

5-1-2004

## End Matter

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# PASS 2002

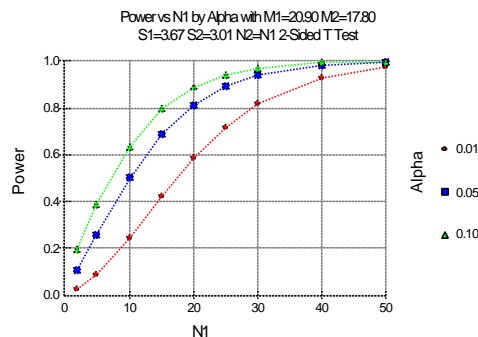
## Power Analysis and Sample Size Software from NCSS

*PASS* performs power analysis and calculates sample sizes. Use it before you begin a study to calculate an appropriate sample size (it meets the requirements of government agencies that want technical justification of the sample size you have used). Use it after a study to determine if your sample size was large enough. *PASS* calculates the sample sizes necessary to perform all of the statistical tests listed below.

A power analysis usually involves several "what if" questions. *PASS* lets you solve for power, sample size, effect size, and alpha level. It automatically creates appropriate tables and charts of the results.

*PASS* is accurate. It has been extensively verified using books and reference articles. Proof of the accuracy of each procedure is included in the extensive documentation.

*PASS* is a standalone system. Although it is integrated with *NCSS*, you do not have to own *NCSS* to run it. You can use it with any statistical software you want.



*PASS* comes with two manuals that contain tutorials, examples, annotated output, references, formulas, verification, and complete instructions on each procedure. And, if you cannot find an answer in the manual, our free technical support staff (which includes a PhD statistician) is available.

### System Requirements

*PASS* runs on Windows 95/98/ME/NT/2000/XP with at least 32 megs of RAM and 30 megs of hard disk space.

*PASS* sells for as little as **\$449.95**.

### *PASS* Beats the Competition!

**No other program calculates sample sizes and power for as many different statistical procedures as does *PASS*.**

Specifying your input is easy, especially with the online help and manual.

*PASS* automatically displays charts and graphs along with numeric tables and text summaries in a portable format that is cut and paste compatible with all word processors so you can easily include the results in your proposal.

Choose *PASS*. It's more comprehensive, easier-to-use, accurate, and less expensive than any other sample size program on the market.

### Trial Copy Available

You can try out *PASS* by downloading it from our website. This trial copy is good for 30 days. We are sure you will agree that it is the easiest and most comprehensive power analysis and sample size program available.

### Analysis of Variance

Factorial AOV  
Fixed Effects AOV  
Geisser-Greenhouse  
MANOVA\*  
Multiple Comparisons\*  
One-Way AOV  
Planned Comparisons  
Randomized Block AOV  
New Repeated Measures AOV\*

### Regression / Correlation

Correlations (one or two)  
Cox Regression\*  
Logistic Regression  
Multiple Regression  
Poisson Regression\*  
Intraclass Correlation  
Linear Regression

### Proportions

Chi-Square Test  
Confidence Interval  
Equivalence of McNemar\*  
Equivalence of Proportions  
Fisher's Exact Test  
Group Sequential Proportions  
Matched Case-Control  
McNemar Test  
Odds Ratio Estimator  
One-Stage Designs\*  
Proportions - 1 or 2  
Two Stage Designs (Simon's)  
Three-Stage Designs\*

### Miscellaneous Tests

Exponential Means - 1 or 2\*  
ROC Curves - 1 or 2\*  
Variances - 1 or 2

### T Tests

Cluster Randomization  
Confidence Intervals  
Equivalence T Tests  
Hotelling's T-Squared\*  
Group Sequential T Tests  
Mann-Whitney Test  
One-Sample T-Tests  
Paired T-Tests  
Standard Deviation Estimator  
Two-Sample T-Tests  
Wilcoxon Test

### Survival Analysis

Cox Regression\*  
Logrank Survival - Simple  
Logrank Survival - Advanced\*  
Group Sequential - Survival  
Post-Marketing Surveillance  
ROC Curves - 1 or 2\*

### Group Sequential Tests

Alpha Spending Functions  
Lan-DeMets Approach  
Means  
Proportions  
Survival Curves

### Equivalence

Means  
Proportions  
Correlated Proportions\*

### Miscellaneous Features

Automatic Graphics  
Finite Population Corrections  
Solves for any parameter  
Text Summary  
Unequal N's

\*New in *PASS* 2002

# PASS 2002 adds power analysis and sample size to your statistical toolbox

## WHAT'S NEW IN PASS 2002?

Thirteen new procedures have been added to *PASS* as well as a new home-base window and a new Guide Me facility.

