What's new in IBM SPSS Statistics 30

Unlock new analytical methods and improved usability for optimized performance.

Highlights

Improve your measurement accuracy with Bland Altman Analysis

Empower your insights with advanced Normality Tests

Explore the enhancements of SPSS Statistics user interface

IBM® SPSS® Statistics is a comprehensive statistical software solution that is widely used for data preparation and management, advanced data analysis techniques, forecasting models, and data visualizations. It is designed to help not only researchers, data analysts, statisticians, and educators but also business professionals extract actionable insights from their data. Our solution offers a powerful suite of tools that can address any type of analysis, from basic descriptive statistics to complex multivariate methods.

With support for multiple data formats and an intuitive interface, SPSS Statistics transforms data into valuable insights and engaging visualizations through graphs and charts. Its comprehensive features in data preparation, statistical modeling, and reporting enable organizations and data professionals to make informed, data-driven decisions. This helps improve strategies across various fields, including social sciences, government, healthcare, marketing, finance, education, and more.

IBM SPSS Statistics 30.0.0 introduces a comprehensive set of new features and improvements, designed to optimize both data analysis capabilities and user experience. It brings advanced statistical methods, including the introduction of Bland Altman Analysis and new normality tests, making it easier for users to gain deeper insights from their data. In addition to new capabilities, the latest interface upgrades, including dark mode and 4K HD Monitor for Windows, aim to enhance the user experience.

Whether you are conducting complex analyses or managing large datasets, SPSS Statistics 30.0.0 offers performance improvements that can help address your data analysis needs.

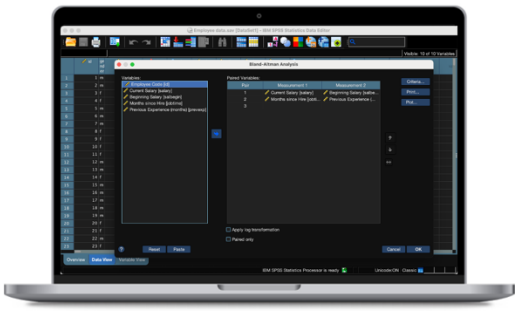

Figure 1. SPSS Statistics - Bland Altman Analysis

Improve your measurement accuracy with Bland Altman Analysis

The new Bland Altman Analysis feature offers a robust, non-parametric method for assessing the agreement between two measurement techniques. By plotting the differences against the means of paired observations, this method provides a clear visual representation of data concordance. This functionality is especially valuable in fields like clinical research, where understanding the relationship between a new diagnostic method and a standard reference is crucial. By identifying patterns of agreement or disagreement, you can make more informed decisions about measurement reliability and method validation.

Key benefits of using Bland Altman Analysis

- **User-friendly interface:** Navigate with ease using the intuitive design, crafted for users of all skill levels.
- **Effortless setup:** Launch your Bland Altman analysis quickly and smoothly, without the need for technical expertise.
- **Enhanced visualization:** Use intuitive plots that clearly illustrate data agreement.
- **Time efficiency:** Benefit from automatic creation of multiple comparison tables and plots, enabling you to complete your analysis more efficiently.
- **Tailored outputs:** Customize your analysis outputs to fit your research needs, ensuring relevance and precision.
- **Reliable accuracy:** Enhance the reliability of your analysis with built-in checks for variable types and scale validation.

Bland Altman use cases and practical insights

Nutritional studies: Validating self-reported dietary intake against biochemical analysis to ensure accuracy in food consumption data.

Environmental monitoring: Evaluating sensor technologies for air quality measurement, providing reliable data for public health initiatives.

Psychometric testing: Analyzing the agreement between various psychological assessment tools to improve reliability in mental health evaluations.

Clinical trials: Comparing different imaging techniques (e.g., MRI vs. CT scans) to ensure diagnostic consistency and accuracy.

Wearable technology: Validating data from fitness trackers against laboratory measurements to ensure precise health and wellness monitoring.

