

## IBM SPSS STATISTICS: AN OVERVIEW

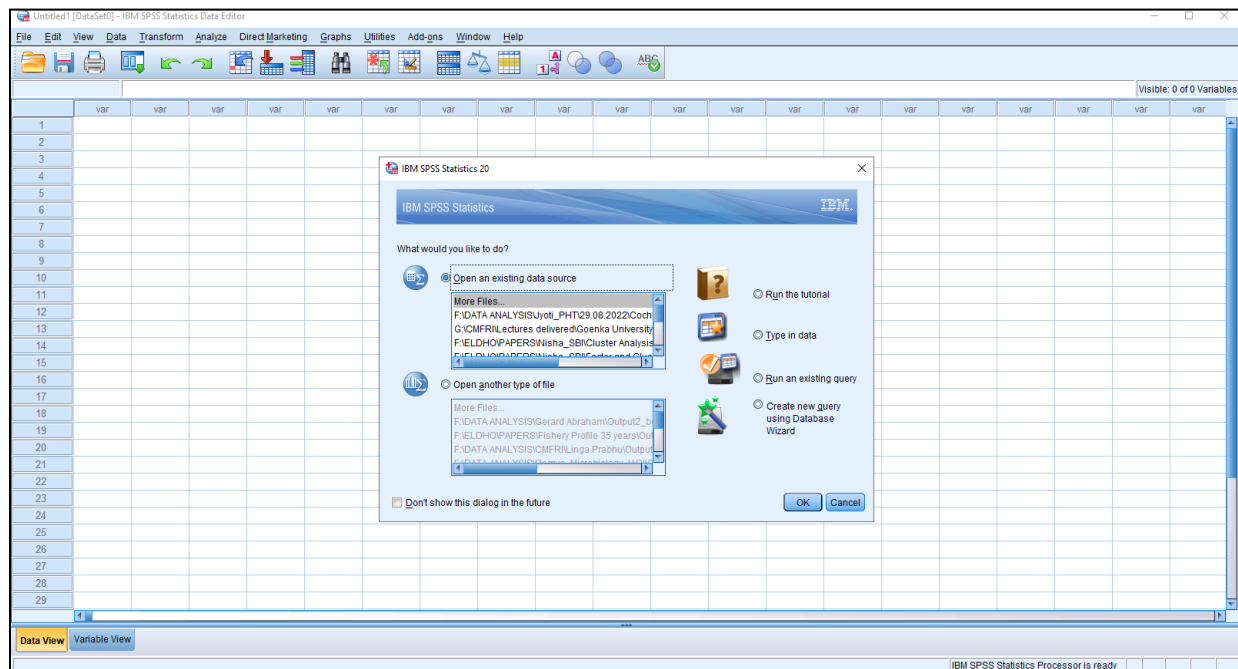
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Statistical Package for the Social Sciences (SPSS), is a comprehensive system for data analysis. The SPSS package includes a number of software programs for data entry, management, statistical analysis, and presentation. SPSS combines complex data and file administration with statistical analysis and reporting tasks. SPSS can produce tabular reports, charts and maps of distributions and trends, descriptive statistics, and sophisticated statistical analyses. IBM® SPSS® Statistics is a potent statistical software platform. It provides a user-friendly interface and a comprehensive set of capabilities that enable to swiftly get useful insights from your data. High accuracy and high-quality decision-making are supported by sophisticated statistical techniques. The whole analytics lifecycle—from data preparation and management to analysis and reporting—is covered.



IBM SPSS Statistics makes statistical analysis convenient for seasoned users and approachable for casual users. A straightforward and effective spreadsheet-like interface for entering data and navigating the working data file is provided by the data editor. Select the proper IBM SPSS Statistics icon to launch IBM SPSS Statistics in the Windows environment. In IBM SPSS Statistics, there are numerous distinct kinds of windows.

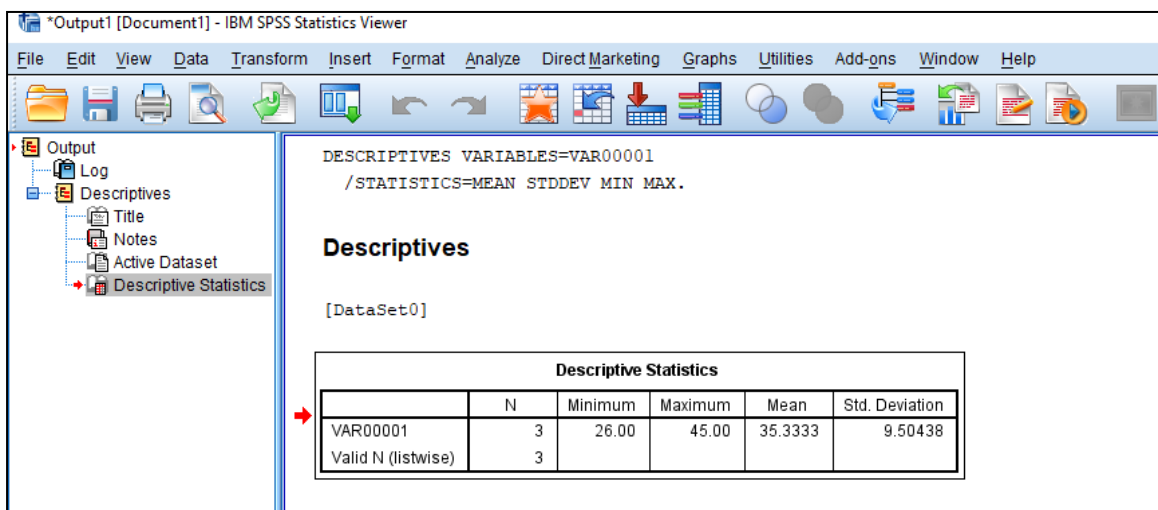
**Data Editor:** The data file's contents are shown in this window. Both fresh and modified data files are available. When one begins an SPSS session, the Data Editor window pops open immediately. One can only have one open data file at once. Two views of the data are provided by this editor viz., *Data view* (for displaying the actual data values or defined value labels) and *Variable view* (for displaying variable definition information, including defined variable and value labels, data type etc.)

	VAR00001	var	var	var	var	var	var	var	var	var	var
1	45.00										
2	26.00										
3	35.00										
4											
5											
6											

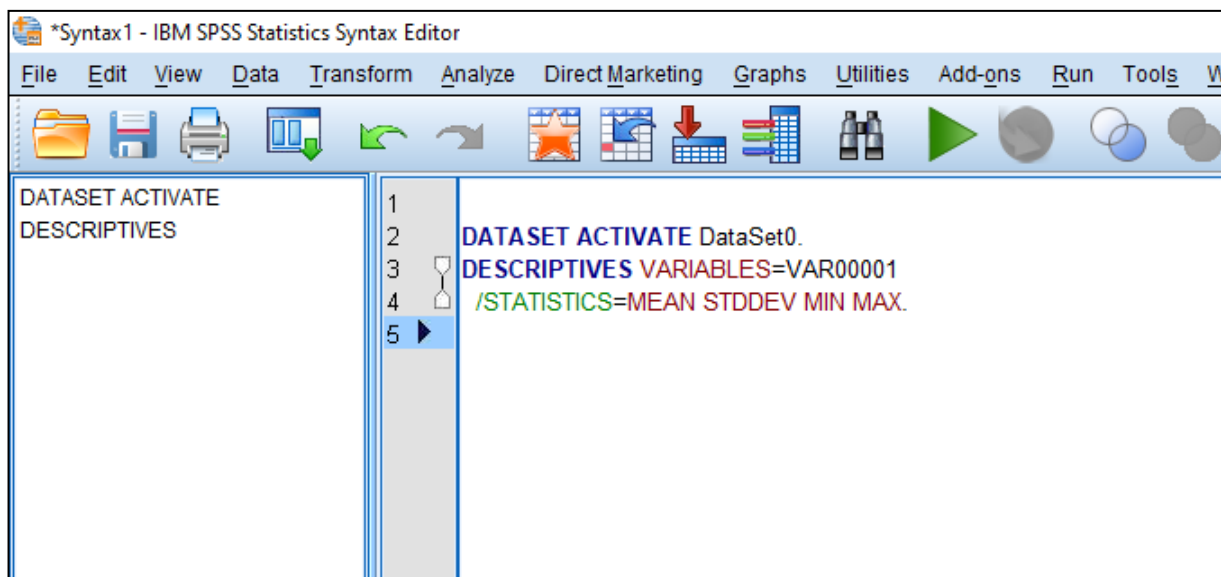
With the Data Editor, it is possible to update, cut, copy, and paste data values, add and remove cases, add and delete variables, and change the order of variables in the Data view.