## MANY NEW PROCEDURES

The new procedures include a new multi-factor repeated measures program that includes multivariate tests, Cox proportional hazards regression, Poisson regression, MANOVA, equivalence testing when proportions are correlated, multiple comparisons, ROC curves, and Hotelling's T-squared.

## TEXT STATEMENTS

The text output translates the numeric output into easy-to-understand sentences. These statements may be transferred directly into your grant proposals and reports.

## GRAPHICS

The creation of charts and graphs is easy in *PASS*. These charts are easily transferred into other programs such as MS PowerPoint and MS Word.

## NEW USER'S GUIDE II

A new, 250-page manual describes each new procedure in detail. Each chapter contains explanations, formulas, examples, and accuracy verification.

The complete manual is stored in PDF format on the CD so that you can read and printout your own copy.

## GUIDE ME

The new *Guide Me* facility makes it easy for first time users to enter parameter values. The program literally steps you through those options that are necessary for the sample size calculation.

## NEW HOME BASE

A new home base window has been added just for *PASS* users. This window helps you select the appropriate program module.

## COX REGRESSION

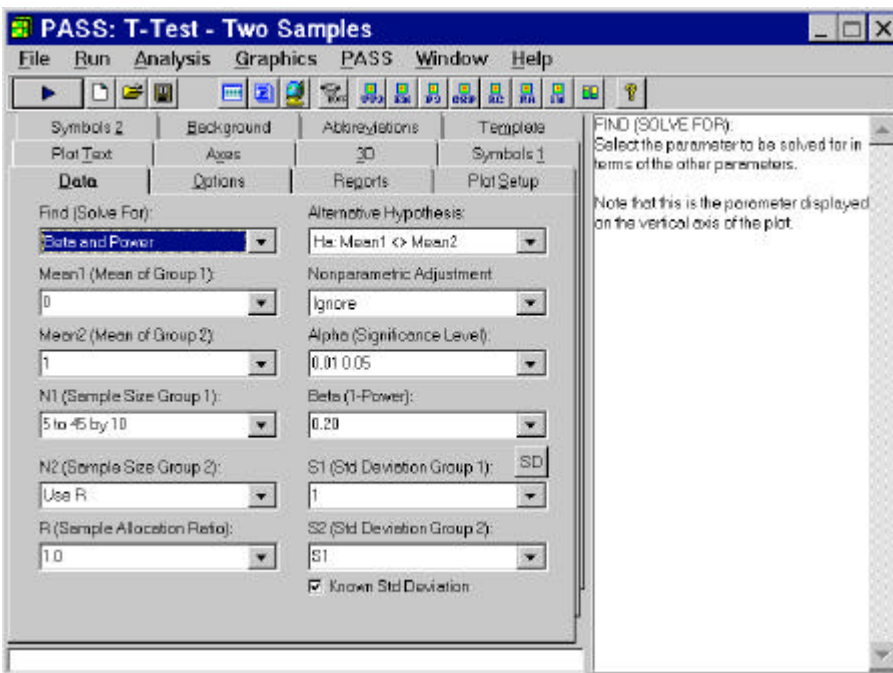
A new Cox regression procedure has been added to perform power analysis and sample size calculation for this important statistical technique.

## REPEATED MEASURES

A new repeated-measures analysis module has been added that lets you analyze designs with up to three grouping factors and up to three repeated factors. The analysis includes both the univariate F test and three common multivariate tests including Wilks Lambda.

## RECENT REVIEW

In a recent review, 17 of 19 reviewers selected *PASS* as the program they would recommend to their colleagues.



## PASS calculates sample sizes for...

Please rush me my own personal license of *PASS 2002*.