Telehealth applications: Comparing remote patient monitoring data with traditional in-person evaluations to enhance the reliability of telehealth services.

Agricultural research: Analyzing consistency in yield measurements from different soil testing methods to optimize agricultural practices.

IBM SPSS Statistics is one of 24 IBM products to win TrustRadius 2024 Top Rated Award.

"Earning a Top Rated Award means the vendor has excellent customer satisfaction and proven credibility. It's based entirely on reviews and customer sentiment," said **Becky Susko**, TrustRadius, Marketing Program Manager of Awards.

Read the announcement here.

Empower your insights with advanced Normality Tests

IBM SPSS Statistics 30.0.0 enhances its capabilities with new and improved normality tests and plots, allowing you to evaluate the distribution of your data more effectively. This feature integrates a suite of built-in extensions, providing both univariate and multivariate tests in a user-friendly interface. The ability to assess normality is essential for ensuring the validity of subsequent statistical analyses.

Multivariate Normality Tests

- The **Mardia** test assesses multivariate normality by evaluating the skewness and kurtosis of a dataset, using test statistics that compare to Chi-square and normal distributions, with significance determined by p-values.
- The **Royston** test extends the Shapiro-Wilk test to the multivariate case, transforming Shapiro-Wilk statistics into an approximately Chi-squared variable with adjusted degrees of freedom, and is suitable for small sample sizes with low correlation, using p-values to assess normality.
- The **Henze-Zirkler** test evaluates multivariate normality by measuring the distance between the characteristic function of a multivariate normal distribution and the empirical characteristic function, using a statistic that follows a lognormal distribution, with significance determined by the p-value.
- The **Doornik-Hansen** test checks for multivariate normality by analyzing the skewness and kurtosis of transformed data to ensure independence. The test statistic, which is the sum of squared transformations, approximately follows a Chi-square distribution, and p-values are used to determine significance.
- The **Energy** test for multivariate normality offers a robust, non-parametric alternative suitable for high-dimensional datasets or when parametric assumptions fail. Its test statistic is based on energy distance, which measures the distance between two probability distributions using Euclidean distance for observations. Critical values under the null hypothesis are determined through simulation.

Univariate Test

- The **Anderson-Darling** test evaluates if a dataset follows a normal distribution by measuring the difference between the observed and expected cumulative distribution functions (CDFs). It is especially sensitive to deviations in the distribution's tails.
- The **Shapiro-Wilk** test assesses univariate normality by testing whether a sample comes from a normally distributed population. The test statistic is derived from the ratio of two variance estimators: the best linear unbiased estimator (BLUE) and the maximum likelihood estimator (MLE).
- The **Shapiro-Francia** test is an approximate test for univariate normality, particularly effective for large samples. While similar to the Shapiro-Wilk test, it uses a different test statistic and has been shown to possess greater power for distinguishing certain alternative hypotheses.

- The **Cramer-von-Mises** test assesses if a sample comes from a specified distribution, such as the normal distribution, by comparing its empirical cumulative distribution function (ECDF) with the theoretical cumulative distribution function (CDF). The test statistic is based on the squared differences between the ECDF and CDF, summed across all sample points.

- The **Lilliefors** (Kolmogorov-Smirnov, K-S) test. Kolmogorov-Smirnov test is a goodness-of-fit test for normality that measures the maximum distance between the empirical distribution function and the cumulative normal distribution. The Lilliefors test enhances the K-S test by correcting for small tail values, particularly when the population mean, and standard deviation are estimated from the sample.

Applications of Normality Tests

Financial analysis: A financial analyst examining the returns of a portfolio that includes stocks, bonds, and real estate over the past decade can use the Mardia test to check if the returns follow a multivariate normal distribution, ensuring accurate risk assessment and modeling.

Healthcare research: A medical researcher studying the relationship between health indicators like blood pressure, cholesterol levels, and body mass index in patients can apply the Royston test to determine if the joint distribution of these indicators follows a multivariate normal distribution.

