Online Agriculture Sampling

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Abstract— It is developed in ASP.net with C# language. It is Web-enabled, User-Friendly, Interactive, password Protected, menu-driven Package. It provides online data handling, data upload/entry, scrutiny, editing and imputation for missing values. It would be able to analyze survey, data anywhere; results will be made available quickly on the browser itself. It estimates the population parameters based on the sampling data collected using the sampling designs like simple, random sampling – with or without replacement, systematic and probability proportional to size (PPS), stratified sampling, cluster sampling etc. Actually software related to agriculture survey are already available but they are costly, requires extensive coding and domain expertise, stand-alone application, need to install on every machines to work. You will develop web enabled software for survey data analysis, to test and validate the software with real survey data using some advanced techniques. We will also use different type of estimator as median, mean, variance. This project will have good efficiency and consume less amount of time. System can be use for the large survey data having a large no of records of surveys done for different parameters.

Keywords— **Asp.net, Data analysis, Data imputation, Data management, Mean, Mean of neighboring unit, Zero**

1. Introduction

Almost as long as there have been many survey in different fields but most of the time they are not processed online. Here this project helps us for generate population parameter for each crop in agriculture field by using different online sampling techniques. Online agriculture sampling has a module for imputation of missing values using mean, zero and mean of neighboring units methods. It has a user friendly, data management module for importing data from commonly used data file formats and usual editing options. It has a data management module for importing data from commonly used data file formats (.xls and .txt) and usual editing options. It is based on the client-server architecture, requires only an internet browser to run. It needs to install or deploy on one machine (web server).

2. THEORY

Sampling Methods Used in online agriculture sampling

If you survey *every person* or a *whole set of units* in a population you are taking a *census*. However, this method is often impracticable; as it's often very costly in terms of time and money. For example, a survey that asks complicated questions may need to use trained interviewers to ensure questions are understood. This may be too expensive if every person in the population is to be included. Sometimes taking a census can be impossible. For example, a car manufacturer might want to test the strength of cars being produced. Obviously, each car could not be crash tested to determine its strength.

To overcome these problems, samples are taken from populations, and estimates made about the total population based on information derived from the sample. A sample must

be large enough to give a good representation of the population, but small enough to be manageable. In this section

the two major types of sampling, random and non-random, will be examined.

Random Sampling

In random sampling, all items have some chance of selection that can be calculated. Five common random sampling techniques are:
1. SIMPLE RANDOM SAMPLING
2. STRATIFIED SAMPLING
3. CLUSTER SAMPLING
4. MULTI-STAGE SAMPLING

1. Simple Random Sampling (SRS)

A sampling procedure that assures that each element in the *population* has an equal chance of being selected is referred to as *simple random sampling.*

In small populations such sampling is typically done "**without replacement**", Although simple random sampling can be conducted with replacement instead, this is less common and would normally be described more fully as simple random sampling **with replacement.**

2. Stratified Sampling

A general problem with random sampling is that you could, by chance, miss out a particular group in the sample

3. Cluster Sampling

It is sometimes expensive to spread your sample across the population as a whole.

4. Multi- Stage Sampling

Multistage sampling involves, combining various probability

techniques in the most efficient and effective manner possible. The process of estimation is carried out stage by stage, using the most appropriate methods of estimation at each stage.

The Software being developed lies in the category of web Application. The Three Tier Architecture used is:

3.LITERATURE REVIEW

Survey is the alternative to census: organization of a well-targeted. Agriculture: To obtain a good picture of yield, yearly variations, variations on a

Longer time scale, etc .[1]

Most of the statistical packages available worldwide have more extensive features but they are not of much use for survey statistician because of one reason or another.

Some software already available for survey data analysis are PC CARP, CENVAR, CLUSTERS, SUDAAN, STATA, R and SAS etc. which are applicable on personal computers. Most of these packages have more extensive features than only estimation for complex sample survey data, incorporating software for processing and managing survey data as well. Among the already available software which has extensive features are found to be very costly such as SUDAAN, STATA and WesVar. Few other DOS based software are PC CARP, CENVAR, CLUSTERS, etc. which has now become obsolete. Therefore, indigenous web -based software for the survey data analysis is needed to be developed enabling the analysis process to be easier and quicker.