Qty

- \_\_\_ PASS 2002 Deluxe (CD and User's Guide): \$499.95..... \$ \_\_\_\_\_
- \_\_\_ PASS 2002 CD (electronic documentation): \$449.95 ..... \$ \_\_\_\_\_
- \_\_\_ PASS 2002 5-User Pack (CD & 5 licenses): \$1495.00..... \$ \_\_\_\_\_
- \_\_\_ PASS 2002 25-User Pack (CD & 25 licenses): \$3995.00 .... \$ \_\_\_\_\_
- \_\_\_ PASS 2002 User's Guide II (printed manual): \$30.00..... \$ \_\_\_\_\_
- \_\_\_ PASS 2002 Upgrade CD for *PASS 2000* users: \$149.95 ..... \$ \_\_\_\_\_

Typical Shipping & Handling: USA: \$9 regular, \$22 2-day, \$33 overnight. Canada: \$19 Mail. Europe: \$50 Fedex..... \$ \_\_\_\_\_

Total: ..... \$ \_\_\_\_\_

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NCSS, 329 North 1000 East, Kaysville, UT 84037

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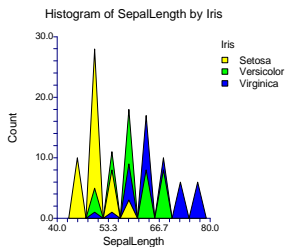
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COUNTRY (IF OTHER THAN U.S.) \_\_\_\_\_

# NCSS

329 North 1000 East  
Kaysville, Utah 84037



## Announcing NCSS 2004 Seventeen New Procedures

**NCSS 2004** is a new edition of our popular statistical **NCSS** package that adds seventeen new procedures.

### New Procedures

Two Independent Proportions  
Two Correlated Proportions  
One-Sample Binary Diagnostic Tests  
Two-Sample Binary Diagnostic Tests  
Paired-Sample Binary Diagnostic Tests  
Cluster Sample Binary Diagnostic Tests  
Meta-Analysis of Proportions  
Meta-Analysis of Correlated Proportions  
Meta-Analysis of Means  
Meta-Analysis of Hazard Ratios  
Curve Fitting  
Tolerance Intervals  
Comparative Histograms  
ROC Curves  
Elapsed Time Calculator  
T-Test from Means and SD's  
Hybrid Appraisal (Feedback) Model

### Documentation

The printed, 330-page manual, called *NCSS User's Guide V*, is available for \$29.95. An electronic (pdf) version of the manual is included on the distribution CD and in the Help system.

### Two Proportions

Several new exact and asymptotic techniques were added for hypothesis testing (null, noninferiority, equivalence) and calculating confidence intervals for the difference, ratio, and odds ratio. Designs may be independent or paired. Methods include: Farrington & Manning, Gart & Nam, Conditional & Unconditional Exact, Wilson's Score, Miettinen & Nurminen, and Chen.

### Meta-Analysis

Procedures for combining studies measuring paired proportions, means, independent proportions, and hazard ratios are available. Plots include the forest plot, radial plot, and L'Abbe plot. Both fixed and random effects models are available for combining the results.

### Curve Fitting

This procedure combines several of our curve fitting programs into one module. It adds many new models such as Michaelis-Menten. It analyzes curves from several groups. It compares fitted models across groups using computer-intensive randomization tests. It computes bootstrap confidence intervals.

### Tolerance Intervals

This procedure calculates one and two sided tolerance intervals using both distribution-free (nonparametric) methods and normal distribution (parametric) methods. Tolerance intervals are bounds between which a given percentage of a population falls.

### Comparative Histogram

This procedure displays a comparative histogram created by interspersing or overlaying the individual histograms of two or more groups or variables. This allows the direct comparison of the distributions of several groups.

### Random Number Generator

Matsumoto's Mersenne Twister random number generator (cycle length > 10\*\*6000) has been implemented.

### Binary Diagnostic Tests

Four new procedures provide the specialized analysis necessary for diagnostic testing with binary outcome data. These provide appropriate specificity and sensitivity output. Four experimental designs can be analyzed including independent or paired groups, comparison with a gold standard, and cluster randomized.

### ROC Curves

This procedure generates both binormal and empirical (nonparametric) ROC curves. It computes comparative measures such as the whole, and partial, area under the ROC curve. It provides statistical tests comparing the AUC's and partial AUC's for paired and independent sample designs.

### Hybrid (Feedback) Model

This new edition of our hybrid appraisal model fitting program includes several new optimization methods for calibrating parameters including a new genetic algorithm. Model specification is easier. Binary variables are automatically generated from class variables.

