YOUNG RESEARCHERS

Assessment of the effectiveness of population's labor behavior at the macro-level

Andrey Vasilyevich POPOV

Junior Research Associate, Department of Living Standards and Lifestyle Studies, Federal State-Financed Scientific Institution the Institute of Socio-Economic Development of Territories of the Russian Academy of Sciences (56A, Gorky Street, Vologda, 160014, Russia, ai.popov@yahoo.com).

Abstract. The article considers the main approaches to the research into the effectiveness of people's labor behavior. Special attention is paid to the analysis of statistical, social and statistical-sociological methods. The article presents the author's methodology for analyzing the effectiveness of labor behavior by the spheres of manifestation: in the labor market and in an organization. The research shows a high degree of differentiation by this indicator among the Russian territories. The indicator's value was the highest in the Ural Federal District (0.588 points) and Central Federal District (0.422 points); it was the lowest in the Siberian (-0.139 points) and North Caucasian (-1.269 points) federal districts. The integrated assessment of the people's labor behavior effectiveness was conducted, 5 groups of RF regions were allocated according to this criterion depending on the indicator's value. The results of the analysis show that the territories with the high level of the indicator under consideration include such subjects of the Central Federal District as Moscow and the Moscow Oblast. The majority of RF subjects constitute the group with the level above medium. The medium-level group includes the regions that are part of nearly all the districts (except for the Ural Federal District), including the Vologda Oblast. The low level of labor behavior effectiveness indicates a depressive character of the territories and requires immediate measures for enhancing the search for reserves and increase in the efficiency of formation and use of labor potential.

Key words: labor behavior, integral index, region, effectiveness of labor behavior.

The late 1990s − early 2000s were a time of dramatic changes in the Russian society. Enterprises transfer to private ownership, new property owners' lack of attention to traditional methods to stimulate production activity of ordinary workers have led to a change in the existing labor values. The role of workers' material claims has increased significantly, thus changing the nature of labor activities and consequently transforming their labor potential in a qualitative way.

The government of the country[1] faces the tasks of increasing the pace and sustainability of economic growth, improving citizens' real incomes, achieving technological leadership is impossible without enhancing the quality of work activities. Socio-economic transformation is to be carried out by highly qualified and motivated employees.

This provision actualizes the problem of the analysis of labor behavior efficiency, which study reveals the potential for the work intensification in general.

Labor behavior is a way of the population practical implementation of employment potential, associated with the creation of material and spiritual wealth to satisfy certain human needs[2].

The studies of labor behavior which is currently a research subject in many disciplines, such as sociology of labor, economics of labor, psychology of labor and so on, are interdisciplinary. The variety of structural elements of labor behavior caused the emergence of a large number of conceptual and methodological approaches to its analysis [7]. Nevertheless, the study of problems of labor behavior efficiency has not been developed appropriately. Typically,

the analysis has been limited to considering a single aspect, such as an impact of financial and nonfinancial incentives on the worker's labor productivity, motivation issues, job satisfaction, etc.

Existing approaches to assess labor behavior effectiveness can be divided into two groups: *sociological and statistical-sociological,* with the key classification criterion being a methodology used to gather information. Let us consider the presented methods in more detail.

The greatest number of studies of labor behavior is based on the use of sociological measurement, such as "standard" polls, questionnaires, and closely related psychodiag-nosis and testing. It is determined by a psy-chological component of labor behavior.

One example of a sociological approach to clearly calculate an integral characteristic of the effectiveness of labor behavior is a methodology developed in the Institute of Socio-Economic Development of Territories of RAS (ISEDT RAS). As labor behavior is a "way of practical implementation of the labor potential of the population", and its efficiency is determined by the fact how fully able-bodied population realizes the potential [9, p. 106-108].