4.RELATED WORK-

Online agriculture sampling consist of different modules-1

S. No.	Module	Sub-module(s)
1	Data Management Module	Editing of data
		Imputation of missing data
2.	Descriptive Statistics	Measures of central tendency i.e. Mean & Median
		Measures of dispersion i.e, Variance & Range
3.	Simple Random Sampling with equal or	Sampling with replacement using sample

	unequal probability	mean
		Sampling without replacement using sample mean
4.	Stratified random sampling with equal or unequal probability	Sampling with replacement using sample mean
		Sampling without replacement using sample mean
5.	Cluster Sampling	Sampling with/without replacement
		Sampling with replacement & with unequal probability
6.	Two Stage Sampling	Sampling with/without replacement with equal probability

Fig. 1 Online agriculture sampling modules

Various Techniques Used in Online agriculture sampling

(1)Type of Design:
1. Simple Random Sampling
2. Stratified Sampling
3. Two Stage Sampling
4. Stratified Two Stage Sampling

(2)Sample Selection
1. Equal Probabilities Sampling
2. Unequal Probabilities Sampling

(3)Type of Estimator
1. Median
2. Mean
3. Variance
4. Relative Standard Error

(4)Imputation techniques to be used
   Missing observations will be imputed using following methods
1. Mean substitution
2. Mean of the neighboring Unit
3. Zero Imputation

4.   OBJECTIVE AND PROBLEM STATEMENT

Statistical computing is a tool in the hand of agricultural research workers. While they understand the use of statistics and computers, they cannot be expected to take on the role of statisticians and computer professionals. If one can integrate statistics with computers and provide them with a means of processing their data, they can achieve their objectives with

efficiency and reliability. Web enabled software for analysing survey data will help in achieving this objectives.To develop web enabled software for survey data analysis.
1. To test and validate the software with real survey data.
2. To use some advanced techniques.
3. Emerging new Sampling Techniques.

5. EXPERIMENTAL DATA ANALYSIS

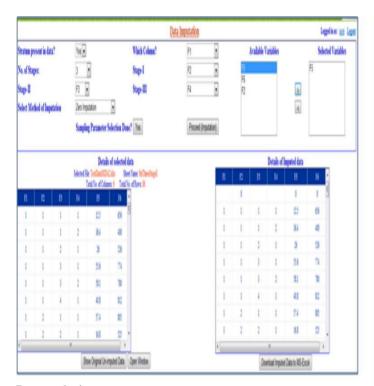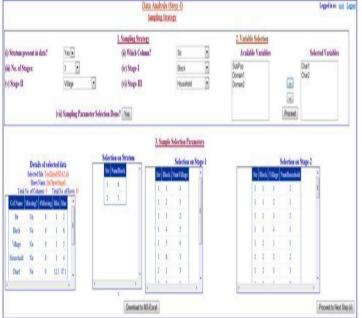**7. RESULTS**   Data Imputation

Data analysis

Data Analysis Results

DATA SCRUTINY & EDITING

8. CONCLUSION

Online Agriculture sampling is designed to automate the functionality of the analysis process of the various survey data that has been done on various states and districts and villeges.etc

1. The main advantage of Online agriculture sampling is that, user can operate a single survey data for more than one estimator at a time.

2. ONLINE AGRICULTURE SAMPLING is fast, accurate and efficient software that provide satisfaction to its users.
3. ONLINE AGRICULTURE SAMPLING can import /export data files from different data sources. Like (MS excess, excel, text file).
4. All the generated reports after the analysis can be saved for future use in any format.
5. The researcher will get a better and more standardized product so he will be able to get the results in significantly less time. It will facilitate the use of developed software to real survey data available in the country.

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