

Features and Technical Specification

Introduction:

Risk Simulator is analytical software that performs Monte Carlo risk simulations, bizstats, stochastic forecasting and predictive modeling, decision analytics, business statistics, dynamic simulated decision trees, and portfolio optimization. It's a official toolkit for teaching Certification in quantitative risk management.

Major Enhancement for Risk Simulator 2023

Compatibility

- Windows 10 and Windows 11 running Excel 2016, 2019, or 365

Post-Hoc Tests

- ANOVA Post Hoc Tests and standalone post hoc tests
- Multiple Regression Post Hoc Tests

Convolution Simulation

- Poisson-Lognormal (Risk Simulator's Set Input Assumptions)
- Poisson-Normal (Risk Simulator's Set Input Assumptions)
- Discrete Normal with Lognormal (Risk Simulator's BizStats)
- Poisson with Frechet (Risk Simulator's BizStats)
- Poisson with Gumbel Max (Risk Simulator's BizStats)
- Poisson with Lognormal (Risk Simulator's BizStats)
- Poisson with Normal (Risk Simulator's BizStats)
- Poisson with Pareto (Risk Simulator's BizStats)
- Poisson with Weibull (Risk Simulator's BizStats)

Artificial Intelligence and Machine Learning algorithms

- AI Machine Learning: Bagging Linear Fit Bootstrap (Supervised)
- AI Machine Learning: Bagging Nonlinear Fit Bootstrap (Supervised)
- AI Machine Learning: Classification and Regression Trees CART (Supervised)
- AI Machine Learning: Classification with Gaussian Mix & K-Means Segmentation (Unsupervised)
- AI Machine Learning: Classification with K-Nearest Neighbors (Supervised)
- AI Machine Learning: Classification with Phylogenetic Trees & Hierarchical Clustering (Unsupervised)
- AI Machine Learning: Classification with Support Vector Machines SVM (Supervised)
- AI Machine Learning: Custom Fit Model (Supervised)

- AI Machine Learning: Dimension Reduction Principal Component Analysis (Unsupervised)
- AI Machine Learning: Dimension Reduction Factor Analysis (Unsupervised)
- AI Machine Learning: Ensemble Common Fit (Nonlinear) (Supervised)
- AI Machine Learning: Ensemble Complex Fit (Nonlinear) (Supervised)
- AI Machine Learning: Ensemble Time-Series (Supervised)
- AI Machine Learning: Linear Fit Model (Supervised)
- AI Machine Learning: Multivariate Discriminant Analysis (Linear) (Supervised)
- AI Machine Learning: Multivariate Discriminant Analysis (Quadratic) (Supervised)
- AI Machine Learning: Neural Network (Supervised)
- AI Machine Learning: Logistic Binary Classification (Supervised)
- AI Machine Learning: Normit Probit Binary Classification (Supervised)
- AI Machine Learning: Random Forest (Supervised)
- AI Machine Learning: Segmentation Clustering (Unsupervised)

Existing Features and Modules:

Monte Carlo Simulation

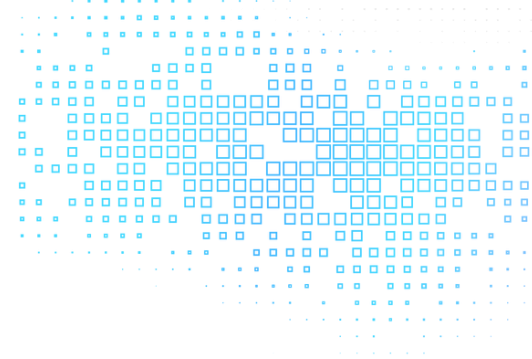
- Distributional Correlations with Copulas
- Latin Hypercube
- Percentile Alternate Parameters
- Multidimensional Simulations

Forecasting

- Box-Jenkins ARIMA
- Auto ARIMA
- Stochastic Processes
- Time-Series Decomposition
- GARCH
- Combinatorial Fuzzy Logic Multiple Regression Analysis)

Analytical Tools

- Bootstrapping, Cluster Segmentation
- Detailed Data Diagnostics, Hypothesis Testing
- Structural Breaks
- Tornado Charts
- Sensitivity Analysis
- Statistical Analysis



Optimization

- Static, Dynamic and Stochastic Optimization
- Continuous, Discrete and Integer Decision Variables
- Efficient Frontier
- Genetic Algorithm

Probability Distributions

- Arcsine, Bernoulli, Beta, Beta 3, Beta 4, Binomial, Cauchy, Chi-Square, Cosine, Custom, Discrete Uniform, Double Log, Erlang, Exponential, Exponential 2, Fdistribution, Gamma, Geometric, Gumbel Max, Gumbel Min, Hypergeometric, Laplace, Logistic, Lognormal (Arithmetic) And Lognormal (Log), Lognormal 3 (Arithmetic) And Lognormal 3 (Log), Negative Binomial, Normal, Parabolic, Pareto, Pascal, Pearson V, Pearsonvi, Pert, Poisson, Power, Power 3, Rayleigh, T And T2, Triangular, Uniform, Weibull, Weibull 3

