METHODS OF STATISTICAL ANALYSIS OF POPULATION EMPLOYMENT

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The article has been highlighted by issues such as the fundamental accounting of the population, complex accounting of its current state and trends, complex analysis of its current state and trends, the main directions of statistical assessment of the population.
KEYWORDS: *employment, statistical methods, comprehensive assessment, forecasting, statistical analysis, main directions, labor market, correliation analysis, Regression model, labor statistics*

INTRODUCTION

Methods of statistical analysis of population employment are based on the dialectical method of knowledge of social life phenomena. According to the method of dialectical understanding, labor statistics examines all events and processes in their interdependence, continuous development, change and transition from quantity to quality. The complexity of the system of socio-economic relations requires further improvement of methods of evaluating the results of regional development. Among them, statistical methods of analysis and comparison of final indicators take the main place. Improving the methods of estimating population employment is one of the elements of increasing the scientific level of regional administration.

In modern literature, four main directions of population employment assessment are distinguished:

1. Evaluation according to the level of achieved results;

2. Evaluation compared to the results of previous periods;

3. Forecasting opportunities for labor market development;

4. Method of assessment of informal components of labor potential.

Methods of statistical estimation of employment O. N. Ashukina, S. Yu. Barsukova, V. T. Voronin, T. L. Gorbachev, G. F. Gorbunov, I. A. Griboedova, G. M. Zushchina, M. Yu. Karishev, O.N. Kashina, E.P. Kokina, L.A. Kostin, S.V. Kurishova, Z.A. Rizhikova, E.H. Sagindikov, I.I. Sergeeva, P.M. Sultanova, I.N. Tartakovskaya, It is mentioned in the works of I.G.Trubinova, I.P.Chernishova. In our opinion, the following figure presents a classification of statistical methods that are appropriate for use in area-level research.

Evaluation based on the level of results achieved is the most common method. Comparing regions based on the scale of results achieved means that the region with the highest performance is the leader among the comparisons. The simplicity of the calculation is considered an advantage of this method of assessment, and its disadvantage comes from the point of view that all regions have the same chance to achieve any result.

This assumption exists regardless of changing socio-economic conditions, including human will. The next method of evaluation according

to the level of the achieved results is to determine the mutual relations between socio-economic phenomena.

The use of economic-mathematical methods, including the possibilities of correlation-regression analysis, in the study of the development process of the number of the employed population requires the quantitative description of the researched object. Therefore, one of the problems of modeling the population of the employed population is the quantitative assessment of the impact of the factors identified in the process of detailed economic analysis on this reality and development. Quantitative evaluation usually uses different correlation coefficients.

Correlation analysis is one of the methods of statistical analysis of the interrelationship of several characteristics. It is used in cases where observational data are selected from the population, can be assumed to be random, and are distributed according to a multivariate moderate law. The main task of the correlation analysis is to evaluate the correlation matrix of the general population according to the selection, and on its basis to determine specific, numerous coefficients of correlation and determination. The pairwise linear (partial) correlation coefficient describes the stability of the linear relationship and the direction of the relationship between the two variables when excluding all other parameters included in the model. They vary between -1 and 1. The process of changes in the number of employed people in most cases has a probabilistic, stochastic nature, therefore, in such cases, it is appropriate to use correlation and regression methods that allow quantitative assessment of the relationship between many factors affecting the number of employed people in the area. When choosing factors for the regression model, it is recommended to take into account the following conditions: Signs-factors should be causally related to the symptoms of the effect (consequence). Signs-factors should not be components or functions of outcome signs (in this case, the correlation coefficient will be equal to one). It is not recommended to include factors that are weakly related to the outcome signs, but are highly correlated. Hierarchical factors of different levels, that is, the nearest order factor and its sub factors, cannot be included in the model. An optional but desirable condition is that the integrity of the unit of aggregation to which they belong must be observed between the symptoms of the outcome and the factor. If the outcome indicators summarized at the area level, all other factors must also be applied at the area level. When choosing one of a pair of correlation-regression models, it is better to give priority to the model with a lower number of factors, even if the coefficient of determination is the same or even insignificantly less. However, the value of the coefficient of determination of the selected model should be at least 0.5. It is enough to select a row or column from the matrix of pairwise correlation coefficients to determine the resulting signs and related factors. Because they have economically based and significant statistical coefficients of correlation.

Estimation using the regression model method has a number of disadvantages, which include building a model, it is necessary to have a sufficiently large population of species.

The next method of assessment is multidimensional grouping of objects based on cluster analysis. Due to the widespread use of electronic computers, multivariate groups in economic-statistical analysis are expanding. In particular, cluster analysis allows combining objects in similar groups based on any number of character complexes. Cluster analysis used to analyze the structure of the territory and to identify cities and districts with close socio-economic potential. Cluster analysis is one of the methods that investigates the multidimensional classification of regions. As a result of applying this method, the initial collection of objects is divided into clusters or groups of objects that are similar to each other.