To assess the level of the population use of their qualities and skills in labor activity, in the framework of the labor potential monitoring[3], we developed a special methodology based on the question pool: "How fully are you "stretched" at work? To what extent do you use your qualities and skills?". The study uses the following four-point marking scale: "to use completely (strained to the limit)" − 4 points, "more-less completely (can use more skills)" − 3; "incompletely (little)" − 2; "very little (at a minimum)" − 1. Then divide the actual number of points by maximum possible, convert the received grades into indices, conditionally called as indices of the labor potential implementation. They comply with eight basic indices of the labor potential quality (*fig. 1*).

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[1] In accordance with the decrees of the RF President V.V. Putin, dated 21.05.2012, the government was renewed by three quarters.

[2] A detailed description of the theoretical basis of the labor behavior is given in the research work "Management of human capital and innovative development of the territories": final report of the research work. Executed by A.A. Shabunova, G.V.. Leonidova, K.A. Ustinova, A.V. Popov, A.M. Panov. Vologda, 2012. Pp. 34-42.

Informative meaning of the received indices is the following: each index reveals what share of the existing quality is actually embodied in the labor activity, i.e. if the index is equal to 0.25 points, this means that a person realizes its potential only by a quarter. Multiplying the calculated indices by 100%, we get an index showing how many percent of the labor potential *quality* is implemented, i.e. it is an analogue of employment, showing how many percent of the labor potential *quantity* is implemented. Thus calculated indicator was conditionally named as a *realization level of labor potential quality*. The effectiveness of labor behavior is defined as an average realization level of labor potential quality [8, p. 45].

The main advantages of the approach are the following: the use of data that are impossible to get in official statistics; possibility of independent specification of the general sample, etc. that significantly expands the study.
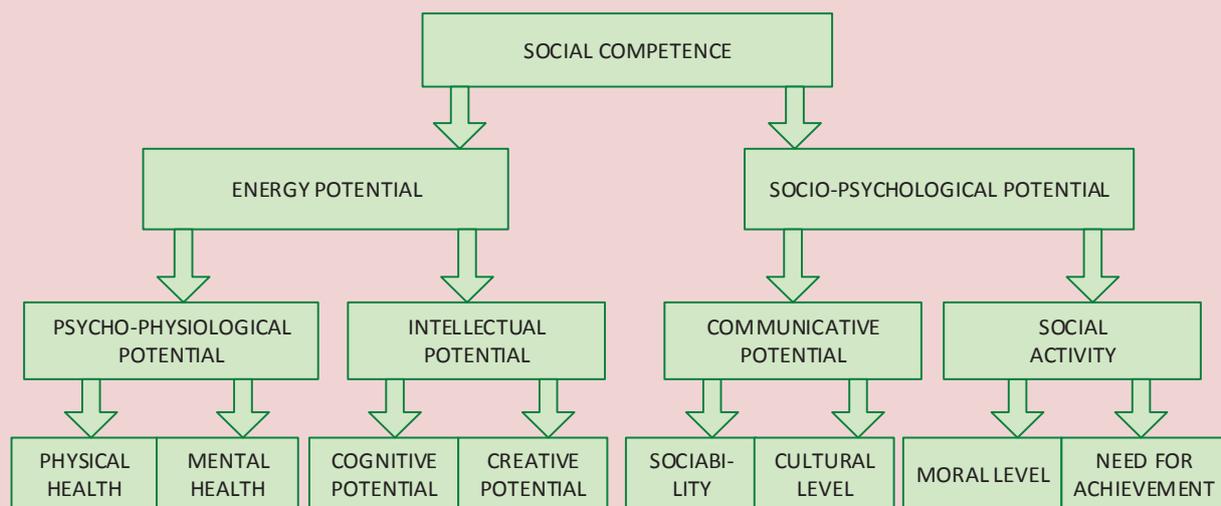
At the same time, the high efficiency of sociological methods, applied in the process of studying various aspects of labor behavior, disappears when assessing its effectiveness due to the fact that the integral index is calculated on the basis of the respondents' subjective estimations. It is possible to get more objective results by means of improvement of a methodological base and methodologies for collecting information.

Using a statistical-sociological method one can avoid some weaknesses of a sociological approach by integrating the latter with the official statistics data. The key advantages of this method are receiving more reliable test results and opportunities to include a variety of factors, due to the extensive information base. However, the disadvantages of the approach are a limited use of the research results, labor intensity and complexity of integral indicators calculations.

