in emergency specialized medical care, specialized health care for socially significant diseases, high-tech medical care, the number of target programs, as well as on the funding and development of health care institutions which are in the regional property.

The funding of the healthcare system of the territorial subjects is regulated only using the rates of insurance contributions. The amount of funding does not depend on the necessity in funding standard costs, for example, funding of the program of state guarantees of free medical care. It turns out that if the subject does not perform the standard it will not get an additional funding for free medical care from any other sources. This case is quite common in fact: 90% of the regions does not

[1]Public health and healthcare. National guideline / edited by V.I.Starodubov, O.P.Shepim et al. – M.:GEOTAR-Media,2013.-624 p

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achieve per capita ratio of financing standard costs. It should be noted, that these standard costs were determined in 1999 and the only change of it was indexation till 2007. In 2009, the regulations were revised upwards (with 4 503 € per person up to 7 633,4 rubles), further changes occurred in the direction of inflation[2].

One of the sources of healthcare funding are Federal Compulsory Medical Insurance Fund (FOMS) and Territorial Compulsory Medical Insurance Fund (TFOMS). In connection with the transition to single-channel financing, funds are allocated through TFOMS. The system of distribution and redistribution of funds is presented in the following form. All fundings transferred for Compulsory Medical Insurance are accumulated in FOMS and then redistributed according to the developed formula in TFOMS. The funds of FOMS are spent on the financial support of the territorial programs of state guarantees in the subjects of the Russian Federation and a number of other targeted programs, which can be as part of Federal programs in the certain regions as be developed and implemented at the regional level independently. Funds are transferred in FOMS and TFOMS as insurance payment from employers, the funds for non-working citizens are transferred from the regional budgets. These funds are expended to the basic medical assistance under the territorial programs of state guarantees, since 2013 funds are also spent for emergency medical care, and since 2015 for high-tech medical care.

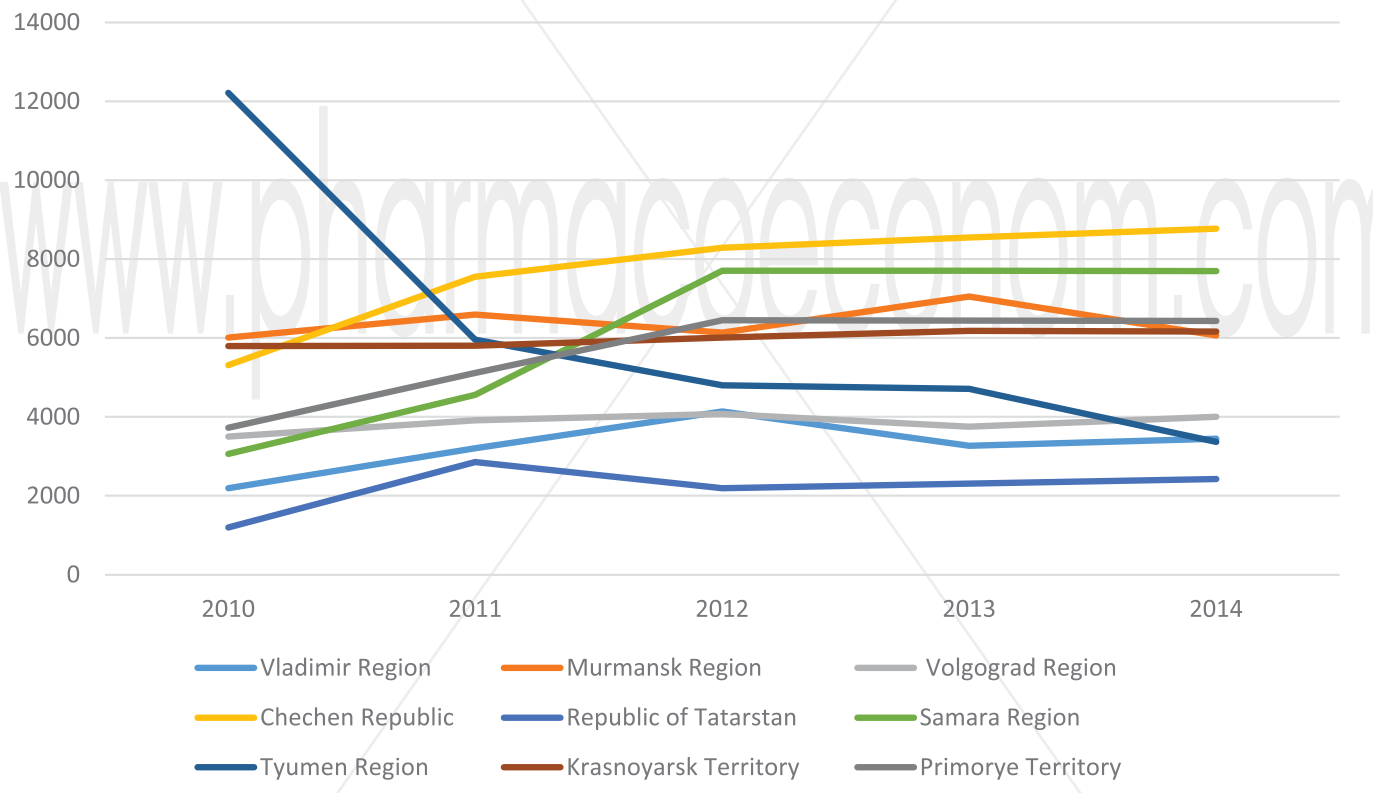
Tariff structure, which was paid of the funds of compulsory medical insurance until 2011, consisted of only 5 items: wages, accrued wages, expenditure on medicines, nutrition patients and soft furnishing. All other costs (public services, maintenance costs, and etc) worked in the system of Compulsory Medical Insurance were covered by health institutions. In 2011, there were changes that increased the list of articles, adding to this list (transport and public services, works and services for the maintenance of the property etc.).

