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STATISTICAL PROCESSING OF EMPIRICAL DATA IN THE RESEARCH PROCESS

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ABSTRACT

Based on preliminary analysis on the object of empirical Sociological Research, an existing problem analysis program is developed. The scientific program is the first necessary document of any practical, theoretical sociological study. The program is aimed at checking the working hypothesis on the object of sociological research, and also consists of the statements of the scientific hypothesis on research, the main tasks to be performed and the methodological basis of sociological research. This paper scientifically investigated the process of statistical processing of empirical data.

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INTRODUCTION

Practical sociological research can be obtained as a sequence of logically related methodological, methodological and organizational and technical processes. The main objective pursued from this sequence of prosedures is to obtain empirically verified substantiated information about the social phenomenon or process under study. Two main methods of obtaining sociological knowledge are officially recorded. These are empirical and theoretical methods that in their place produce two levels of sociological knowledge, namely empirical and theoretical. Until the end of the 19th century, the development of theoretical and empirical sociology was special. From time to time there was a debate about the ratio between theory and empiricism. In the late 19th and early 20th centuries, the famous French sociologist Emil Durkheim was able to combine theoretical and empirical sociology in his scientific activities.

There are general requirements of any empirical sociological research program. These include identifying the main goals and objectives of the study; developing a working hypothesis; using computer techniques in the program development process. The

processing of empirical data consists of a set of organizational, technical, methodological and mathematical tasks carried out at the final stage of sociological research

RESULTS AND DISCUSSION

In the statistical processing of empirical data, the sociologist collaborates with a mathematician who has deeply mastered the laws of computer programs and statistics. So what kind of creative collaboration should there be between a sociologist and a mathematician? The mathematician must carry out statistical processing of questionnaires that contain the collected information. The general structure of the processing of empirical data covers the following processes:

1. Editing and coding information.

The purpose of this stage is to prepare the information in the questionnaire for transfer to an electronic state. Based on the likelihood that the results of the questionnaires will consist of many errors, it will be necessary to eliminate the errors in it.

Typical disadvantages encountered when editing questionnaires:

- violation of query processes: use of the wrong form of the questionnaire; unnecessary respondent surveyed; absence of ciphers identifying the questionnaire or questionnaire;
- not filling out until the end of the questionnaires;
- imbalance of respondent responses;
- non-existent codes of answers;
- misinterpretation of questions by the respondent or interviewer.

Part of such errors, if found at the stage of data collection, are corrected as a result of an interview with an interviewer, and the other part by reapplication to the respondent. If this is not possible, then this questionnaire will be abandoned. While the process of data editing is long-lasting, complex and multi-step in some (large) studies, in others it is only limited to reviewing simple questionnaire-surveys. But in any case, a specific document should be developed, namely – an editorial guide, which will tell you what errors should be paid attention to and how to fix them.

The purpose of encoding is to convert the collected information into electronic form. Most often, questionnaires are encoded during the creation period, and the respondent determines the code corresponding to his answer. But even such surveys

may have used a form of open-ended questions that require later coding. Interview blanks are full of open-ended questions and require special coding after the request is made.

An important part of preparing data for analysis consists in their comprehensive control and correction of found errors. Such errors occur mainly in the stages before the transfer to the electronic state. The more large-scale the study, the more complex it will be to correct errors in it. The researcher must be the first to get rid of what mistakes are and know, understand for himself what is not so important. The process of data correction consists of three stages: finding errors, primary documents – questionnaire, finding the actual amount of codes on the blanks, data correction.

2. Entering data into an electronic computing machine.

At this stage, the edited and encoded questionnaires are entered into the electronic computing machine. For this, computer programs are used for the purpose of statistical processing of sociological data on an electronic computing machine. In this regard, sociological research centers have so far used various computer programs. Today, however, the most popular and effective program is the SPSS (Statistical Package for Social Sciences) Program.

The versatility of working with the SPSS program is that, unlike other programs, this program has the opportunity not only to convert empirical data into variables, but also to perform frequency analysis in a short time, to convert statistical data into graphical data, to prepare electronic reports. In addition, statistical analysis in this program is considered lighter, for which there are no formulas for calculating statistical indicators. Working with this program requires special preparation.

3. Checking the quality of the data and correcting errors.

The information included in the exposure can in most cases be carried out with certain errors caused by the researcher's haste, shifted attention, low computer literacy or other reasons. At some point, the SPSS program may have exchanged codes, or the empirical data may have been mistransformed into variables. At this stage, all similar errors are corrected.

Statistical analysis. The data included in the SPSS program is taken into statistical processing based on the purpose and hypothesis of the study. With this program, empirical data can be processed based on the following methods of statistical analysis.

Cluster analysis is a method of classifying objects according to their specific symptoms. The main task of cluster analysis is to form the target audience of problem carriers and clearly distinguish them from others. And the goal is to take a private approach to the study of the opinion of respondents and form conclusions and recommendations based on the specific social image of the problem carrier.

Discriminant analysis is a method for identifying differences between the groups being studied. The purpose of this method is to clarify whether it is possible to compose a typical portrait according to the descriptions prescribed for each group. If a clustered analysis distributes a set of respondents into groups, A Discriminant Analysis determines the possibility of defining the differences of pre-existing groups of respondents.

Regression analysis is a method for determining statistical correlations between variables being studied. Based on the analysis of empirical data, not only the presence of the fact of statistical dependence is described, but also the mathematical formula for the dependence function of the variables under study.

Modern techniques of regression analysis have the potential to interpret the dependence function of the variables under study in different manifestations. The simplest of these is the linear function, which is established using linear regression analysis.

Factor analysis is a method that allows you to Group a large number of variables (factors affecting the subject of research) and add them to the minimum amount of generalizing factors. Data grouping is based on the following criteria: - variables that have a high-order correlation relationship with each other are combined into one factor; - there must be a low-order correlation relationship between variables that relate to various generalizing factors. Factor analysis is mainly used when there is a large amount of data that needs to be reduced (reduced) in order to carry out further research or to increase the effectiveness of the analysis.

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