

# What's new in IBM SPSS Statistics 28

## Highlights

- New statistical procedures such as meta-analysis to uncover deeper insights
- Procedure enhancements for Power Analysis and Ratio Statistics
- Addition of Relationship Maps for data visualization
- Everyday usability improvements including Statistics Workbook, search, and table side-pane editor

IBM® SPSS® Statistics enables organizations to gather rich insights from data with a powerful set of tools to validate assumptions, analyze past performance and forecast trends. To ensure that the most advanced techniques are available to a broader group of analysts and business users, enhancements have been made to the features and capabilities of the IBM SPSS Statistics portfolio.

IBM SPSS Statistics 28 introduces a new statistical procedure (meta-analysis), enhancements to existing procedures such as Power Analysis for increased research methods, data visualizations to understand connections, and functional enhancements designed to improve everyday usability.

The perpetual editions of SPSS Statistics 28—[Base](#), [Standard](#), [Professional](#) and [Premium](#)—deliver the long-term software access required for analytics groups. These editions group essential features, functionality, and usage requirements to offer a convenient way to acquire the capabilities you need. For individuals and organizations that require pay-as-you-go software usage, [SPSS Statistics Subscription](#) and its optional add-ons provide the desired flexibility. The latest features and functionality are available in both IBM SPSS Statistics Subscription and IBM SPSS Statistics 28.

# New statistics

## Meta-analysis

1. Meta-analysis of continuous outcomes:  
Raw data, precalculated effect size data
2. Meta-analysis of binary outcomes:  
Raw data, precalculated effect size data
3. Meta-regression

Meta-analysis constitutes a scientific process to synthesize and combine results across different research studies. It can provide systematic reviews on the magnitude of the effect sizes as well as the causes of potential variation. The methods of meta-analysis have also been expanded to the heterogeneity tests, publication bias assessment, evaluation of small study effects, and meta-regression. Various charts and plots available in meta-analysis are broadly used in data visualization, result summary and bias illustration.

## Procedure enhancements

### Power Analysis

IBM SPSS Statistics 28 includes an enhancement to the Power Analysis procedures to create a graphical representation of results. Power analysis plays a pivotal role in study plan, design, and conduction. The calculation of power is usually before any sample data have been collected, except possibly from a small pilot study. The precise estimation of the power may tell investigators how likely it is that a statistically significant difference will be detected based on a finite sample size under a true alternative hypothesis.

All of the Power Analysis procedures now allow the user to enter a series of power values rather than a single one. These can take the form of separate (point) values, a series of values incremented by a specific amount, or a combination of both. This enhancement now results in a table of power values and, optionally, an accompanying power curve graph.

### Ratio Statistics

The Ratio Statistics procedure in IBM SPSS Statistics has long been a convenient option for obtaining descriptive statistics on ratios of two variables, as well as the go-to procedure for property assessment professionals, whose work involves working with ratios of property assessment values to sales prices. In the time since the original

procedure was implemented, changes in thinking about the use of some statistics in property valuation have occurred. The Ratio Statistics procedure has been enhanced to make it more consistent with current approaches, as described in the Standard on Ratio Studies document published by the International Association of Assessing Officers.

The most important change to the procedure is the addition of the coefficient of price-related bias (PRB) and an associated confidence interval. The PRB is an index of whether assessment to price ratios are systematically higher or lower for higher-priced properties. It is calculated by regressing percentage differences in assessment ratios from the median ratio on the base 2 logarithms of value proxy measures calculated as the averages of sales prices and the ratios of assessed values to the median ratio, and gives the percentage change in assessment ratios for a 100 percent change in value. This newly available measure is selected by default in the Statistics dialog when using the graphical user interface to the procedure, which is accessed via **Analyze > Descriptive Statistics > Ratio**.

Other changes include removing the coefficient of variation based on the median ratio from the Statistics dialog options, relabeling the remaining coefficient of variation option based on the mean ratio as COV, as is common usage, and adding the option in the main Ratio Statistics dialog to include the number of cases or properties on which statistics are based in the output table, instead of only offering that in a saved output file.

### Other procedural enhancements

1. A new graphical user interface control was designed for GLM and UNIANOVA. Specifically, an additional **Compare simple main effects** checkbox was added to the **EM Means...** sub-dialog to support the specification of comparisons among the main effects nested within the levels of other factors.
2. Adjustments were made to Change Contrast in the LOGISTIC REGRESSION and COXREG dialogs:
  - a. The default reference category specification for contrast types that use reference category specifications (Indicator, Simple, and Deviation) was changed from **Last** to **First**.
  - b. The positions of the **Last** and **First** buttons were switched.
  - c. The listing of variables in the Categorical Covariates target list now includes (**last**).
3. In prior versions users were able to run a two-sided T-Test, but additional calculations were necessary to get output for a one-sided T-Test. Users often were left to reference an IBM Tech Note to get the results they required for a one-sided T-Test. Starting with V28 Beta, users will be able to run a one-sided T-Test through the dialogs.

