TEACHING OF SAMPLE SURVEY DESIGN AND ANALYSIS IN THE IN-SERVICE TRAINING PROGRAMME OF STATISTICAL OFFICERS

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During the last few decades the theory of Sample Survey Sampling has undergone rapid growth, often involving speculations about the nature of finite population at hand. Unlike the classical set up where the population values on units are considered as fixed quantities, model-based approach considers the set of population values as a random sample from a super-population and aims at obtaining the point and interval prediction of the Statistic of interest like population mean, total, variance etc. The complex analytical Surveys often involve estimation of non-linear functions, say, population ratio, difference of ratios, regression coefficient, correlation coefficient. Moreover, in the context of current trend of regional planning there has been a tremendous demand for small area statistics at district or country level in various countries. This is so, because the distribution of Central funds is often made on a local or regional basis and this may depend on variables such as the number of unemployed, the condition of the housing stock, the use of fertilisers, the principal occupation of the household and so on. In addition, there are demands from the private sectors for small area statistics since many business and industry rely on socio-economic conditions for formulation of their policies. Different design-based and model-based synthetic estimators have been developed to tackle the situation which “borrow strength” from similar areas. Bayes, Empirical Bays, Hierarchical Bays, Best Linear Unbiased Prediction (BLUP), Empirical BLUP are some of the procedures which develop precise small-area estimates to cater to these requirements. There is also the twin problem of analysis of results of complex surveys as the tools of classical inference are inadequate for this purpose and often need suitable modification. Survey Statisticians in an executive agency like National Sample Survey Organisation (NSSO) of India who are engaged in the organisation of field surveys and the preparation of reports as are required by the administrative departments often require brush up of their knowledge for implementation of some of the results achieved by their theoretician counterparts. The International Statistical Education Centre (ISEC), Calcutta is endowed with the responsibility of organising training courses in Statistics to middle-level officials from the countries of the Middle East, South and South-East Asia, the Far

East and the commonwealth countries of Africa. The Centre which is operated jointly by the International Statistical Institute and the Indian Statistical Institute under the auspices of UNESCO and the Government of India has till today catered to the training of 1249 participants spread over 56 countries. A major topic in this training programme is Sample Survey which is taught as a Compulsory Course for a period of twelve weeks' and subsequently as a Specialisation Course over a period of eight-weeks. While imparting a training Course on recent developments in the theoretical aspects of Sample Survey design to these officials is not advisable it is envisaged that inclusion of some elementary ideas out of the recent developments like model-based prediction, small area estimation would go a long way in
achieving the needs of different Survey Organisations as well as making the course more interesting.

The aim of the present paper is to suggest a re-orientation of the training course on Sample Survey Design and analysis at the tertiary level which takes into account of the ideas set forth above. The paper indicates the topics, the levels at which these topics should be expanded and areas of practical applications.