Manufacturing quality control: Quality control engineers in a manufacturing company can use the Henze-Zirkler test to assess whether the multivariate distribution of product dimensions meets normality. Detecting deviations from normality can help identify potential issues in the production process that require attention.

Analyzing student test scores: A teacher analyzes students' test scores to check for normal distribution using the Shapiro-Wilk test. This enables the teacher to choose appropriate methods for evaluating student performance and teaching effectiveness.

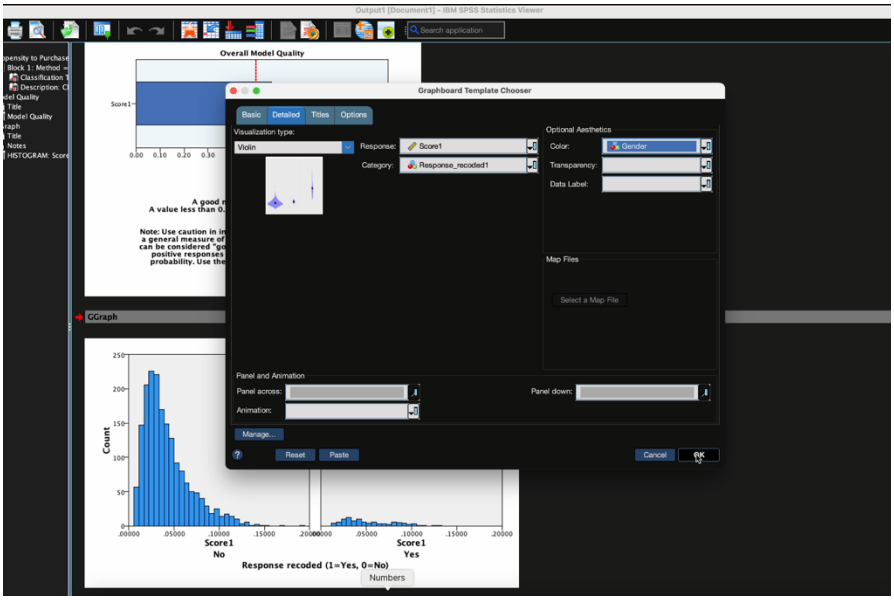

Figure 2. SPSS Statistics dark mode

Explore the enhancements of SPSS Statistics user interface

IBM SPSS Statistics 30.0.0 offers a refined dark mode option for a modern, visually appealing experience. You can easily activate it from the Look and Feel settings in SPSS Statistics Options by selecting Dark Mode from the drop-down menu.

Our enhanced text scaling feature supports high-resolution 4K HD monitors on Windows, allowing you to adjust zoom from 100% to 200% (1.0 to 2.0). This provides clear visibility across menus, dialog boxes, Data Editor, Syntax Editor, pivot tables, charts, and text outputs.

The user interface includes a redesigned status bar and improved toolbar icons for streamlined navigation:

- The processor pane now has a new option to stop the processor if it is busy. In the event of a crash, you are prompted to confirm restarting the application.
- Click the active OMS Pane to trigger a confirmation dialog to stop the OMS processes.
- Click the filter pane and user confirmation is requested to remove any active filters.
- If you have multiple open windows, click the Designate Window toolbar button to set a Syntax window, Output window, or Workbook window as the designated window.

Conclusion

IBM SPSS Statistics 30.0.0 introduces new features, including the Bland-Altman analysis for assessing agreement between measurement techniques and new normality tests for evaluating data distribution. The new capabilities streamline the analysis process, providing intuitive visualization and tailored outputs that improve measurement reliability. Additionally, the updated user interface includes enhancements such as dark mode and support for 4K HD monitors. By providing deeper insights into complex datasets, SPSS Statistics 30.0.0 empowers professionals to make data-driven decisions that enhance the quality of their work across various industries.

For more information
To learn more about SPSS Statistics, contact your IBM representative or IBM Business Partner, or visit ibm.com/products/spss-statistics.

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