The health expenditure of the territorial subjects of the Russian Federation can be divided into money spent on the increase in value of fixed assets, (on wages, accrued wages), the implementation of territorial programs of state guarantees of free medical aid to citizens of the Russian Federation.

Funding in each territorial subjects of the Russian Federation is quite specific, since there are identical areas with an equal amount of population and same political and social management models. Therefore, when considering the funding of each individual region, it is impossible to identify a common trend, which would have demonstrated the effectiveness of using incoming funds. As the changes in the system of financing of such important areas as healthcare are impossible without understanding of what qualitative and quantitative indicators of the amount of money influence and which, on the contrary, depend on the value of funding.

The subjects from each federal district were randomly selected for calculations, while the expenditure on health is designed per 1 person to eliminate the distortion of the results due to differences between regions in terms of population[3].

Figure 1. **The expenditure on health per 1 person in the regions of the Russian Federation, rubles.**



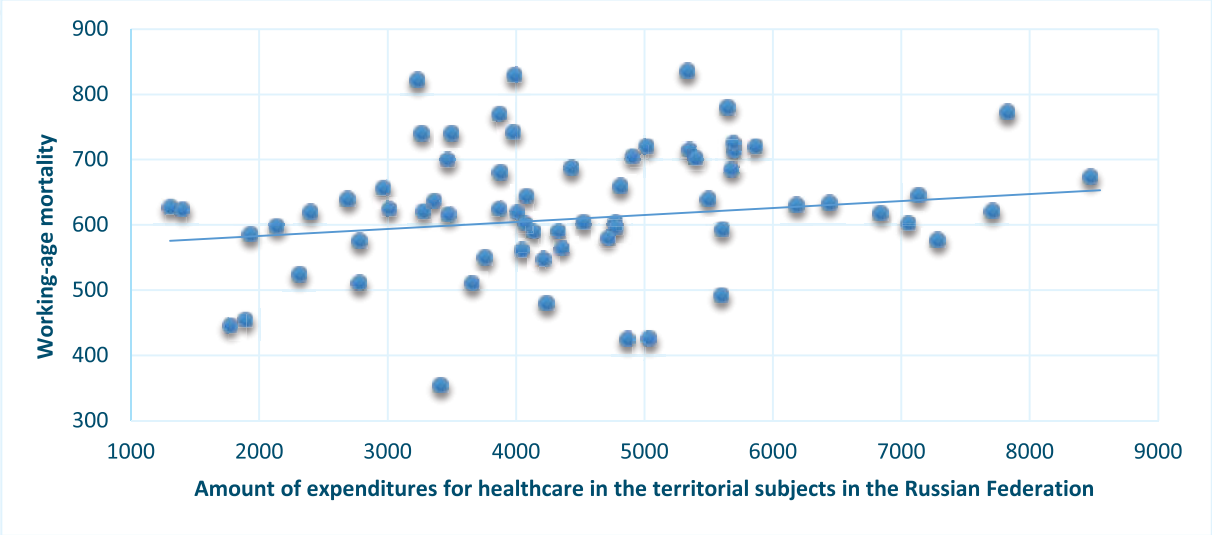
As it is seen from Fig. 1, the general trend of the funding level can not be traced. Each region has its own level of healthcare financing per 1 inhabitant, however, there is question which factors influenced on the regions in terms of changing the amount of funding on healthcare.