### Statistical Innovations Products

Through a *special arrangement* with Statistical Innovations (S.I.), NCSS customers will receive \$100 discounts on:

**Latent GOLD<sup>®</sup>** - latent class modeling

**SI-CHAID<sup>®</sup>** - segmentation trees

**GOLDMineR<sup>®</sup>** - ordinal regression

For demos and other info visit:

[www.statisticalinnovations.com](http://www.statisticalinnovations.com)

**Please rush me the following products:**

- Qty \_\_\_\_\_
- \_\_\_\_\_ **NCSS 2004 CD upgrade from NCSS 2001**, \$149.95 ..... \$ \_\_\_\_\_
- \_\_\_\_\_ **NCSS 2004 User's Guide V**, \$29.95..... \$ \_\_\_\_\_
- \_\_\_\_\_ **NCSS 2004 CD, upgrade from earlier versions**, \$249.95..... \$ \_\_\_\_\_
- \_\_\_\_\_ **NCSS 2004 Deluxe (CD and Printed Manuals)**, \$599.95..... \$ \_\_\_\_\_
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Approximate shipping--depends on which manuals are ordered (U.S: \$10 ground, \$18 2-day, or \$33 overnight) (Canada \$24) (All other countries \$10) (Add \$5 U.S. or \$40 International for any S.I. product)..... \$ \_\_\_\_\_

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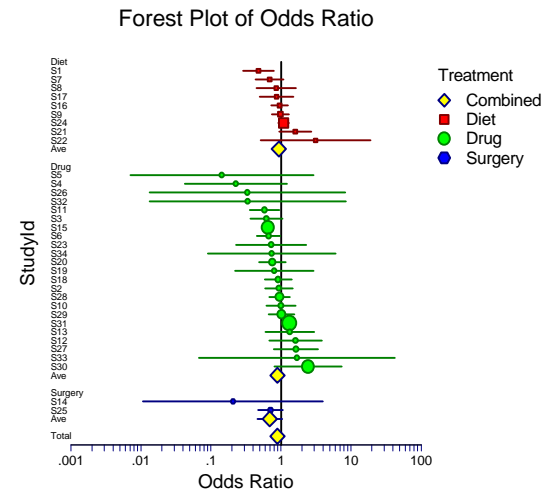
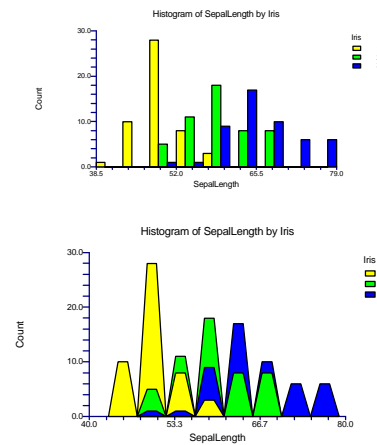
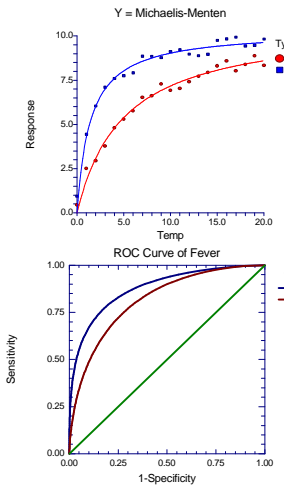
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**Statistical and Graphics Procedures Available in NCSS 2004**

**Analysis of Variance / T-Tests**

- Analysis of Covariance
- Analysis of Variance
- Barlett Variance Test
- Crossover Design Analysis
- Factorial Design Analysis
- Friedman Test
- Geiser-Greenhouse Correction
- General Linear Models
- Mann-Whitney Test
- MANOVA
- Multiple Comparison Tests
- One-Way ANOVA
- Paired T-Tests
- Power Calculations
- Repeated Measures ANOVA
- T-Tests – One or Two Groups
- T-Tests – From Means & SD's
- Wilcoxon Test

**Time Series Analysis**

- ARIMA / Box - Jenkins
- Decomposition
- Exponential Smoothing
- Harmonic Analysis
- Holt - Winters
- Seasonal Analysis
- Spectral Analysis
- Trend Analysis