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	VAR00001	Numeric	8	2		None	None	8	Right	Unknown	Input
2											
3											
4											
5											
6											
7											
8											
9											
10											

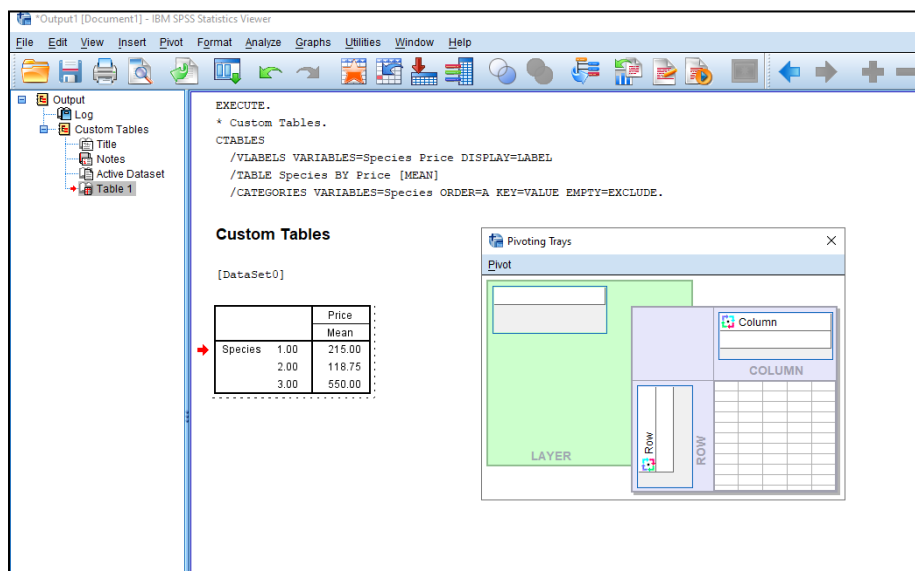
**Viewer:** The Viewer shows all tables, charts, and statistical results. It is possible to edit and store the result for later use. When you execute a process that produces output for the first time, a Viewer window automatically pops up.



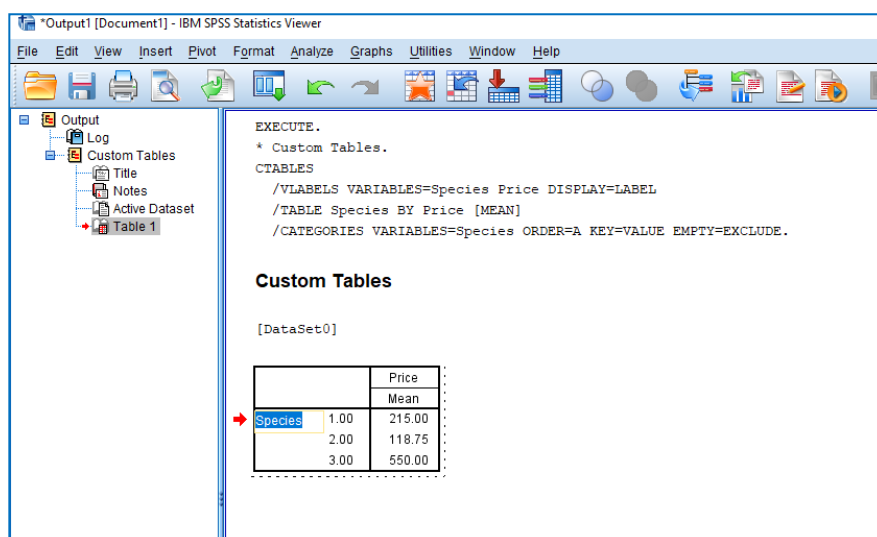
**Syntax Editor.** The options from the dialogue box can be pasted into a syntax window, where they show up as command syntax. The command syntax can then be modified to use IBM SPSS Statistics's unique capabilities that aren't accessible through dialogue boxes. These instructions can be stored in a file and used in further IBM SPSS Statistics sessions.



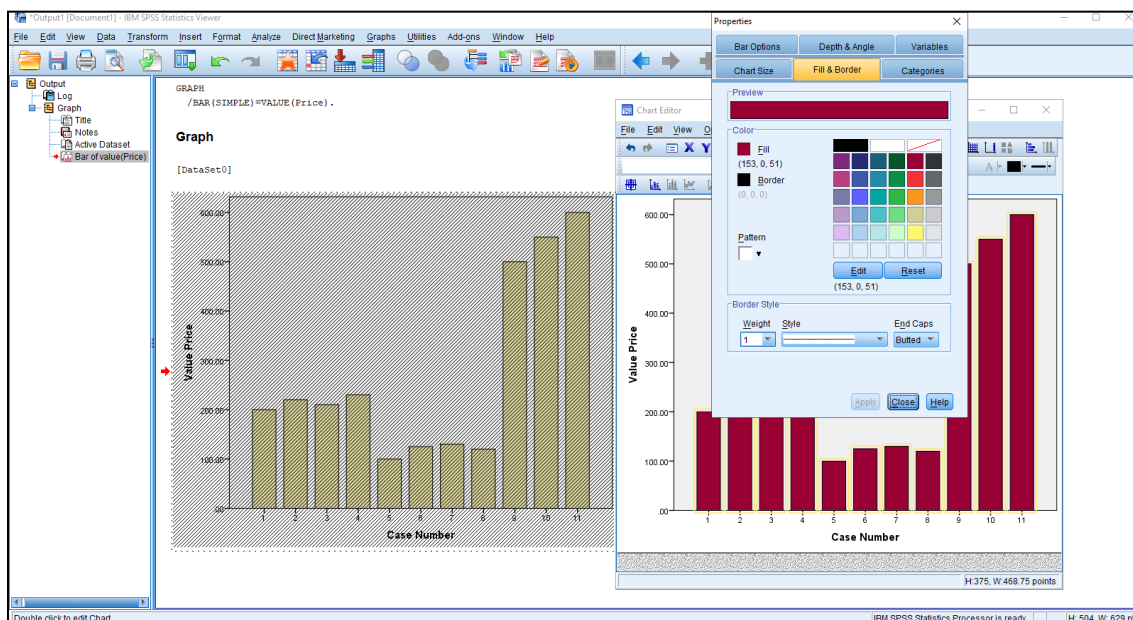
**Pivot Table Editor:** The output is presented in pivot tables that can be altered in a variety of ways using this editor. Text can be changed, data can be moved between rows and columns, multidimensional tables can be made, and results can be hidden and shown only to certain people.



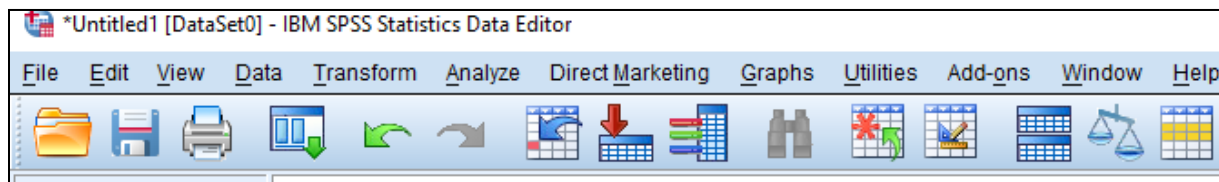
**Text Output Editor:** The Text Output Editor allows you to edit text output that isn't shown in pivot tables. Editing the output allows for changing the font's properties (type, colour, size, style).