Among statistical and sociological methods to assess the effectiveness of labor behavior the most prominent one is the work by I.A. Kulikova [5]. Her research is based on the use of objective (statistical) and subjective (sociological) indicators. As a case study, *table 1* presents a classification of indicators cha-

Figure 1. A structure of the labor potential quality (according to the methodology of ISEPP RAS)

Source: Chekmareva E.A. Realizatsiya trudovogo potentsiala regiona: zaklyuchitel'nyy otchet o NIR [Implementation of the Region's Labor Potential]. Executed by E.A. Chekmareva. Vologda, 2010. 94 p.

Table 1. Indicators of the effectiveness of labor behavior in the labor market

Indicator	Unit of measurement
Objective	
Direct	
Average duration of job search	Months
Average amount of time spent on job search	Hours a week
A share of active profile groups per job seeker	%
An average number of job search methods per job seeker	Points
An average number of job applications	Points
An average number of persons refusing jobs offered by a employment service (state and commercial), relatives, friends or an employer	Points
A coefficient of population independence in employment	–
Indirect	
Provision of the population with employment services	%
A proportion of trainees per job seeker	%
Distribution of job seekers number by job search methods	%
Subjective	
Direct	
Satisfaction with the workplace which a person is going to have	%
Person's positive evaluation of job search	%
Indirect	
Job seekers' satisfaction their status, the current situation	%
A level of initiative, job seekers' business acumen	%
A level of optimism in employment	%
Sources: compiled from the materials: Kul'kova I.A. Upravlenie trudovym povedeniem kak faktor usileniya trudovoy motiva-tsii: avtoref. dis. na soisk. uchenoy step. d-ra ekon. nauk [Management of Labor Behavior as a Factor in Enhancing Labor Motivation: Doctor of Economics Dissertation Abstract]. Izhevsk, 2009. P. 29.	

racterizing labor behavior of the population in the labor market as one of the spheres of its application[3].

Generally, the significant disadvantage of the presented approaches is a limited use, as it is not easy to obtain sociological data. In this regard, it is important to develop methodologies for assessing the effectiveness of labor behavior on the basis of official statistics data.

As a rule, *the statistical method* is not suitable for the analysis of motivation, attitudes, values, etc., but it represents the final result of labor behavior and, therefore, can be successfully applied to calculate indicators of its effectiveness. This approach simplifies and standardizes a set of indicators, contributing to the geographical expansion of research due to availability of the information base.

We examine effectiveness of labor behavior in terms of economically active population of Russia on the basis of official statistics data.

The essence of this study, as well as in the works of some researchers (I.A. Kul'kova [3, 4], N.I. Shatalova [8] and others), lies in dividing labor behavior by the spheres of its application (*tab. 2*):

1. The labor market. To calculate the indicator of workers' labor behavior in the labor market one includes unemployment rate; average duration of job search, specific weight of the unemployed looking for a job for 12 months

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[3] It should be noted that mostly the labor behavior of the people in an organization/company has been studied in the foreign and domestic literature.

Table 2. Indicators characterizing labor behavior

№	Indicator	Unit of measurement	Weight coefficient
	Labor behavior in the labor market		
1.	Unemployment rate (by ILO)	%	1.0
2.	Average duration of job search	Months	1.0
3.	Share of the unemployed looking for work for 12 months and more	%	1.0
4.	A structure of unemployed by jobs search methods.	%	1.0
5.	Seek secondary employment	% of the employed population	0.5
	Labor behavior in an organization		
1.	Employment	%	1.0
2.	Labor productivity	Th. rubles per one employee	1.0
3.	Fulfilled per employee per week	Hours	1.0
4.	Share of people got work-related injuries with disability for one or more working days and fatal outcome	In % per 1000 employees	1.0
5.	Share of people who have undergone professional training	Trained in % from the total number	1.0
6.	Actual number of hours worked on a side job per employee per year	Hours	0.5
7.	Share of the employed moving to work to another RF regions	% of the employed population	0.5
	Source: compiled by the author.		

and more; a structure of unemployed by jobs search methods. During the expert assessment they have got a weight coefficient equal to 1.