**Plots / Graphs**

- Bar Charts
- Box Plots
- Contour Plot
- Dot Plots
- Error Bar Charts
- Histograms
- Histograms: Combined\*
- Percentile Plots
- Pie Charts
- Probability Plots
- ROC Curves\*
- Scatter Plots
- Scatter Plot Matrix
- Surface Plots
- Violin Plots

**Experimental Designs**

- Balanced Inc. Block
- Box-Behnken
- Central Composite
- D-Optimal Designs
- Fractional Factorial
- Latin Squares
- Plackett-Burman
- Response Surface
- Screening
- Taguchi

**Regression / Correlation**

- All-Possible Search
- Canonical Correlation
- Correlation Matrices
- Cox Regression
- Kendall's Tau Correlation
- Linear Regression
- Logistic Regression
- Multiple Regression
- Nonlinear Regression
- PC Regression
- Poisson Regression
- Response-Surface
- Ridge Regression
- Robust Regression
- Stepwise Regression
- Spearman Correlation
- Variable Selection

**Quality Control**

- Xbar-R Chart
- C, P, NP, U Charts
- Capability Analysis
- Cusum, EWMA Chart
- Individuals Chart
- Moving Average Chart
- Pareto Chart
- R & R Studies

**Survival / Reliability**

- Accelerated Life Tests
- Cox Regression
- Cumulative Incidence
- Exponential Fitting
- Extreme-Value Fitting
- Hazard Rates
- Kaplan-Meier Curves
- Life-Table Analysis
- Lognormal Fitting
- Log-Rank Tests
- Probit Analysis
- Proportional-Hazards
- Reliability Analysis
- Survival Distributions
- Time Calculator\*
- Weibull Analysis

**Multivariate Analysis**

- Cluster Analysis
- Correspondence Analysis
- Discriminant Analysis
- Factor Analysis
- Hottelling's T-Squared
- Item Analysis
- Item Response Analysis
- Loglinear Models
- MANOVA
- Multi-Way Tables
- Multidimensional Scaling
- Principal Components

**Curve Fitting**

- Bootstrap C.I.'s\*
- Built-In Models
- Group Fitting and Testing\*
- Model Searching
- Nonlinear Regression
- Randomization Tests\*
- Ratio of Polynomials
- User-Specified Models

**Miscellaneous**

- Area Under Curve
- Bootstrapping
- Chi-Square Test
- Confidence Limits
- Cross Tabulation
- Data Screening
- Fisher's Exact Test
- Frequency Distributions
- Mantel-Haenszel Test
- Nonparametric Tests
- Normality Tests
- Probability Calculator
- Proportion Tests
- Randomization Tests
- Tables of Means, Etc.
- Trimmed Means
- Univariate Statistics

**Meta-Analysis\***

- Independent Proportions\*
- Correlated Proportions\*
- Hazard Ratios\*
- Means\*

**Binary Diagnostic Tests\***

- One Sample\*
- Two Samples\*
- Paired Samples\*
- Clustered Samples\*

**Proportions**

- Tolerance Intervals\*
- Two Independent\*
- Two Correlated\*
- Exact Tests\*
- Exact Confidence Intervals\*
- Farrington-Manning\*
- Fisher Exact Test
- Gart-Nam\* Method
- McNemar Test
- Miettinen-Nurminen\*
- Wilson's Score\* Method
- Equivalence Tests\*
- Noninferiority Tests\*

**Mass Appraisal**

- Comparables Reports
- Hybrid (Feedback) Model\*
- Nonlinear Regression
- Sales Ratios

**\*New Edition in 2004**

# Qualitative research has come a long way...

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to this!



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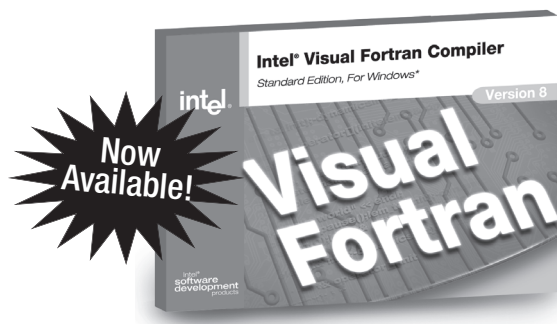
WORLD LEADING PRODUCTS FROM THE  
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Read more about QSR software in this edition of JMASM.