**Chart Editor.** Chart windows allow for the modification of high-resolution charts and graphs. One can alter the fonts, sizes, and colours, among other things.

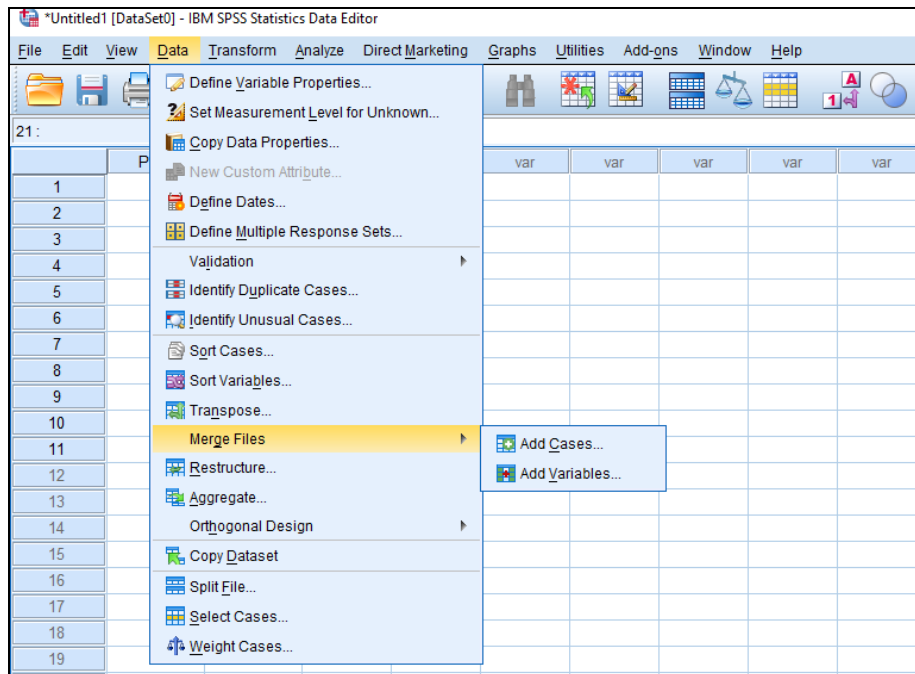


With IBM SPSS Statistics, many of the tasks that need to be completed begin with menu selections. Every window has an own menu bar with options tailored to that window type. The various procedures under IBM SPSS Statistics are

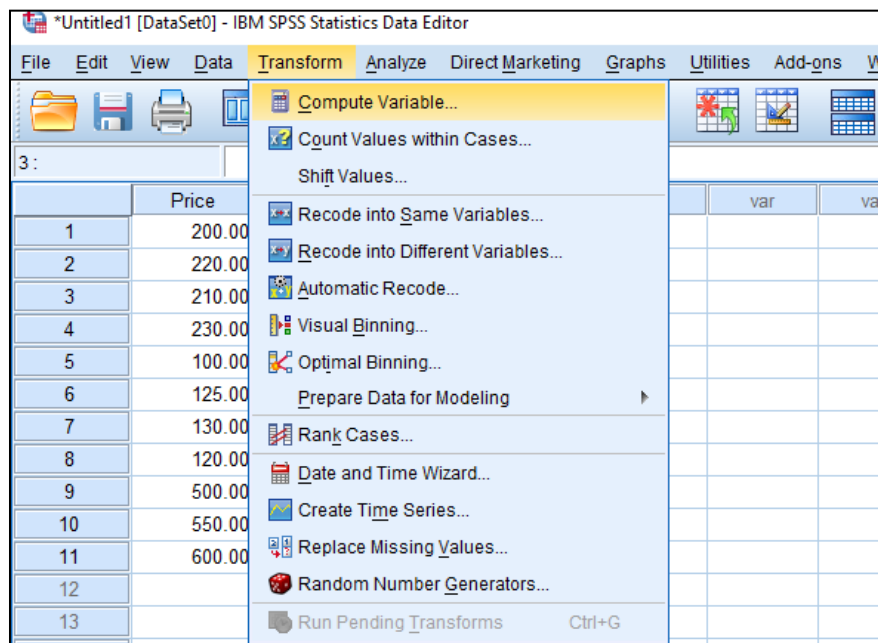


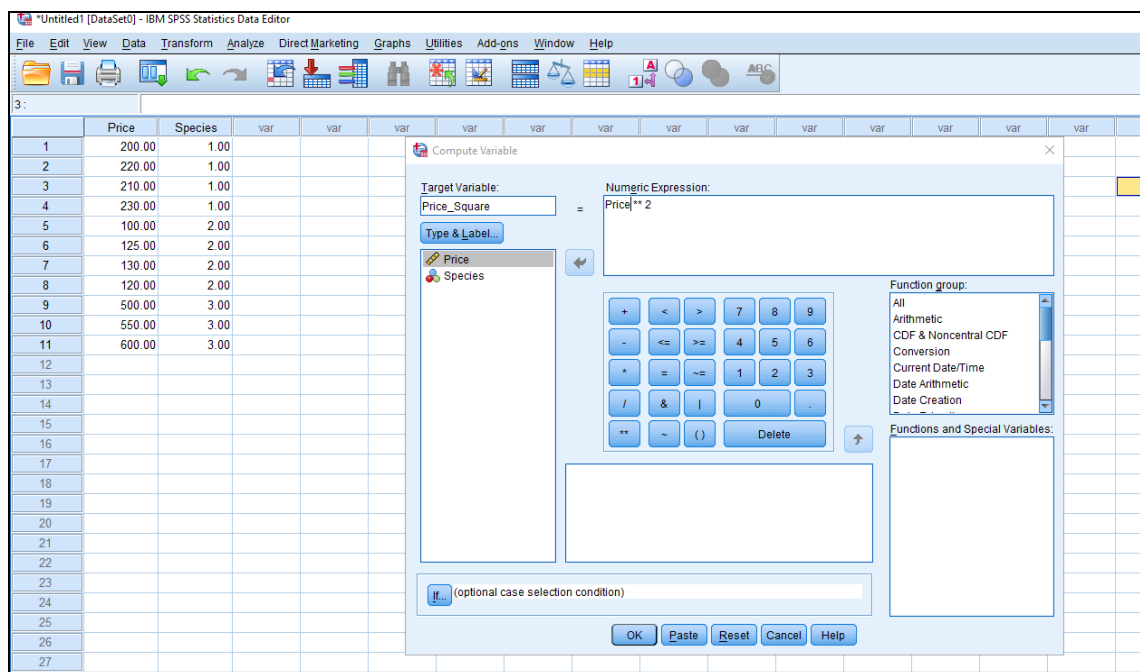
Almost all menu choices bring up dialogue boxes. Dialogue boxes can be used to choose variables and analysis choices. Not all options can fit in a single dialogue box because most procedures offer a significant deal of versatility. Typically, the main dialogue box has the bare minimum of data needed to execute a procedure. Sub dialog boxes contain further specifications. There are more sub options for each of the aforementioned options. We just move the cursor to a specific option and hit, causing a drop-down menu to emerge, revealing the available programmes. Place the cursor anywhere outside the selection and press the left button to dismiss a drop-down menu.

## Advanced Analytical Tools for Social Science Research



A dialogue box will open when the option with three dots after the option phrase (...) on a drop-down menu, such as the **Define Variable Properties...** option under Data, is selected.





Select the Cancel button on the dialogue box to close it. A drop-down menu will expand to the right when an option phrase is followed by an arrowhead pointing to the right. If neither of these symbols is present, there are no more drop-down selections to choose from. Most dialogue windows include five conventional command pushbuttons.