It is not also clear how the qualitative and quantitative parameters of healthcare system (the mortality and morbidity of the population, the average life expectancy, the number of beds in the region, the number of doctors, people's satisfaction with quality of services, the volume of rendered medical emergency, etc.).were changed system health in conditions of these trends.

One of the key indicators in determining the effectiveness of health spending is the mortality rate of the population, which influences negatively not only on the economy of the region, slowing its development, but also leads to population decline and disappearance of the nation. Mortality is measured in different age, social groups, gender traits, and so on, but the adopted mortality in working age was considered, as one of the most important for the region economy and able to be corrected through the measures aimed at improving health outcomes through increased access to medical services, diagnostics and medical assistance.

[2] Public health and healthcare. National guideline / edited by V.I.Starodubov, O.P.Shepin et al. – M.:GEOTAR-Media,2013.-624 p
[3] Public health and healthcare. National guideline / edited by V.I.Starodubov, O.P.Shepin et al. – M.:GEOTAR-Media,2013.-624 p

Figure 2. **Interrelation of funding amount and mortality for per 10 000 people in 2013**

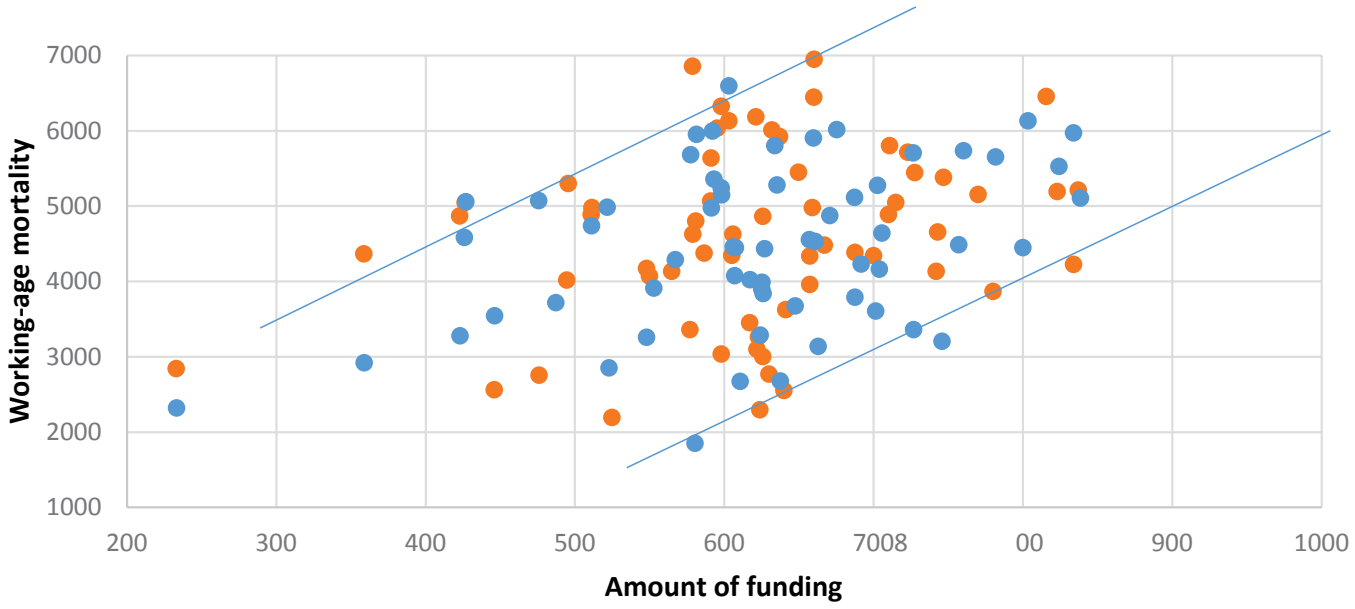


As shown in Fig.2, the majority regions including 70 Russian Federation territorial subjects form a so-called «corridor» (the term used for such studies). The level of expenditure in the subject of the Russian Federation on health per capita is from 2000 rubles/person up to 7 000 rubles/person, mortality