# Two Years in the Making...

## Intel® Visual Fortran 8.0

The next generation of Visual Fortran is here! Intel Visual Fortran 8.0 was developed jointly by Intel and the former DEC/Compaq Fortran engineering team.



### Visual Fortran Timeline

- 1997** DEC releases Digital Visual Fortran 5.0
- 1998** Compaq acquires DEC and releases DVF 6.0
- 1999** Compaq ships CVF 6.1
- 2001** Compaq ships CVF 6.6
- 2001** Intel acquires CVF engineering team
- 2003** Intel releases Intel Visual Fortran 8.0

### Intel Visual Fortran 8.0

- CVF front-end + Intel back-end
- Better performance
- OpenMP Support
- Real\*16

### Performance

Outstanding performance on Intel architecture including Intel® Pentium® 4, Intel® Xeon™ and Intel Itanium® 2 processors, as well as support for Hyper-Threading Technology.

### Compatibility

- Plugs into Microsoft Visual Studio\* .NET
- Microsoft PowerStation4 language and library support
- Strong compatibility with Compaq\* Visual Fortran

### Support

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*"The Intel Fortran Compiler 7.0 was first-rate, and Intel Visual Fortran 8.0 is even better. Intel has made a giant leap forward in combining the best features of Compaq Visual Fortran and Intel Fortran. This compiler... continues to be a 'must-have' tool for any Twenty-First Century Fortran migration or software development project."*

—Dr. Robert R. Trippi  
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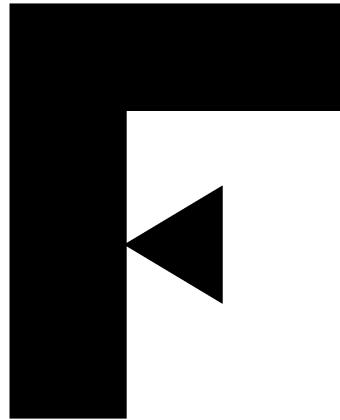
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*“Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away.”*

- Antoine de Saint Exupery

F is a carefully crafted subset of the most recent version of Fortran, the world’s most powerful numeric language.



Using F has some very significant advantages:

- Programs written in F will compile with any Fortran compiler
- F is easier to use than other popular programming languages
- *F compilers are free* and available for Linux, Windows, and Solaris
- Several books on F are available
- F programs may be linked with C, Fortran 95, or older Fortran 77 programs

F retains the modern features of Fortran—modules and data abstraction, for example—but discards older error-prone facilities of Fortran.

It is a safe and portable programming language.

F encourages Module-Oriented Programming.

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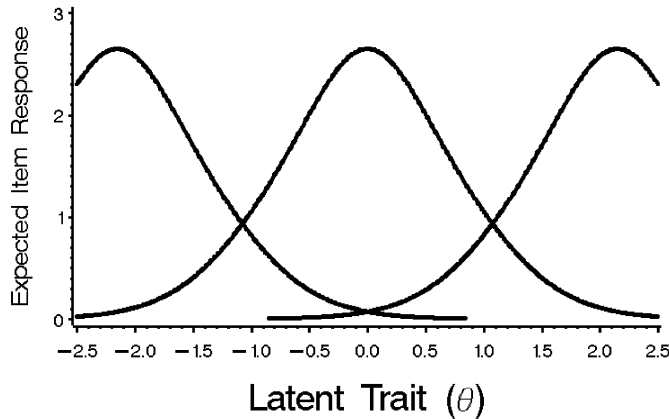
It is ideal for new numerically intensive programs.

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# ***GGUM2000***

## *Item Response Theory Models for Unfolding*



The GGUM2000 software system estimates parameters in a family of item response theory (IRT) models that unfold polytomous responses to questionnaire items. These models assume that persons and items can be jointly represented as locations on a latent unidimensional continuum. A single-peaked, nonmonotonic response function is the key feature that distinguishes unfolding IRT models from traditional, "cumulative" IRT models. This response function suggests

that a higher item score is more likely to the extent that an individual is located close to a given item on the underlying continuum. Such single-peaked functions are appropriate in many situations including attitude measurement with Likert or Thurstone scales, and preference measurement with stimulus rating scales. This family of models can also be used to determine the locations of respondents in particular developmental processes that occur in stages.