The peculiarity of the cluster analysis is that the variance between units allocated to a group is insignificant, and the variance between groups is large. In the system of comprehensive analysis of population employment, not only the republic-wide information, but also the information on the urban and rural sections, which are provided in the form of average indicators of the region in most cases, are important. In order to determine the socio-economic potential of the region, its effective use, development prospects, it is necessary to know the direction of development specific to each aspect of the region, its strengths and weaknesses. Such information is necessary for a comparative assessment of the socio-economic situation in individual cities and districts of the republic. Cluster analysis is one of the methods that investigates the multidimensional classification of regions, and as a result of its application, the initial set of objects is divided into clusters or groups of objects that are similar to each other. The peculiarity of the cluster analysis is that the differences between the units included in the separated group are insignificant, and the difference between the groups is significant. Real objects are multidimensional, not one, but several indicators represent them, and combining objects into groups is also carried out in a multidimensional space, which is a complex aspect of cluster analysis.

COMPARATIVE EVALUATION OF THE RESULTS OF PREVIOUS PERIODS

From the point of view of the comparison base, these forms of assessment in development, dynamics are:

- Evaluation of the level of the relevant period compared to last year's indicators;

- Evaluation compared to the base period, for example, the period when market changes began.

Often, the level of current indicators is compared with the same period of the previous year, that is, the rate of chain absolute growth (decrease) and chain growth (decrease) of results is summarized. Crises in the country's economy make it difficult to reflect a number of indicators, first of all, expenses in the dynamics of several years. Therefore, the method of regional economy analysis was greatly simplified. However, comparing the current indicators only with the same period of the previous year reduces the value of the analysis. In addition, the use of a limited number of methods in comparison with the results of previous periods does not allow to fully imagine the impact of market changes on the socio-economic processes in the region. Therefore, the results achieved in the development of the last year of the stable situation in the country's economy, for example, A comparison with 1992 would be appropriate. That is, it is necessary to take the level of 1992 as a base of comparison, as well as to calculate the basis of absolute growth (decrease) and the rate of growth (decrease). Dispersion analysis is used to assess the degree of significance of differences in the structure of occupations, and dispersion relationships can be calculated both quantitatively and qualitatively.

Forecasting the possible results of the development of the regional labor market. Extrapolation (extending the structural value beyond the limits of the studied periods) is the basis of any forecasting method. It is assumed that the laws of development of the studied phenomenon will be preserved in the future. The forecasting process consists of three important steps. At the first stage, the forecasting period is determined. At the second stage, a forecasting method is selected that reflects the main trends in the development of the phenomenon under study.

The selected method should be able to predict the dynamics of indicators under the influence of factor changes with a certain probability. At the final stage, the quality of the forecast, that is, its accuracy is checked. The quality of the forecast depends, first of all, on the level of inertia of the economic system and the accuracy of the research method. An extension of the forecast period leads to a decrease in the accuracy of the forecast, that is, to a decrease in its quality. The longer the forecast period, the greater the possibility of changing the internal structure of the phenomenon under study and its main development trends. In practice, it is necessary to enter the expected value of the factor signs into the regression equation in order to create a single value forecast of the outcome sign and its confidence interval based on the given probability. For forecasting based on multivariate regression models, it is necessary to predict the value of each dependent variable according to the trend equation and then enter the obtained numbers into the regression equation.

METHOD OF ASSESSMENT OF INFORMAL COMPONENTS OF LABOR POTENTIAL

Various sociological methods can be used to assess officially weak components of the labor potential, based on the rating values given by the population to the characteristics of the potential: - expert assessment method;

- conducting selective sociological research using standard scales (self-assessment method); - method of content analysis of information sources;

- a private rating assessment of the value of potential quality characteristics. For example, the socio-psychological characteristics of the population, first of all, the range of values, i.e. readiness to perform diverse and more responsible tasks, readiness to learn new professions, re-education, re-specialization, adaptation to working conditions, special value to work, health, education, family attitude towards the quality is the main indicator of the potential of suitability for certain socio-economic situations. The method of data content analysis, which plays an important role in the identification and evaluation of social conflicts, provides an opportunity to conduct a quantitative and qualitative analysis based on a large volume of documents (letters, citizens' appeals, official documents, statistical data, etc.). The analysis carried out on this basis will clarify the main reasons different groups of the population are not satisfied, their demands, and how much they are ready to protect their interests.

Competence is a private rating assessment of the value of quality characteristics. The method of social assessment of the rating value of quality indicators of labor potential makes it possible to determine the specific characteristics of different social groups. According to the results of the surveys, the percentage of the attitude of the respondents (U_j) to the characteristics (i) of maximum, high, medium, low and minimum importance is determined. Each option is given a certain score (K_j). The value of the generalized rating indicator of the importance of the characteristic / labor potential is determined based on the following formula:

$$R_i = \sum_{j=1}^{5} (U_j K_j)/100$$

If the feature is of maximum importance, $K_j = 1$; if high $K_j = 0.75$; if average, $K_j = 0.50$; if low, $K_j = 0.25$; in a minimal state $K_j = 0$ will be. In this, R_i changes from 0 to 1.

Three main directions of population employment research were used in the research work: assessment according to the level of development achieved; comparative assessment to the results of previous periods; forecasting likely employment outcomes in the area. In our opinion, the proposed

statistical evaluation methods allow to conduct a comprehensive statistical analysis of population employment, as well as to fully reflect the state of the object under study, to determine its characteristics and to determine development prospects. In cases where there is an appropriate database, these methodological approaches can be applied differentially to urban and rural residents, different social groups.

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