of the working age population of the Russian Federation - 450 - 750 people per 10,000 population. Points that are not included in the main flow is the «noise». Why are several subjects not taken into account? Some regions are considered «noise» due to enormous differences territories, population density (Republic of Yakutia, and so on), and as a consequence significant differences in expenditure per capita on average in all the subjects of the Russian Federation. In fact, less population the region increases the cost of services in the field of health. This is because it is necessary to provide adequate medical assistance to the population regardless of its quantity. It turns out that to achieve this goal, we must also contain medical facilities, purchase equipment, pay salaries to the sufficient number of doctors and so on, Thus, the amount of per capita expenditure increases significantly.

The upward trend can be traced within the allocated «corridor». Evidence suggests that the higher is the mortality rate of the working age population of the Russian Federation subject, the higher is the level of expenditures of the Russian Federation subjects on health per capita. Thus, the mortality rate is not an indicator of the effectiveness of health funding, but the factor of «appreciation».

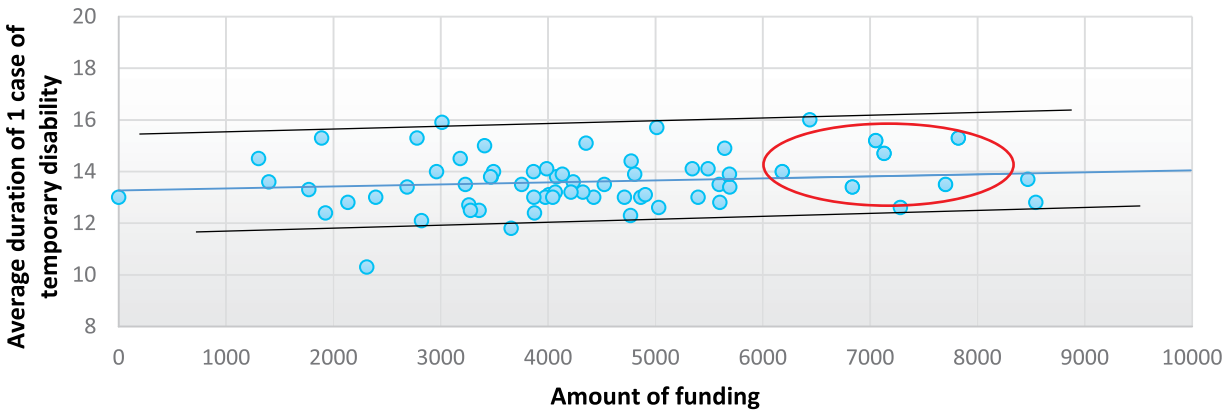
To confirm the identified trends, it is necessary to consider the interrelation between the mortality of the working age population of the Russian Federation subject and the level of expenditures of the Russian Federation subjects on health per capita in 2012 and 2011. This analysis either will confirm the General trend, or will deny it.