**OK.** Executes the process. To start the procedure after choosing the variables and additional specifications, click OK.

**Paste.** Uses the choices made in the dialogue box to generate command syntax, which is then pasted into a syntax window.

**Reset.** Resets all dialogue box specifications and deselects all variables in the selected variable list.

**Cancel.** Dismisses the dialogue box after undoing any changes made to its settings since it was last opened.

**Help.** Contains details regarding the active dialogue box.

### Entering and editing data

The simplest approach to enter data into IBM SPSS Statistics is to type it straight into the Data Editor window's matrix of numbered rows and columns. Variables are represented by columns,

and cases are represented by rows. In the variable view, the variables can be defined. The name of the variable must start with a letter.

There are seven submenus in the **Transform Menu**. Some of the important functions are

**Compute:** determines values for a new or existing variable, for all cases or just those that meet a defined criterion.

**Count:** generates a variable that, for each case, counts the instances of a particular value or values in a list of variables.

**Recode into Same Variables:** assigns new values to the values of the variables that already exist or collapses existing value ranges into new values.

**Recode into Different Variables:** values of current variables are transferred to new variables, or ranges of current values are collapsed into new variables.

**Rank Cases:** creates new variables for numerical variables that contain ranks, typical scores, or comparable ranking scores.

**Create Time Series:** a function that produces a time-series variable from an existing series, such as lagged or leading values, differences, or cumulative sums. The Trends option contains this command.

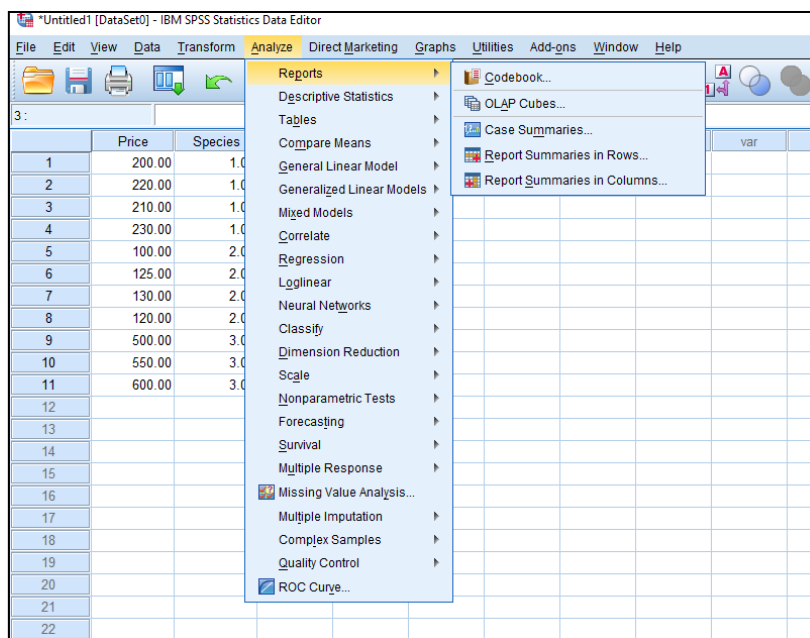
**Replace Missing Values:** uses one of several time-series functions or the series mean to replace missing values with non-missing values.

### Statistical Procedures:

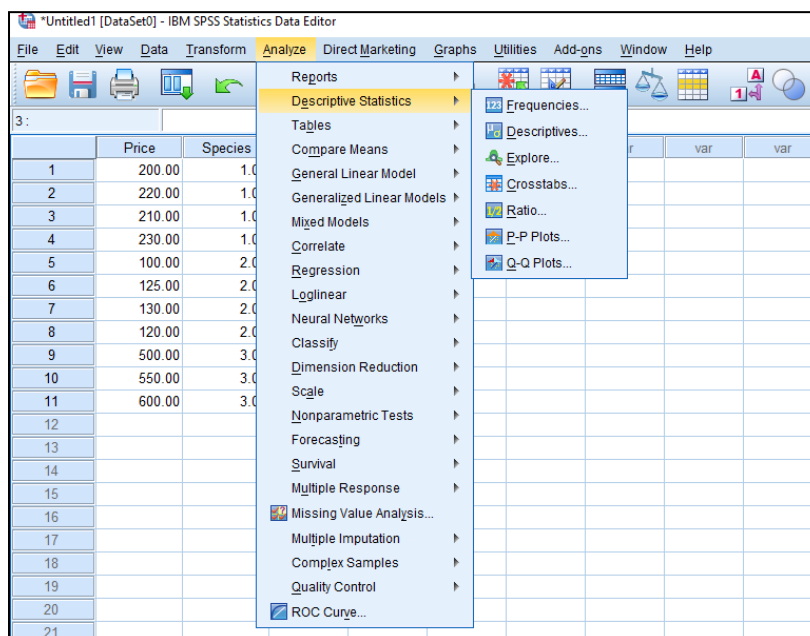
We are now prepared to analyse the data set after entering it in Data Editor or reading a data file. There are the following sub choices under the Analyze option:

**Reports:** Totals, means, and other univariate statistics are computed for continuous summary variables within categories of one or more categorical grouping variables using the OLAP (Online Analytical Processing) cubes process. Each category of each grouping variable is given its own layer in the table.





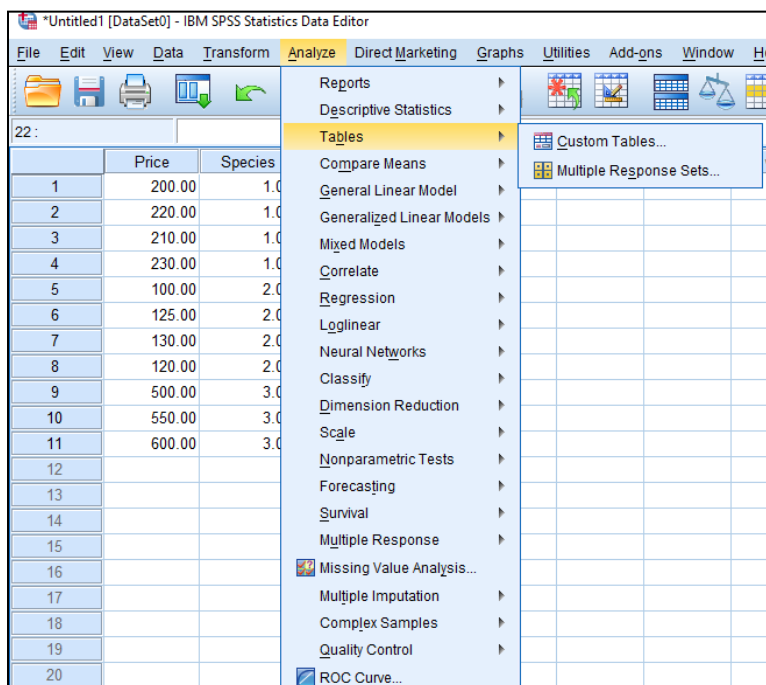
**Descriptive Statistics:** Techniques for summarising data with statistics, charts, and reports are offered in this submenu. Following are the numerous sub-sub menus under this:



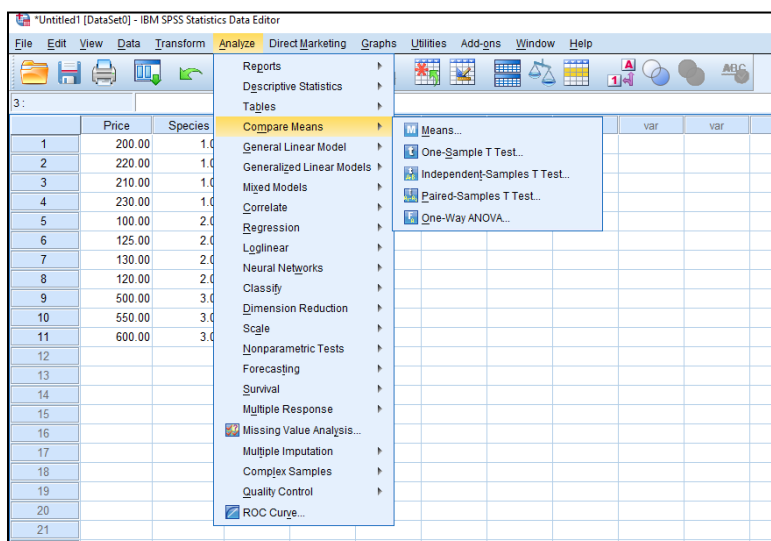
**Tables:** This sub menu gives us the ability to present and discuss results in any tabular format, including elaborate stub-and-banner tables, contingency tables, and display listings of survey data. In order to generate reports on surveys, customer satisfaction, and polling results, this add-

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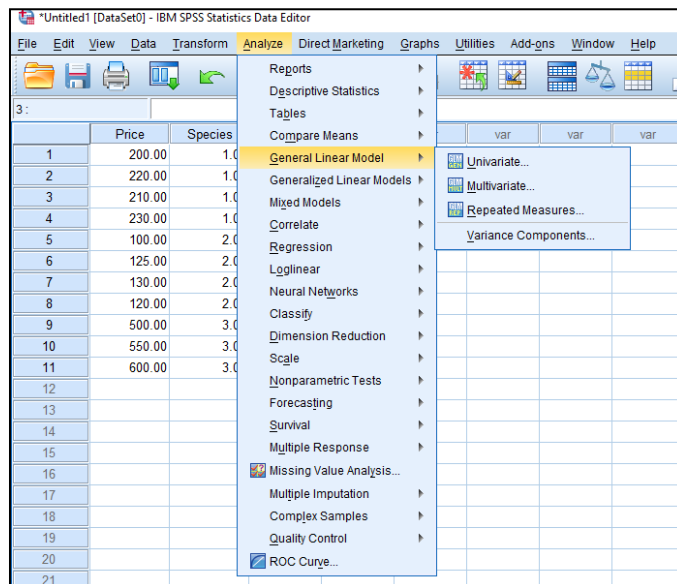
on module has specific features for survey analysis, including layering, nesting, stacking, and multiple response analysis.



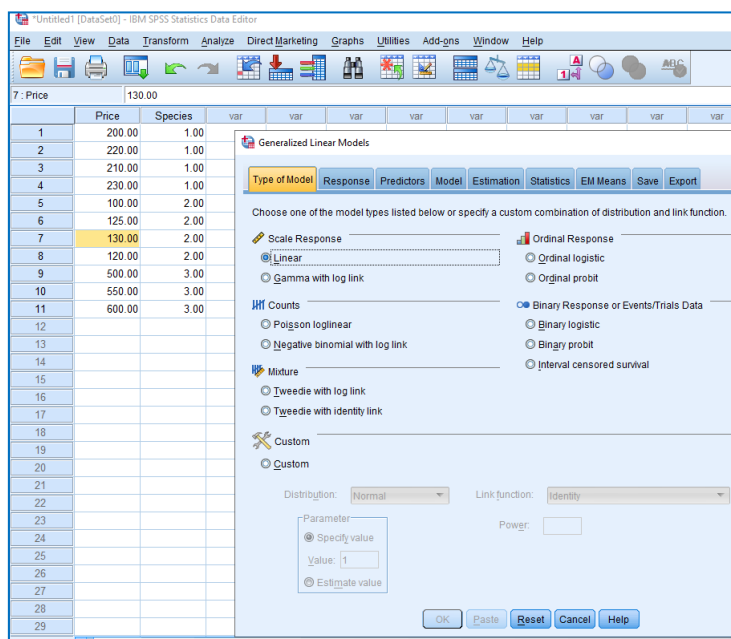
**Compare Means:** Techniques for comparing two or more means for both unrelated and related samples are provided in this submenu.



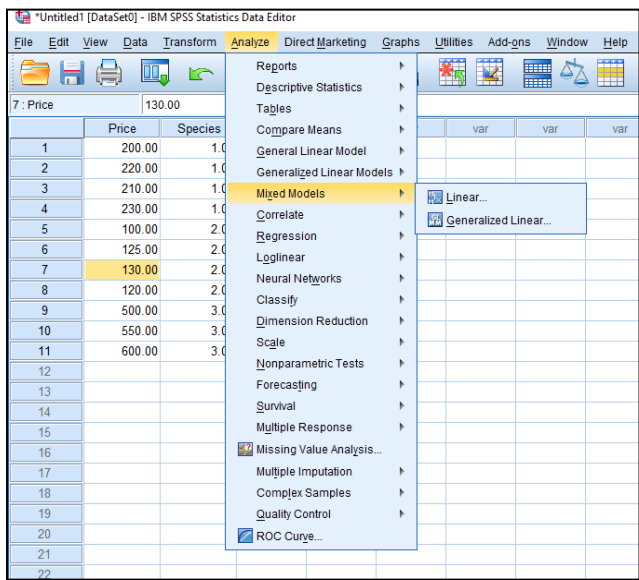
**General Linear Model:** Techniques for analysing both univariate and multivariate Analysis-of-Variance models, including repeated measures, are available in this submenu. The Univariate sub-option can be used to analyse experimental designs such as Latin square designs, completely random designs, randomised block designs, designs for factorial studies, etc.



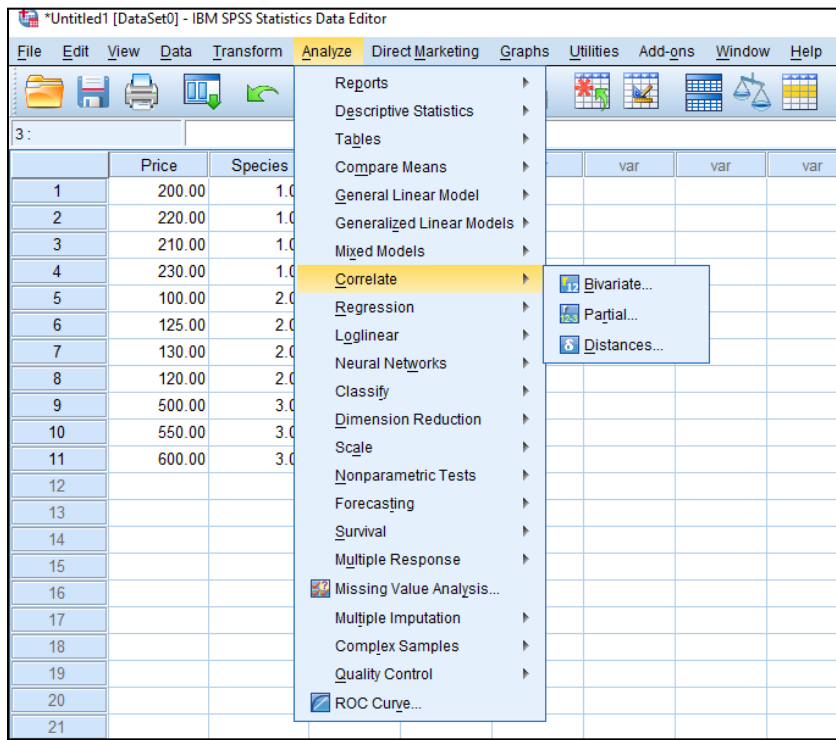
**Generalized Linear Models:** This submenu has option for running generalized model-based analysis



**Mixed Models:** This sub menu provides option for mixed model analysis under general linear model/generalized linear models