The search of secondary employment has a smaller share in this indicator, but as a factor of hyperactive labor behavior it is included in the given table. Its lower weight coefficient is due to an optional indicator of the labor market functioning.

2. Management. The effectiveness of labor behavior at work places is characterized by such indicators as a level of employment, labor productivity, a number of hours fulfilled per employee per week, the share of people got work-related injuries and the share of people who have undergone professional training. The choice of these indicators is due to the fact that labor behavior is manifested by means of labor activity, which includes:
• employment;
• labor activity character;
• discipline of labor process participants [6, p. 39].

Additional options include indicators to evaluate the scale of secondary employment and labor mobility of the population.

To reconcile diverse indicators we applied standardization by z-transformation taking into account their direction (forward/reverse). The index negative values indicate its location below the average of the entire sample, positive ones – location above it:

$$x_i = \frac{a_i - \overline{a}}{\sigma} , \qquad (1)$$

where a_i – a variable value;
$\overline{a}$ – a variable average value;
σ – standard deviation.

$$\sigma = \sqrt{\frac{\sum_{i=1}^{n} (a_i - \overline{a})^2}{n}} . \qquad (2)$$

This indexation method was chosen due to the fact that some variables have a different scale of values or their values differ considerably from each other, that is why the use of maximum

and minimum values does not make sense in this methodology.

The composite index of each block represents a sum of all observed values divided by their number (simple average). The integral index of the effectiveness of labor behavior is similar and is calculated by the following formula:

$$PLB_i = \frac{LBM_i + LBO_i}{2}, \qquad (3)$$

where PLB_i (Productivity of labor behavior) – an integral index of the effectiveness of labor behavior of the population;

LBM_i (Productivity of labor behavior in the labor market) – is a composite index of the effectiveness of labor behavior in the labor market;

LBO_i (Productivity of labor behavior in an organization) is a composite index of the effectiveness of labor behavior of the population in the organization.

As the indices are calculated separately for the districts and regions of the Russian Federation, their values vary depending on the territory lying in the basis of the research.

The effectiveness of labor behavior of the population in the labor market

In 2010, the highest value of the index of the effectiveness of the labor behavior in the labor market could be observed in the Ural Federal District (0.625 points; *tab. 3*). Despite a rather high level of unemployment on this territory (8.0%), other figures are significantly below the national average. The lowest value of the index is observed in the North Caucasian Federal District, as the absolute outsider is the Chechen Republic (-2.622 units).

The Northwestern Federal District takes fifth place among the districts. Index values differentiation in the given district fluctuated from 0.050 points in the Kaliningrad Oblast to 0.567 points in Arkhangelsk. The Vologda

Table 3. Composite indices of the effectiveness of labor behavior of the population (2010)

Territory	LBM, points	LBO, points
Ural Federal District	**0.625**	**0.551**
Central Federal District	**0.410**	**0.434**
Volga Federal District	**0.324**	**0.133**
Southern Federal District	**0.291**	**-0.002**
Northwestern Federal District	**0.232**	**0.031**
Saint-Petersburg	0.419	0.442
Leningrad Oblast	0.118	0.340
Republic Of Komi	0.425	0.001
Murmansk Oblast	0.416	-0.075
Novgorod Oblast	0.119	0.146
Arkhangelsk Oblast	0.567	-0.305
Pskov Oblast	0.317	-0.075
Kaliningrad Oblast	0.050	-0.017
Vologda Oblast	0.137	-0.209
Republic Of Karelia	0.210	-0.539
Far Eastern Federal District	**-0.098**	**-0.114**
Siberian Federal District	**-0.001**	**-0.277**
North Caucasian Federal District	**-1.783**	**-0.755**
Source: compiled by the author.		

Oblast takes seventh place (0.137 units) in the rating of the Northwestern regions.