Figure 3. **Interrelation between the mortality of the working age population of the Russian Federation subject and the level of expenditures of the Russian Federation subjects, 2012 and 2011.**



Blue coloured points show the results for 2012, red ones for 2011. Thus, on the basis of Fig.3 it can be determined that the upward trend of the magnitude of funding and mortality in working age is confirmed. Considering the fact that this indicator is a factor of appreciation, it is necessary not only to increase funding for certain areas in the healthcare system but to revise the policy priorities of healthcare funding, as well as to develop special programs and events to change the current situation.
The next stage of analysis of the interrelation of indicators of funding and the qualitative and quantitative parameters shows us that the average duration of 1 case of temporary disability (quantitative metric which allows us to trace how quickly treatment is, whether the effect of missed opportunities in the patient in obtaining necessary medical care).

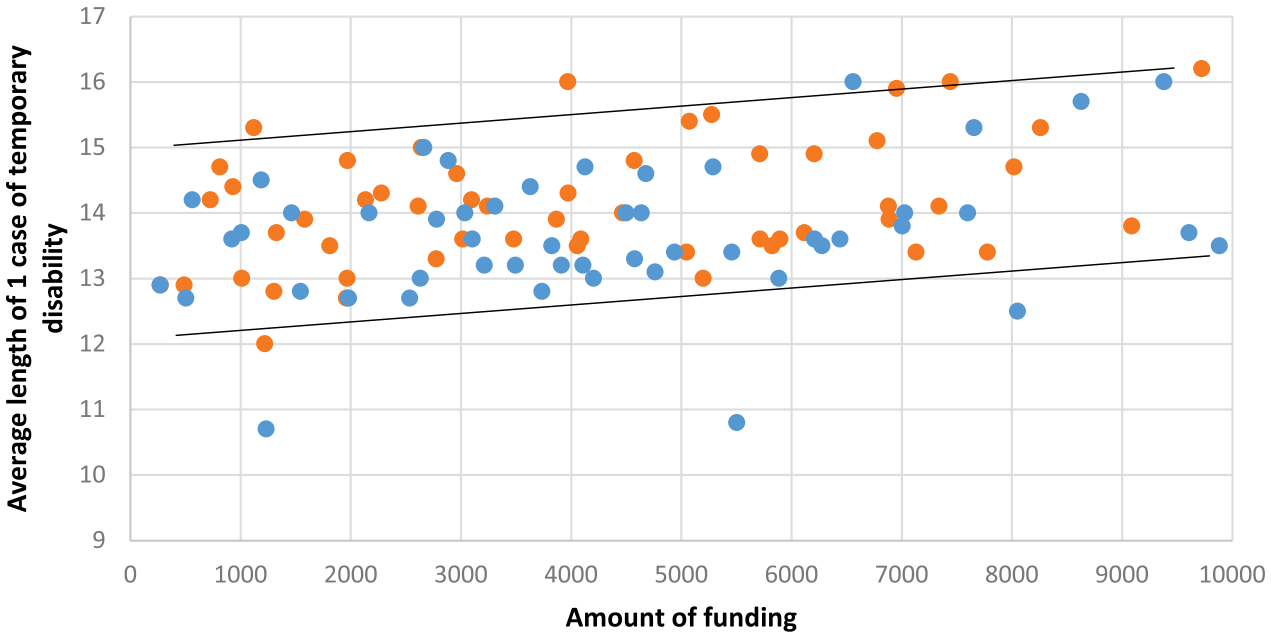
Figure 4. **Interrelation of funding amount and the average duration of 1 case of temporary disability, 2013.**



As shown in Fig.4, the majority regions including 71 Russian Federation territorial subjects form a so-called «corridor». The level of expenditure on healthcare in the subjects of the Russian Federation per capita varies from 1300 rubles/person up to 8500 rubles/person, according to the average duration of 1 case of temporary disability of the Russian Federation - 12-16 days (in the world practice of the leading countries of not more than 10 days).
There is a weak upward trend in the frame of highlighted corridor. However, the variation of the volume of expenditure in health per capita is significant. At 4 000 - 5 000 rubles/person - indicator value ranges from 12 to 14 days.

