DESCRIPTION FOR THE GENERAL PUBLIC

Social, economic, ecological research are based on data observed in very large populations. Usually, observation of all data is very expensive and time consuming job. Statistical research of large populations are based on information observed in samples selected from them on the basis of sampling designs or sampling schemes. Variables under study are observed only in the previously selected samples and they are used to inference on population parameters like mean value. Auxiliary variables are observed in whole population. The auxiliary variables are usually available in administrative or demographic registers or in accounting. For instance size of a local population, book values, area of a farm can play the role of auxiliary variables. It is well known that many sampling designs or schemes or estimators constructed as some functions of the auxiliary variables usually lead to improving accuracy of statistical inference of population. That is why in this project the problem of statistical sampling strategies dependent on auxiliary variables is considered. The project will provide original contributions to construction of sampling strategies based on auxiliary variables. More precisely, it will be focused on two following problems. The first one deals with so called continuous sampling designs and schemes and the second one leads improvement of cluster sampling strategies. The accuracy of proposed new methods of estimation of population parameters will be considered on the basis of computer simulation analysis. The results will allow to choose the proper sampling strategy for assessing population parameters in practical survey sampling research.