It can be generally noted that most Federal districts, except the North-Caucasian and Far Eastern Federal districts, are territories with average and high levels of the effectiveness of labor behavior of the population in the labor market. The Ural and Central Federal districts are among the leaders by this indicator, with Moscow being an absolute leader among Russian regions by most parameters.

The effectiveness of labor behavior of the population in an organization

In 2010, the Ural (0.551 points) and the North-Caucasian (-0.755 points) Federal districts have maximum and minimum values of the index of the effectiveness of the labor behavior in the organization. The first case stems from a high level of employment; large volumes of products per unit of time, manufactured by employees; further training. The second one is explained by common labor passivity of the population, caused not only by personal factors, but also by external environment conditions.

The Northwestern Federal District takes forth place by this indicator. The integral characteristic reaches 0.031 points, slightly above the average Russian level. Saint Petersburg (0.442 points) and the Leningrad Oblast (0.340 points) are absolute leaders in the district.

The Vologda Oblast relates to outsiders of the district and Russia as a whole, the index value of the effectiveness of labor behavior at the workplace is -0.209 points. Such factors as a low level of labor productivity (489.2 thousand rubles) and labor mobility (0.6% of the employed population), a high share of accidents (4.4% per 1000 workers) have a negative impact on this indicator.

The methodology final stage is to calculate an integral characteristic of the effectiveness of labor behavior of the population of the Russian Federation subjects on the basis of a given composite indices.

The integral index of the effectiveness of labor behavior of the population

The Ural and Central Federal districts occupy leading positions in the rating: the indices of the effectiveness of labor behavior on these territories reach 0.588 and 0.422 points, respectively (*tab.4*).

The differentiation of effectiveness of labor behavior in the Ural Federal District can be characterized as high: the maximum index value is observed in Tyumen (0.490 points), and the minimum – in Kurgan (-0,274 points) oblasts.

In the Central Federal District Moscow has the highest value of the effectiveness of labor behavior of the population (1.315 points) and the Tambov Oblast – the lowest value (-0,333 points). In general, the results reveal the existence of a large gap between the Moscow Oblast and other regions of the district. According to the given hierarchy, the nearest area in the district is the Tver Oblast with the integral indicator value being 0.247 points.

The integral indicator of the effectiveness of labor behavior in the Volga Federal District equals to 0.229 points. The territory has moderate differentiation of labor behavior: the index ranges from 0.498 points (the Samara Oblast) to -0.164 points (the Ulyanovsk Oblast).

The Southern and Northwestern Federal districts are at the end of the list of the subjects with the index above the national average – 0.144 and 0.131 points, respectively. The leaders by this indicator in the studied districts are Krasnodar Krai (0.316 points) and Saint Petersburg (0.43 points), and the outsiders – republics of Kalmykia (-0.777 units) and Karelia (-0.165 points).

The index of effectiveness of labor behavior in the Vologda Oblast reaches -0.036 points, which is slightly below the national average. The following key factors that have a negative impact on the integral characteristic can be singled out:

Table 4. The integral index of the effectiveness of labor behavior of the population (2010)