# Data visualizations

## Relationship Maps

Relationship Maps are introduced as a new data visualization in SPSS Statistics 28 (Figure 1). Users are now able to visually inspect the relationship across multiple variables as shown by the thickness of the connections and size of the categories indicator. This function can be found in the **Graphs** dropdown menu and will reference data within the active dataset.

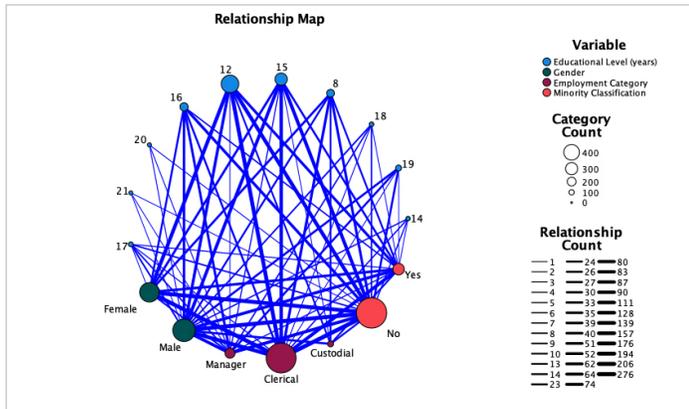


Figure 1. Relationship Maps offer a new data visualization in SPSS Statistics 28.

# Usability improvements

## Statistics Workbook

The Statistics Workbook combines multiple file types into one (Figure 2). Users are able to write syntax, create output, and edit that output all in the Workbook for an interactive way to run data analysis.

Accessing the Workbook: After the initial installation of the product, the view will be in **Classic (Syntax & Output)** mode. This can be seen in **Edit > Options > Application Mode** located at the top of the **Options** view. To switch the mode, select **Workbook** and click **OK**. There will be a warning dialog to remind users to close all open syntax and output documents before switching modes. To create a new Workbook, go to **File > New** and select **Workbook**.

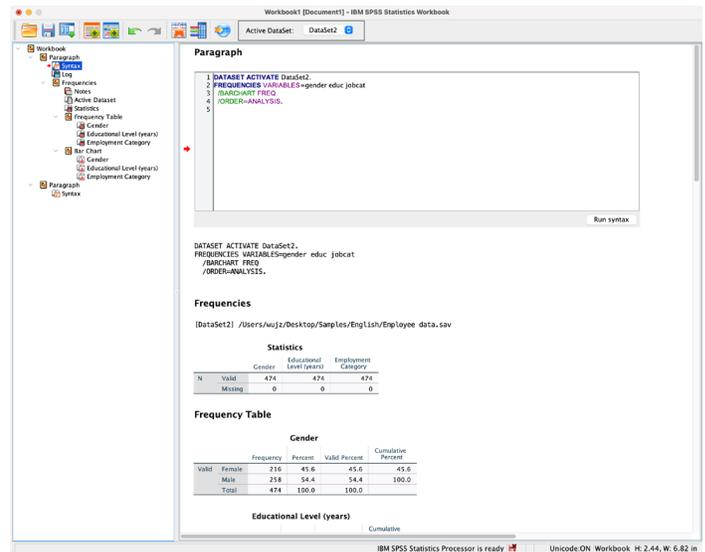


Figure 2. Statistics Workbooks combine traditional syntax and output files into a single file type.

## Search enhancements

Search functionality, first introduced in version 27, is enhanced in SPSS Statistics 28. A search icon is present in the upper right corner of the Data, Syntax and Output windows. Click the icon to enter search terms. Search results will include links to menu dialogs, help topics, case studies and syntax references (Figure 3). Clicking a search result will take you directly to the relevant procedure dialog, help topic, case study, or syntax reference topic. Deeper levels are now extracted via robust alias search terms and text from within dialogs.