However, there are some regions in which under funding of 6500-8000 rubles / person average duration of 1 case of temporary disability is above the trend line that may indicate about ineffective treatment or about the presence of specific characteristics of the subject (far North, for example).Republic of Komi, Sakhalin region and Murmansk region are included in this range.
To confirm the trends identified, it is necessary to consider the interrelation between the mortality of the working age population of the Russian Federation subject and the level of expenditures of the Russian Federation subjects on health per capita in 2012 and 2011. This analysis will either confirm the general trend or deny it.

Figure 5. **Interrelation of expenditures for healthcare and the expenditure on health care and average length of 1 case of temporary disability in 2012 and 2011**

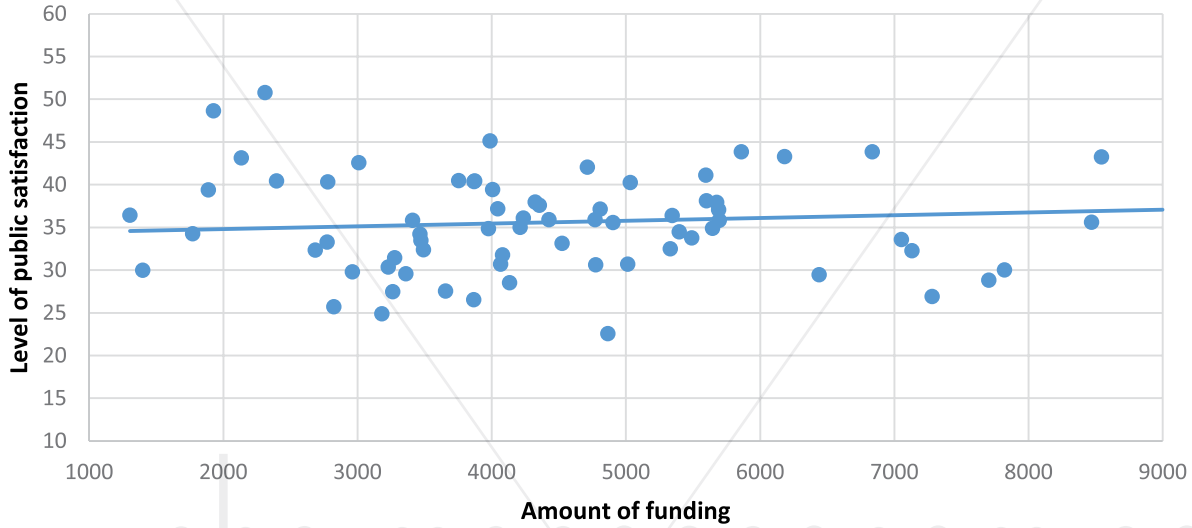


There is an upward trend of the increase of funding and average duration of 1 case of temporary disability. With increasing duration of 1 case of temporary disability, expenditure on health is growing. The longer an employee is on medical leave, the less he works, and as a consequence the less taxes he pays, living standards are falling, the economy slows down its development. For reduction of the period of temporary disability, it is necessary to increase the budget expenditures. That could result in the purchase of additional units of equipment of the best formations, creating new jobs for physicians and implementation of preventive measures. In turn, this increased funding ultimately will be returned to the budget as tax deductions and overall economic growth.

One of the indicators, which allows evaluating the opinion of the end-user of healthcare services is the level of satisfaction with quality of medical services. Undoubtedly, this option is quite subjective, as the population often estimates not immediate satisfaction with medical aid, but also takes into account external and internal factors, which as such are not relevant to public health.