Territory	PLB, points	Territory	PLB, points
Ural Federal District	**0.588**	Republic of Adygea	-0.094
Tyumen Oblast	0.490	Republic of Kalmykia	-0.777
Chelyabinsk Oblast	0.399	**Northwestern Federal District**	**0.131**
Sverdlovsk Oblast	0.293	Saint-Petersburg	0.430
Kurgan Oblast	-0.274	Leningrad Oblast	0.229
Central Federal District	**0.422**	Komi Republic	0.213
Moscow	1.315	Murmansk Oblast	0.171
Moscow Oblast	0.698	Novgorod Oblast	0.133
Tula Oblast	0.247	Arkhangelsk Oblast	0.131
Yaroslavl Oblast	0.232	Pskov Oblast	0.121
Kaluga Oblast	0.218	Kaliningrad Oblast	0.017
Smolensk Oblast	0.171	Vologda Oblast	-0.036
Ivanovo Oblast	0.151	Republic Of Karelia	-0.165
Belgorod Oblast	0.143	**Far Eastern Federal District**	**-0.106**
Kostroma Oblast	0.124	Chukotka Autonomous Okrug	0.400
Vladimir Oblast	0.041	Sakhalin Oblast	0.362
Kursk Oblast	0.029	Primorsky Krai	0.145
Ryazan Oblast	-0.022	Kamchatsky Krai	0.139
Tver Oblast	-0.092	Sakha (Yakutia) Republic	0.052
Orel Oblast	-0.129	Magadan Oblast	-0.137
Bryansk Oblast	-0.205	Jewish Autonomous Oblast	-0.149
Lipetsk Oblast	-0.217	Khabarovsk	-0.166
Voronezh Oblast	-0.254	Amur Oblast	-0.173
Tambov Oblast	-0.333	**Siberian Federal District**	**-0.139**
Volga Federal District	**0.229**	Krasnoyarsk Oblast	0.462
Samara Oblast	0.498	Tomsk Oblast	0.387
Nizhny Novgorod Oblast	0.421	Irkutsk Oblast	0.203
Republic of Tatarstan	0.387	Omsk Oblast	0.188
Udmurt Republic	0.353	Republic of Khakassia	0.130
Chuvash Republic	0.303	Novosibirsk Oblast	0.045
Perm Oblast	0.282	Kemerovo Oblast	-0.040
Saratov Oblast	0.227	Republic of Buryatia	-0.323
Republic of Bashkortostan	0.214	Zabaykalsky Krai	-0.398
Orenburg Oblast	0.082	Altai Krai	-0.505
Penza Oblast	0.030	Altai Republic	-0.657
Kirov Oblast	-0.044	Tyva Republic	-0.740
Republic of Mordovia	-0.085	**North Caucasian Federal District**	**-1.269**
Mari El Republic	-0.130	Stavropol Krai	0.022
Ulyanovsk Oblast	-0.164	Republic of North Ossetia-Alania	-0.400
Southern Federal District	**0.144**	Republic of Dagestan	-0.551
Krasnodar Krai	0.316	Kabardino-Balkar Republic	-0.719
Rostov Oblast	0.205	Karachay–Cherkess Republic	-1.201
Astrakhan Oblast	0.138	Republic of Ingushetia	-1.234
Volgograd Oblast	0.042	Chechen Republic	-1.830
Source: compiled by the author.			

• low activity of the population in the employment process;

• high rate of industrial injuries;

• low labor mobility.

The lowest level of the effectiveness of labor behavior is observed in the North Caucasian Federal District –in only one subject (the Stavropol Oblast) the level is similar to the national average (0.022 points). The rest of the territory belongs to a group with the low level, with Kabardino-Balkar, Karachay–Cherkess and Chechen republics being included into the group of regions having a critically low level of the effectiveness of labor behavior. They take last places in the Russian regions rating.

The analysis of integral characteristics of the effectiveness of labor behavior in our country regions has made it possible to divide all the territory into several groups:

• a low level – from -1.830 points to -1.201 points;

• below an average level – from -1.200 points to -0.571 points;

• an average level – from -0.570 points to 0.059 points;

• above an average level – from 0.060 points to 0.689 points;