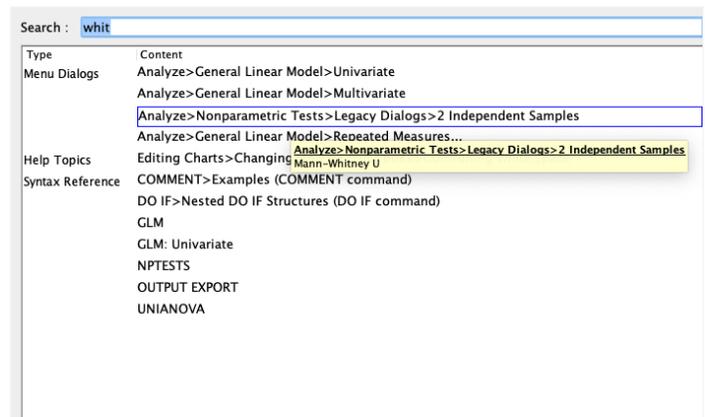
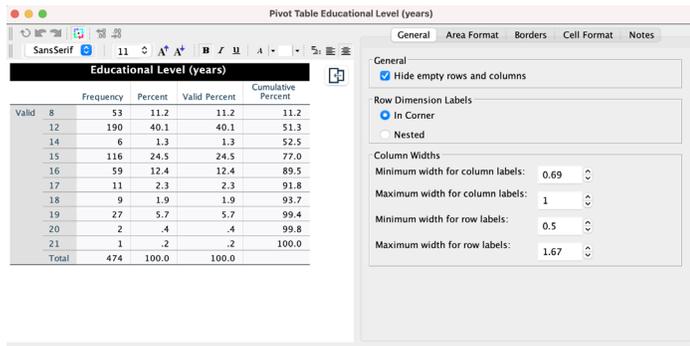


Figure 3. Search functionality is enhanced to show more granular results.

## Side-pane table editor

Table editing in version 28 now introduces a more efficient process for you to get the output you desire in your tables (*Figure 4*). When **Output** is double clicked the editor mode now displays a side panel that brings in functionality found in the Cell Properties and Table Properties drop downs from the Format menu. In a reduced number of clicks, you can now edit tables using the side pane, and those changes will be reflected in the table view to the left of the pane.

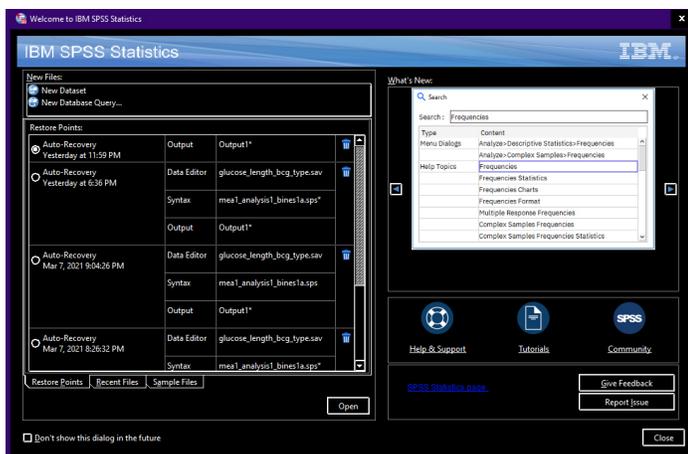


	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 8	53	11.2	11.2	11.2
12	190	40.1	40.1	51.3
14	6	1.3	1.3	52.5
15	116	24.5	24.5	77.0
16	59	12.4	12.4	89.5
17	11	2.3	2.3	91.8
18	9	1.9	1.9	93.7
19	27	5.7	5.7	99.4
20	2	.4	.4	99.8
21	1	.2	.2	100.0
Total	474	100.0	100.0	

*Figure 4.* The table editing side pane reduces the number of clicks necessary to achieve a desired output.

## High contrast accessibility

Accessibility support for high contrast was added in SPSS Statistics 28 (*Figure 5*). If you select **High Contrast** mode on a Microsoft Windows machine and open SPSS Statistics, the view in SPSS Statistics will automatically display in high contrast mode. To use high contrast mode on a Mac, select **System Preferences > Accessibility**, then drag the **Display** contrast slider to adjust the display contrast.



*Figure 5.* High contrast accessibility is now supported.

## Why IBM?

IBM SPSS Statistics is a comprehensive software solution that addresses all facets of the analytical process from data preparation and management to analysis and reporting. You can improve forecasts and plans by inputting missing values with expected values, deliver tables and visualizations to communicate results effectively, classify cases into groups and predict values of target variables based on values of predictor variables, and accurately model linear and non-linear relationships. Organizations of all types have relied on IBM SPSS Statistics to increase revenue, outmaneuver competitors, conduct research, and drive decision-making with data.

## Additional information

To learn more about IBM SPSS Statistics, start a free trial, or make a purchase, visit the [product page](#).

## Next steps

[Discover IBM SPSS Statistics 28.](#)  
[Start a no-cost 30-day trial.](#)

If you'd like to purchase, or upgrade to SPSS Statistics 28 through an IBM Business Partner, please contact a partner from the following list: [IBM SPSS Business Partners](#).



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