The GGUM2000 system estimates item parameters using marginal maximum likelihood, and person parameters are estimated using an expected a posteriori (EAP) technique. The program allows for up to 100 items with 2-10 response categories per item, and up to 2000 respondents. The software is accompanied by a detailed user's manual. **GGUM2000 is free** and can be downloaded from:

<http://www.education.umd.edu/EDMS/tutorials>

Start putting the power of unfolding IRT models to work in your attitude and preference measurement endeavors. Download your free copy of GGUM2000 today!



## Are you involved in Data Modeling or Data Mining?

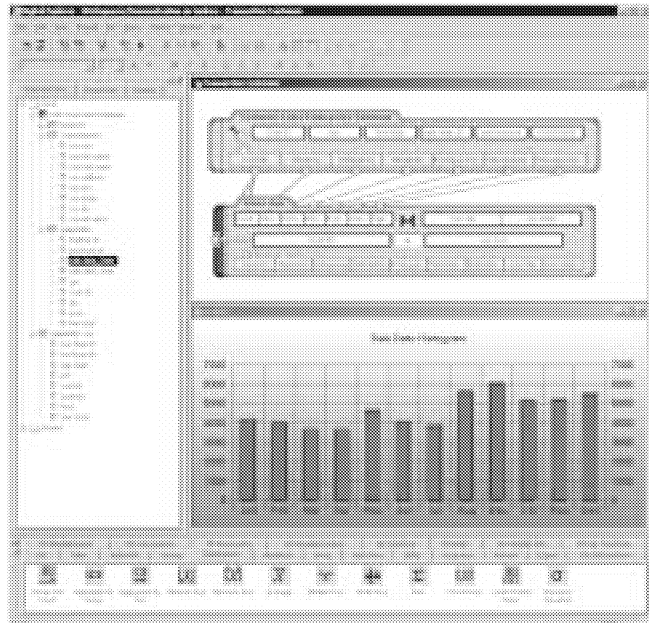
## Are you spending a large percentage of your time dealing with data issues?

If so, you will be happy to know that we have developed a tool that specifically addresses the data prep tasks associated with data modeling and data mining. The tool is called the Digital Excavator from Digital Archaeology ([www.digarch.com](http://www.digarch.com)). Data modelers are well aware of the time-consuming and sometimes frustrating nature of data set-up. In many cases data preparation can represent 60%-80% of the data mining project length. With Digital Archaeology's Digital Excavator, data preparation tasks are streamlined, results are more accurate, and the modeler has more time to focus on finding the appropriate mathematical solution--rather than wasting time with painful data issues. Digital Archaeology's software is intuitive, visual, self-documenting, and deploys what a number of analysts and customers have termed the "most elegant" user interface for data analysis and exploration ever conceived. It's the only tool specifically designed for the data prep tasks of data modeling.

**Visit our website and see for yourself! >>>> [www.digarch.com](http://www.digarch.com)**

Functions have been created which perform the following:

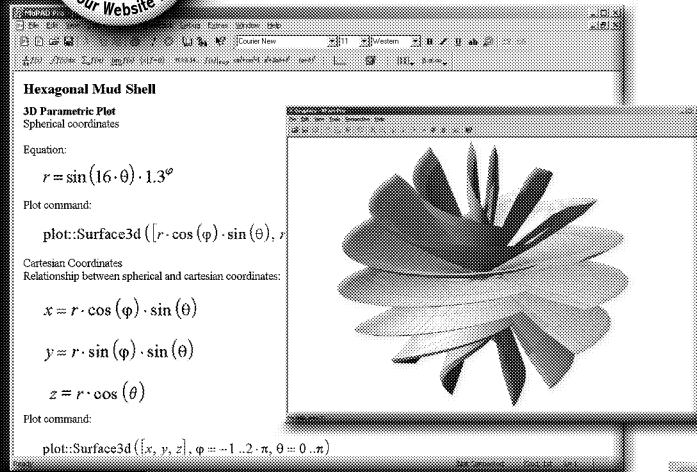
- Frequency Distributions
- Categorical Variable Profile
- Continuous Variable Profile
- Histograms
- De-duping
- Find and Replace Missing Values
- Find and Split Out Outliers
- Binning
- Correlation Matrix
- Cross-Tabs
- Panel Variables (Occupancy Map)
- Lag functions
- Decimal Scaling
- Rank and Sample Variables
- Recency, Frequency, Monetary Analysis
- N-Tile Distributions
- Gains Charts
- Many others