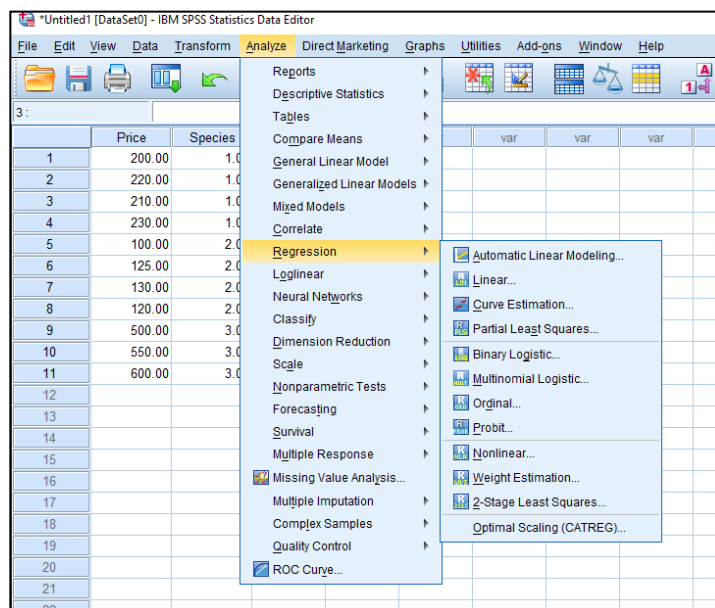


**Correlate:** For two or more variables measured at the interval level, this submenu offers measures of association.

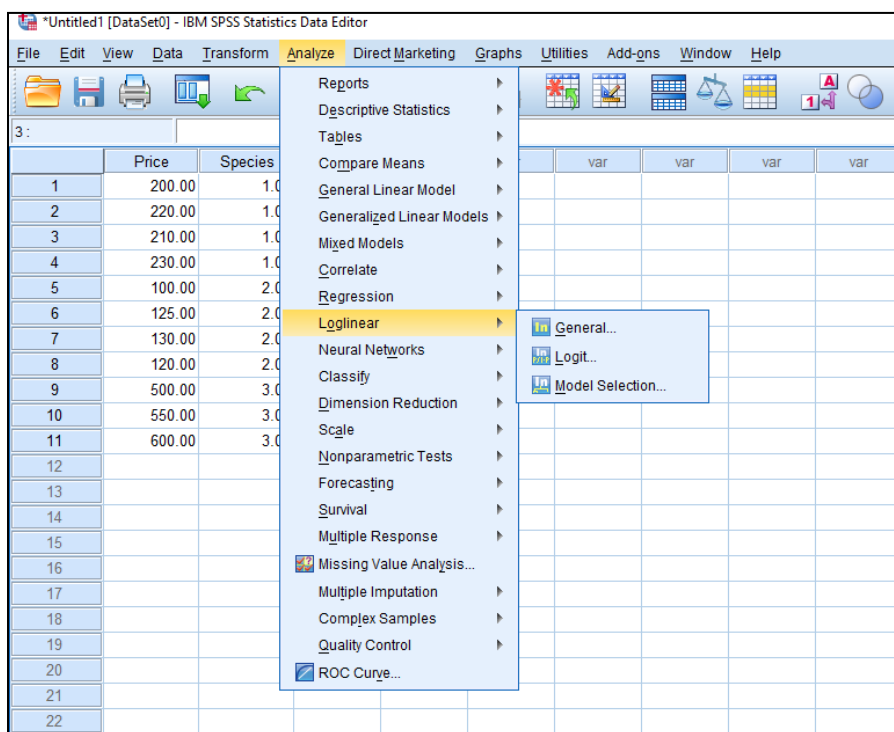


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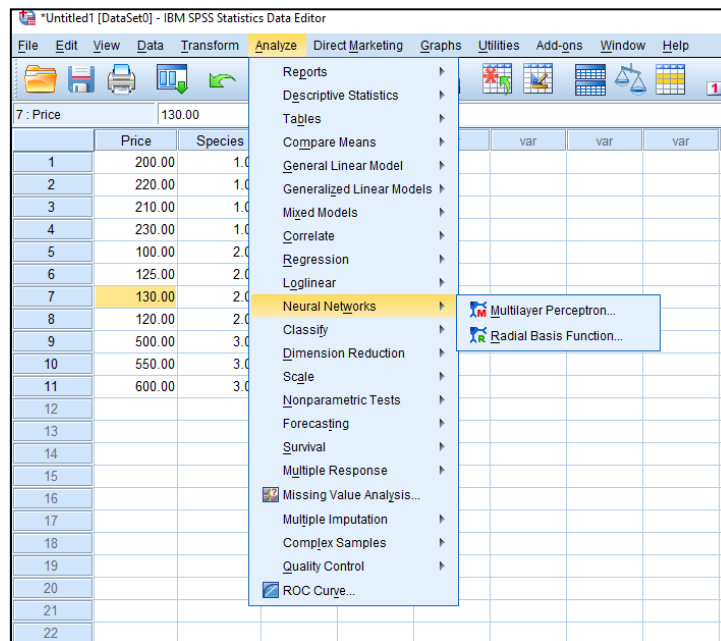
**Regression:** Linear, logistic, non-linear, weighted, and two-stage least-squares regression are just a few of the regression methods available in this submenu.



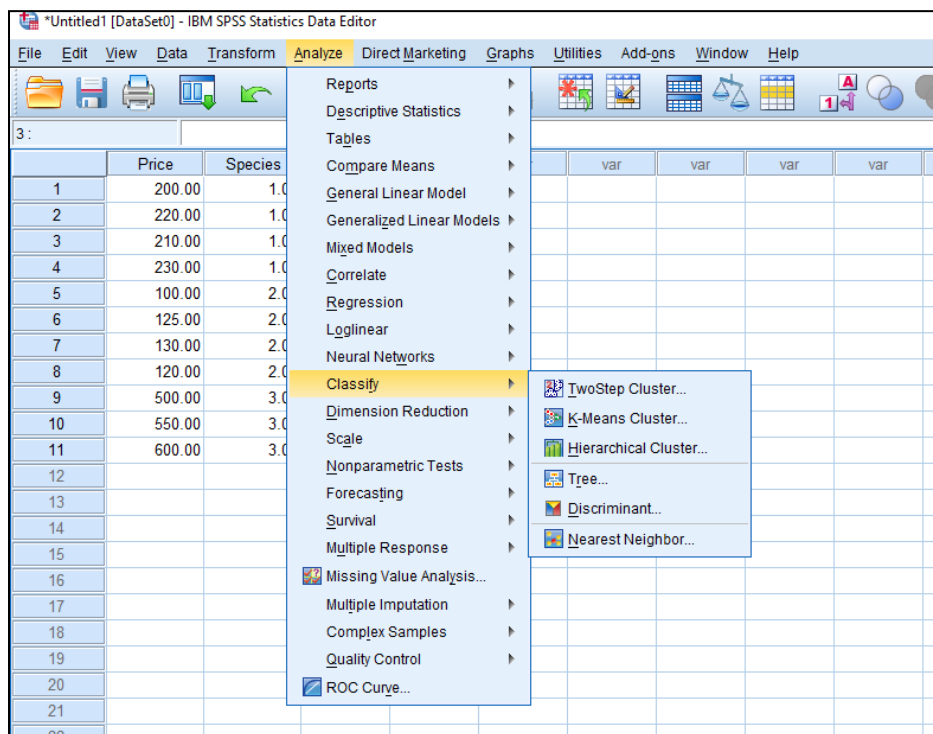
**Loglinear:** Logit and general log-linear analysis are available in the submenu.



