

# > Online Training on SPSS for Agricultural Statistics.

STATISTICS FOR AGRICULTURAL OFFICERS



# But HOW?

## Turn insights into action

Agriculture is a major contributor to all economies touching not only the lives of people who are employed in this sector, but also the rest of the population whose nutritional needs as well as food security depend on it. There is however a lot of uncertainty inherent in agriculture, arising out of a host of factors ranging from climate change and weather patterns to fluctuating demand for crops and the input cost of fertilizers. Key stakeholders of this sector including scientists, policy makers and officers need therefore to adapt precisely and rapidly to these changes in order to ensure the well-being of the economy and the population. Statistical sciences can play a critical role in addressing this need by allowing agricultural data to be scientifically analyzed.

Agricultural statistics is the science of analyzing and interpreting agricultural data in order to locate association by test of hypotheses while taking into account the variability inherent in agriculture. It provides an objective and formal framework for communicating findings and evidences to decision makers and scientists involved in overseeing the agricultural economy and practices.

## Do More With Less

SPSS Licenses are expensive, and as much as possible they should be put to use for analytical work: for project reports, data analysis and research. Yet, to first pick up the analysis skills, it becomes inevitable to spend more time on the software learning it, than is spent actually getting productive work out of it. This makes it very difficult for administrators to allocate adequate training budget and facilities to a large body of agricultural officers and scientists. The simulated environment of the SPSS Online Training course, along with statistical concepts as well as guidelines on interpreting results, makes users adept at using SPSS. So that when they access SPSS they use it for producing results, not trying to learn it. This of course helps the organization manage a bigger work load with an optimal number of licenses.

## Free Up Resources with Asynchronous Learning

In any organization involved in analysis of data, time and space are two of the most valuable resources that need to be put to the best productive use. This includes utilizing them for delivery of necessary analysis, research and reports, rather than for learning. SPSS, when it needs to be learnt as an added skill or as a part of the repertoire of tools that an agriculture officer and scientist must acquire, is best delivered in an asynchronous mode over the web, so that it does not consume the vital resources of time and space.

## Standardize the Training Delivery

Teaching a subject like data analysis with SPSS to agricultural officers and scientists, to whom it needs to be taught as a added skill for improving productivity rather than as a core responsibility, sometimes faces a challenge when it comes to managing the need for adequate coverage while avoiding too much of technicality. And it is often left to the individual trainer to strike the right balance between these two necessities. The problem becomes further compounded as users continuously rotate through the department and when they are geographically dispersed as well. The SPSS online training ensures that all officers undergo the same training wherever they are and whenever they join the department.



# WHAT'S in the training



## Specific to the Agricultural Sector

This training is meant for agricultural officers and scientists. Users who will need to learn on how to apply statistics and SPSS to agricultural problems, rather than attempt to become statisticians or data scientists. The training therefore, is delivered with agricultural case studies, to give the learners a grasp of the practical usage of these techniques.

## Statistical Concepts

Trying to analyze data in SPSS without understanding the statistical concepts that underlie the techniques is not advisable. For it can often lead the researcher to either apply an incorrect technique or draw the wrong conclusions. Each section in the training therefore first explains a statistical concept before exposing the learner to the running of the analysis itself.

## Simulated User Interface

A primary objective of the training is to give the learner a hands-on feel of the environment that he or she would encounter while working on SPSS itself. The training does provide a simulated environment, guiding the learner step by step through the analysis process, and preparing the users to become completely familiar with the workings of the actual software itself.

## Interpretation of Results

Running an analysis on the data is just the beginning. Ultimately the user has to draw conclusions from the results SPSS produces. The training explains the SPSS output, with a variety of examples, guiding the learner through the findings the results show up. The examples are created using public domain agricultural data, so that the learners can repeat it themselves.





# What's in the Content?

## Preprocessing

- Data Measurement
- Data Types
- Data Preparation
- Visual Binning
- Data Selection

## Data Exploration

- Frequency Distribution
- Central Tendency
- Measure of Position
- Measure of Dispersion
- Measure of Distribution

## Visual Exploration

- Univariate Graphs
- Bivariate Graphs
- Multivariate Graphs

## Data Reports

- Olap Cubes
- Case Summaries

## Tabular Representation of Data

- Comparing Categories
- Comparing Multiple Variables
- Displaying Statistics
- Row-column and Sub Totals
- Presentation and Appearance of Tables

## Inference

- Categorical Data
  - Chisquare Test
  - One Sample
- Scale Data
  - Two Sample (Independent Sample)
  - Paired Sample
  - ANOVA

## Relationship Between Variables

- Correlation
  - Pearson
- Regression
  - Simple Linear Regression
  - Multiple Linear Regression

## Design of Experiments

- Completely Randomised Design (CRD)
- Randomised Block Design (RBD)
- Latin Square Design (LSD)

## Sampling Techniques

- Simple Random Sampling
- Stratified Sampling

## Classification

- Hierarchical Clustering
- K-means Clustering

## Time Series Analysis

- Defining Date Variable
- Finding Patterns of the Series
- Model Building and Validation
- Forecasting