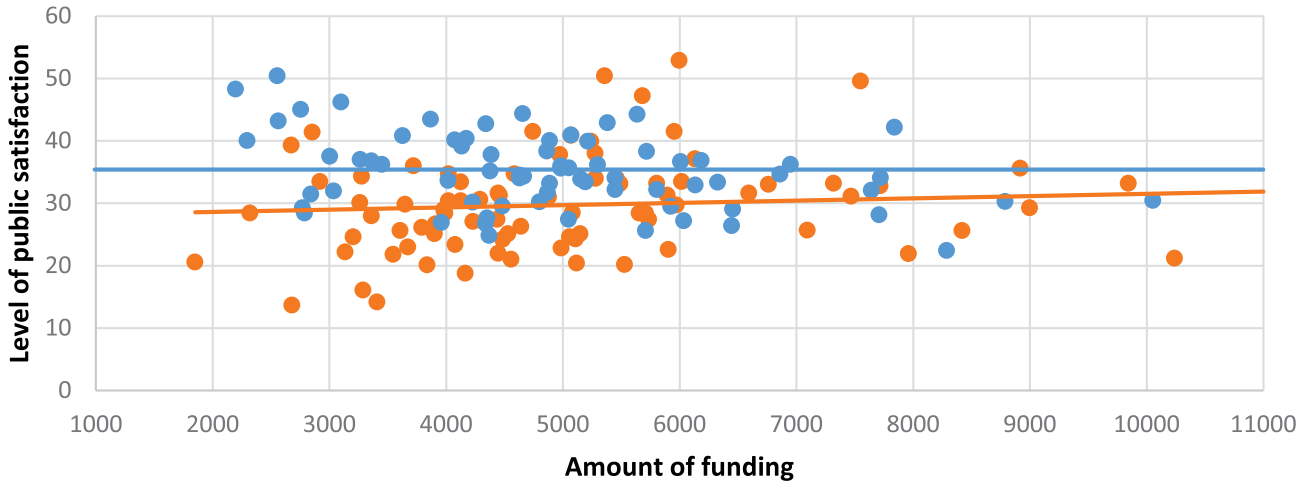
For example, the opinion of respondents of respondents in Pakistan degrades significantly if there are no convenient parking at health facilities but in Russia this factor is probably important in the cities (Moscow, St. Petersburg etc.), but it does not affect the opinion of other consumers across the country.

Figure 6. **Interrelation of the amount of the healthcare funding and the level of public satisfaction with the quality of services provided in 2013**



The graph shows the presence of a basic array in financing from 1 300 to 8,000 rubles/person, which forms a so-called «corridor» of 64 subjects. The satisfaction level is in the range from 25 to 45 % (in assessing public opinion «satisfactory» response of the respondents was not included in the calculation was made solely as «excellent» and «good»). The trend is weakly ascending, which indicates the improvement of public opinion in the growth of health care costs. It turns out that consumers of medical care feel improvements that occur due to increased allocations.

Figure 7. **Interrelation of the healthcare funding and the level of public satisfaction with the quality of medical care in 2012 and 2011.**



The trend line on the results of 2012 does not demonstrate the general trend. Perhaps this fact is associated with the transition to the new system of financing and functioning of the healthcare. If we consider 2011, we observed a quite weak upward trend. It should be noted that for the same level of funding, there has been a rise of satisfaction level.

Thus if majority regions in 2011 are ranged from 13 to 55 (painted red) with mean number of 28, majority regions in 2011 (painted red), then in 2012 (painted blue) the level of regions lowers in the scale showing the satisfaction. The level of satisfaction varies from 25 to 44, the average is 35 units. Based on the above judgments, the overall level of public satisfaction with the quality of health care has increased over the period.

Thus, the changes in health care financing at the regional level need to be assessed from the point of view of their influence on the quantitative and qualitative indicators of the system. In the analysis of mortality of the working age population, it was found that this parameter is a factor of appreciation; it increases the amount of the expenditures of the regional budget. The average duration of one case of temporary disability during its increase leads to funding increase. However, there are regions managing to show good results (the amount of temporary disability is low when the average level of spending is low too). The level of satisfaction is in some other dependence – if there is increase of funding for healthcare, and then the consumers notice the changes and react to them, noting changes in the received medical assistance.

However, these factors are not sufficient, it is necessary to conduct a more detailed study, which would include other qualitative and quantitative parameters. This will not only form an opinion about the influence of the value of funding at the regional level on the indicator, but also allows to determine the effectiveness of individual sources and changes in the system of distribution and redistribution of funds in the health sector.

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