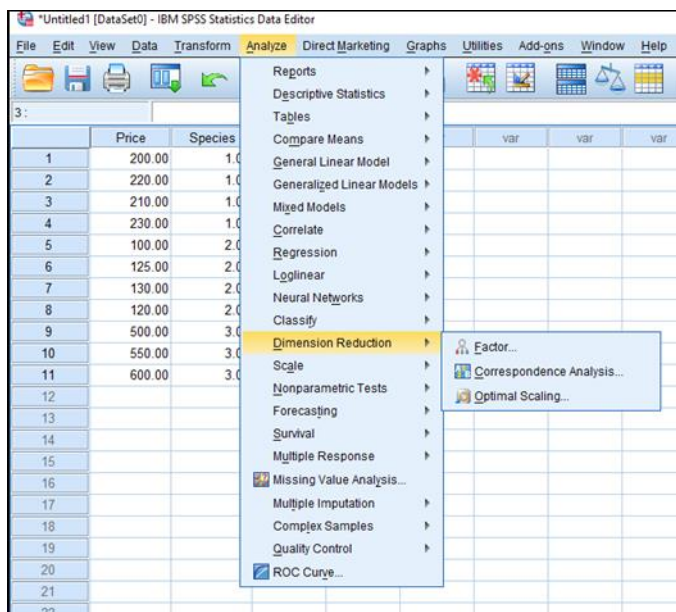
**Neural Networks:** Artificial Neural network based analysis is provided in this submenu



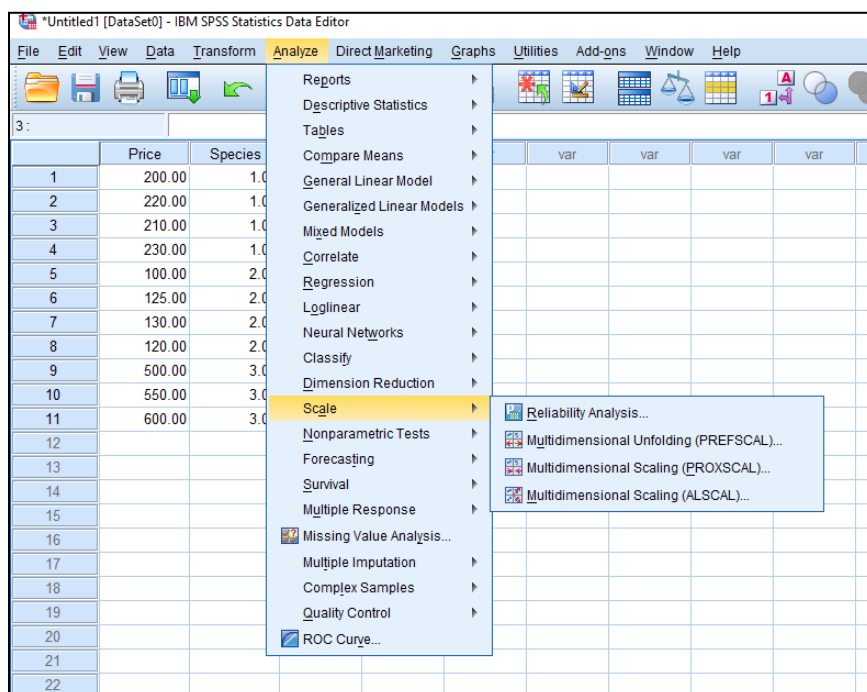
**Classify:** Discriminant and cluster analysis are available in this submenu.



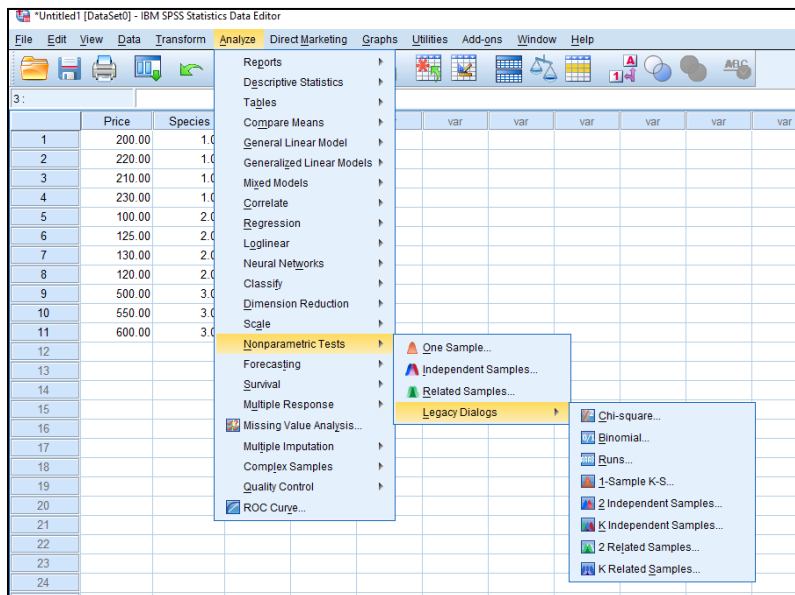
**Data Reduction:** Factor analysis, correspondence analysis, and optimal scaling are offered in this submenu.



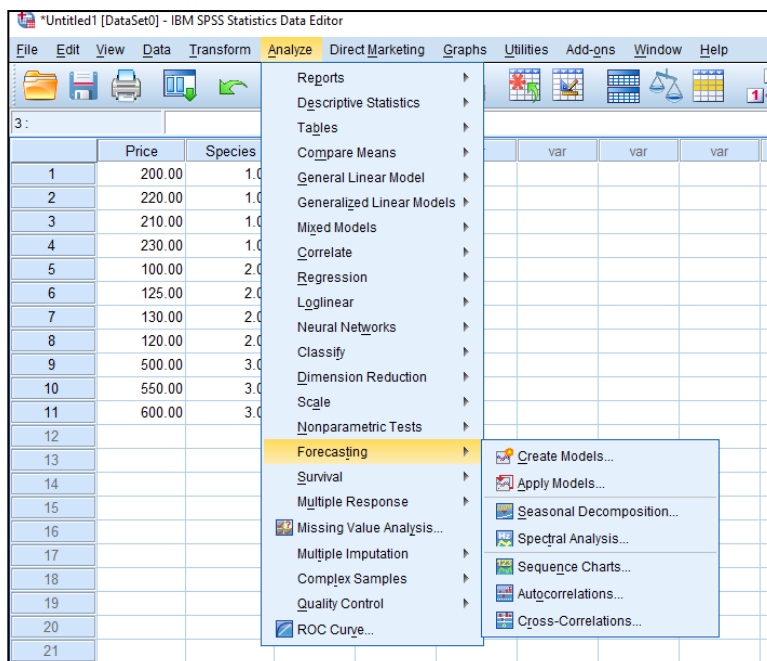
**Scale:** Reliability analysis and multidimensional scaling are available in this submenu.



**Nonparametric Tests:** Nonparametric tests are available in this subcategory for one sample, or for two and more related or independent samples.

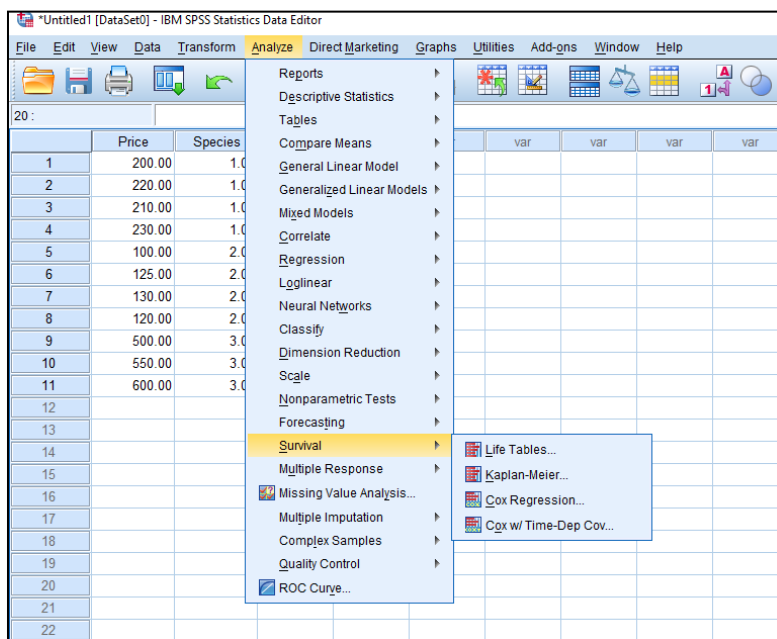


**Forecasting:** Exponential smoothing, auto correlated regression, ARIMA, seasonal decomposition, spectral analysis, and other related methods are available in this submenu.