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# MuPAD<sup>®</sup> Pro

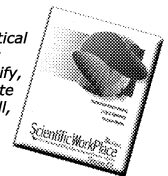
Version  
**2.0**  
See our Website for details



## The Open Computer Algebra System

MacKichan Software is proud to bring you MuPAD Pro, a full-featured computer algebra system in an integrated and open environment for symbolic and numeric computing. The MuPAD language has a Pascal-like syntax and allows imperative, functional, and object-oriented programming. Its domains and categories are like object-oriented classes that allow over-riding and overloading methods and operators, inheritance, and generic algorithms. A comfortable notebook interface includes a graphics tool for visualization, an integrated source-level debugger, a profiler, and hypertext help.

*Scientific WorkPlace, the proven solution for mathematical publishing, is an excellent companion to MuPAD Pro. It integrates with MuPAD so that you can evaluate, simplify, solve, and plot from inside your document, and evaluate functions that you have defined with MuPAD. Best of all, you typeset in LaTeX with just the click of a button.*



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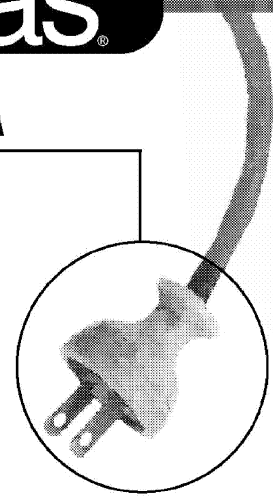
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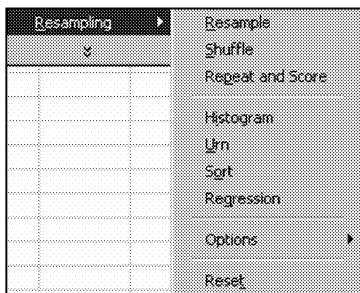
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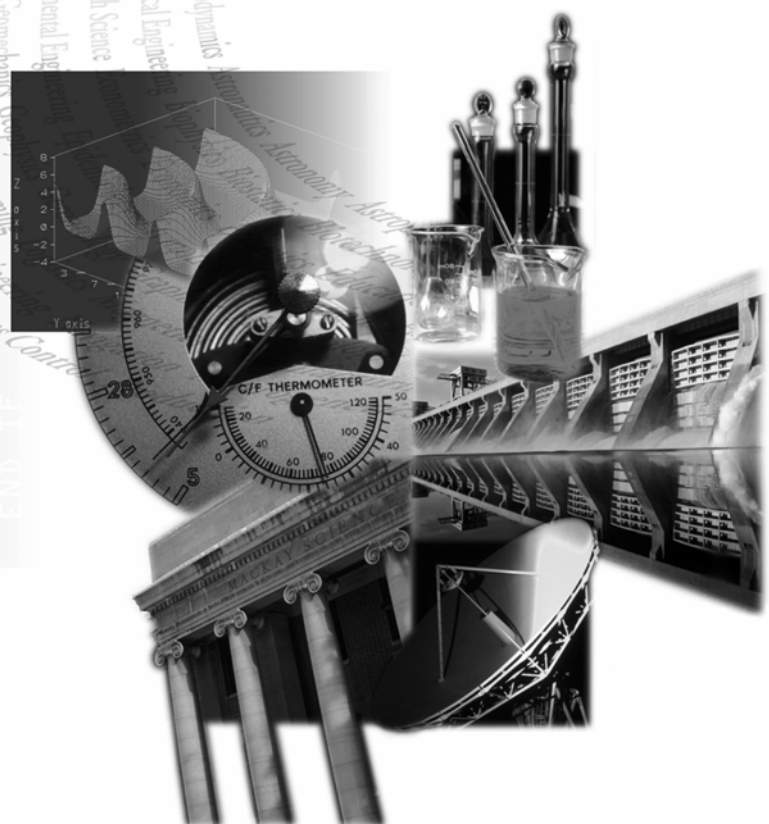
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IF ( .NOT. PRESENT
  NULLIFY ( p%coef
ELSE
  m = UBOUND(v,i)
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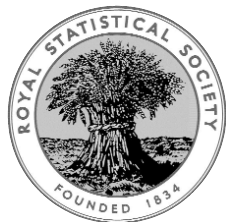
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