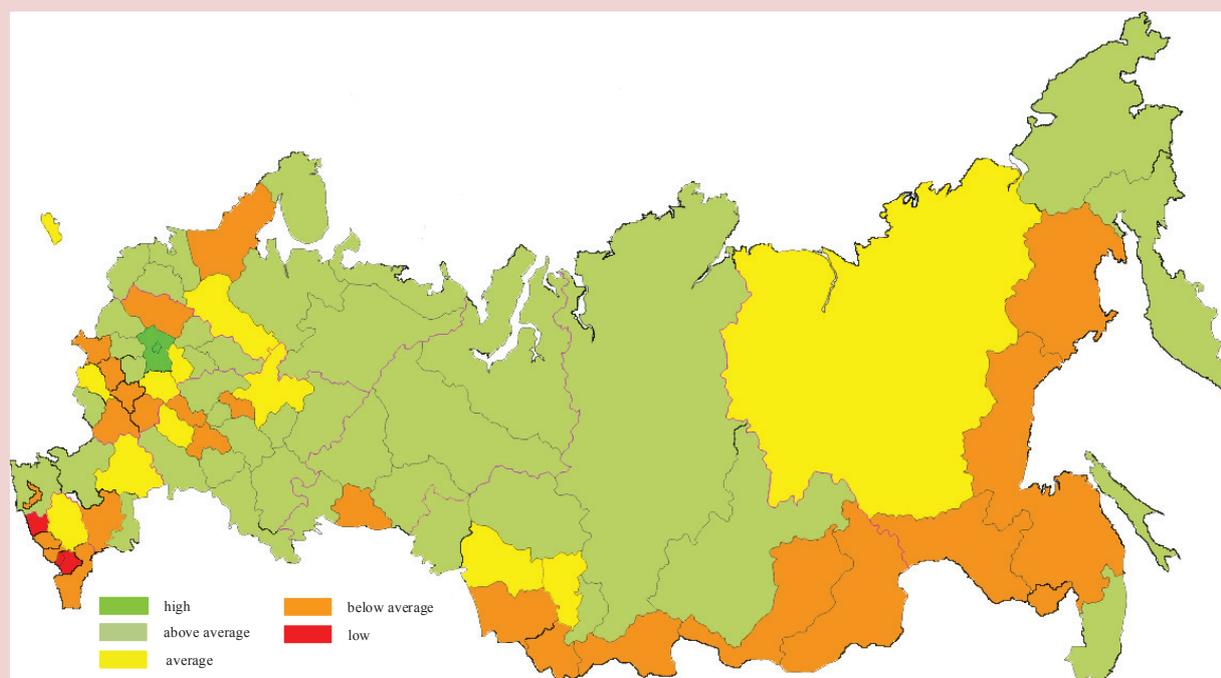• a high level – from 0.690 points to 1.319 points (*fig. 2*).

According to the analysis, the Central Federal District, Moscow and the Moscow Oblast have a high level of the effectiveness of labor behavior.

The effectiveness level of labor behavior above average is characteristic for the following districts (the percentage of the total number of subjects in the district is given in brackets):

1. Ural – 3 territories (75%);

2. Northwestern – 7 territories (70%);

3. Volga – 9 territories (64%);

4. Southern – 3 territories (50%);

5. Far Eastern – 4 territories (44%);

6. Siberian – 5 territories (42%);

7. Central – 7 territories (39%).

The subjects of all districts, except the Ural Federal District, can be referred to the group

Figure 2. The effectiveness levels of labor behavior in the regions (2010)

high
above average
average
below average
low

Source: compiled by the author.

with an average level. The Vologda Oblast is included in this group.

Below the average level of the effectiveness of labor behavior is characteristic for such districts as:

1. Far Eastern – 4 territories (44%);
2. North-Caucasian – 3 territories (43%);
3. Siberian – 5 territories (42%);
4. Central – 6 territories (33%);
5. Southern – 2 territories (33%);
6. Ural – 1 territory (25%);
7. Volga – 3 territories (21%);
8. Northwestern – 1 territory (10%).

The regions of the North-Caucasian Federal District (Karachay–Cherkess Republic, Republic of Ingushetia, Chechen Republic) have the lowest position in the rating.

Thus, the conducted analysis indicated that the level of effectiveness of labor behavior of the population in the majority of Russian regions is characterized as average or above average. The significant part of the regions with low level are depressed, therefore, it is necessary to take immediate measures to enhance the search of reserves and to increase the efficiency of labor potential formation and use.

The overall evaluation of the effectiveness of labor behavior of the population have revealed a significant gap among the RF subjects (including in one Federal district) by this indicator, which proves the necessity of adjusting government policy in the field of employment. First of all it concerns the development of regional programs that should be based on a differentiated system of measures to boost the labor market efficiency taking into account the trends of labor behavior of the population on a certain territory.

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