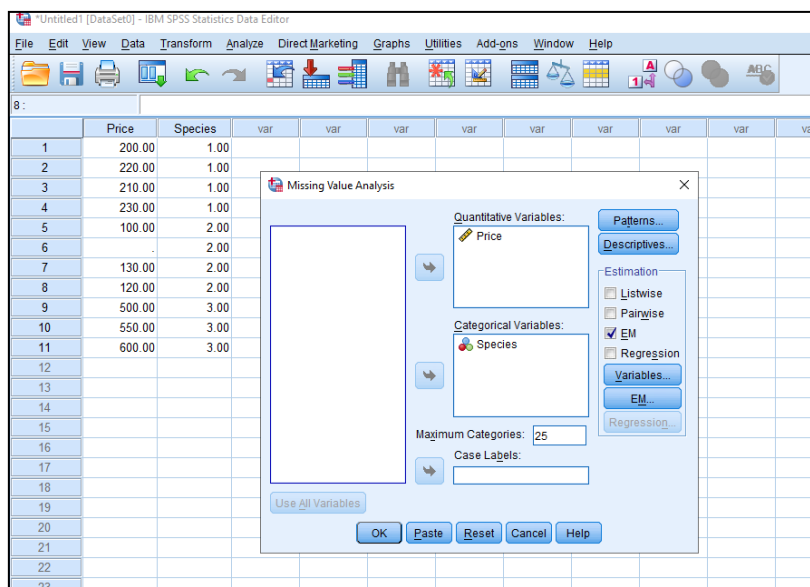




**Survival:** This submenu provides options for repairing life tables and survival analysis tools like Kaplan-Meier statistics and Cox regression etc.



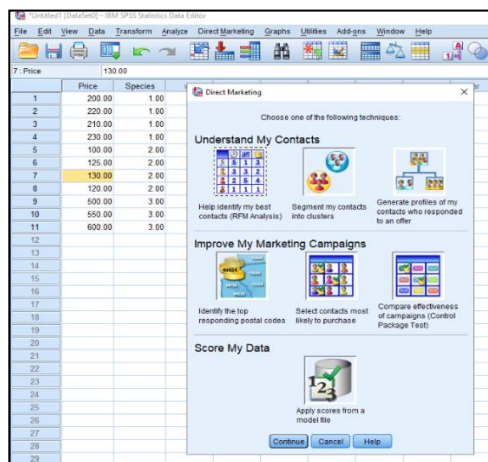
**Missing Value Analysis:** This submenu provides options for estimating the missing values through various approaches including EM algorithm.



Apart from the above discussed submenus, there are submenus for **Multiple response**, **Multiple imputations**, **Complex samples**, **Quality Control** and preparing **ROC curve**.

## Direct Marketing Menu

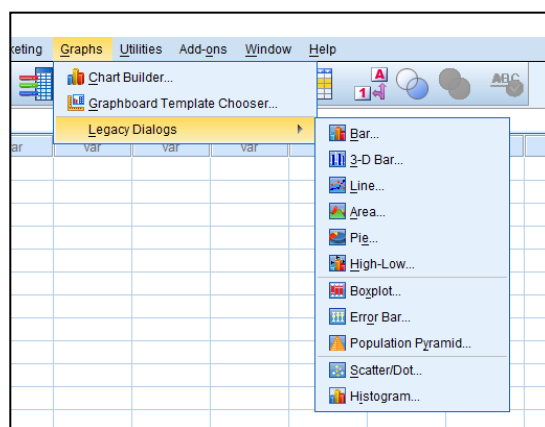
To get better results, one can use complex analysis with IBM® SPSS® Direct Marketing. Aside from RFM analysis, which stands for recency, frequency, and monetary value analysis, it offers provisions for cluster analysis, prospect profiling, postal code analysis, propensity scoring, and control package testing.



## Graphs Menu

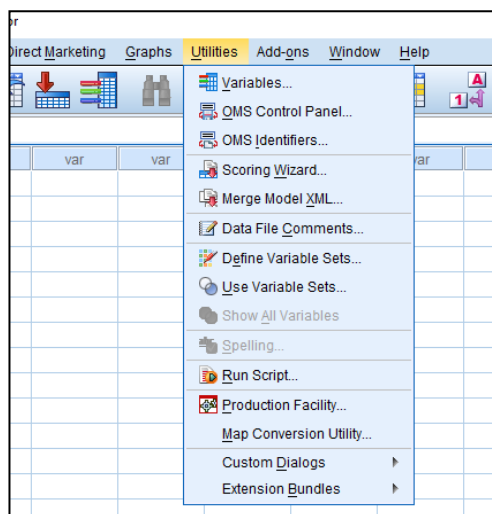
The term "graph" is where the word "graphics" comes from. X and Y axes are found in graphs. Similar to how something developed in digital form is displayed on a digital screen, this screen features x and y axes. Consequently, the output from any digital equipment is referred to as graphics. In other terms, graphics refers to an image that a computer creates.

IBM® SPSS® Statistics Graphics menu provide provision for drawing a wide variety of graphs with different dimensions which include **bar chart, line chart, area chart, pie hart, pareto chart, high-low chart, box plot, error bar, scatter/dot plot, population pyramid etc.**



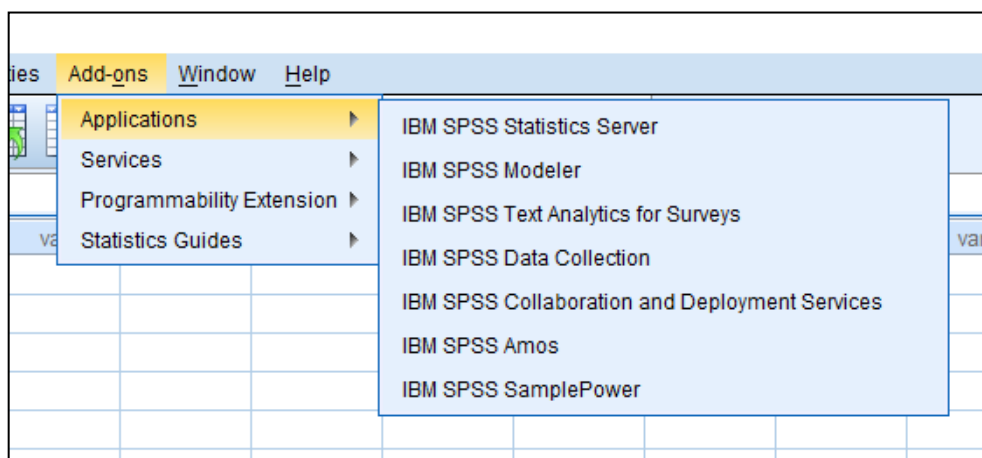
## Utilities Menu

This menu provides option to get variable information, output management system (OMS) control panel, OMS identifiers, define variable set etc.



## Add-ons

This menu give some additional IBM SPSS customized applications like IBM SPSS Statistics Server, IBM SPSS Modeller, IBM SPSS Text Analytics for Surveys, IBM SPSS Data Collection, IBM SPSS collaboration and Deployment Services, IBM SPSS Amos, IBM SPSS SamplePower. Besides, the services of IBM SPSS including training and consultancy details are also provided along with a link to online statistics guide.



## References

- <https://www.ibm.com/in-en/products/spss-statistics>
- [https://www.ibm.com/mysupport/s/topic/0TO500000001yjtGAA/spssstatistics?language=en\\_US](https://www.ibm.com/mysupport/s/topic/0TO500000001yjtGAA/spssstatistics?language=en_US)

