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## End Matter

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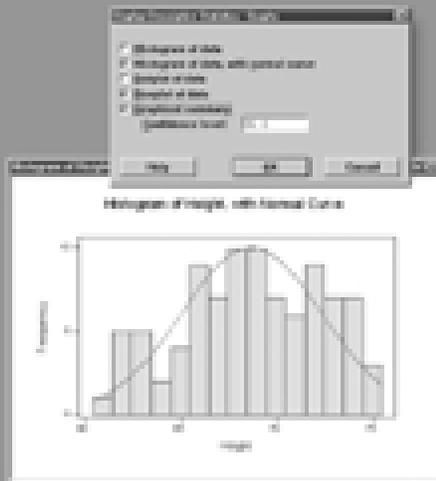
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Take a look at some highlights in SPSS' line-up for predicting numerical outcomes and learn about just one aspect of SPSS' many offerings for the analytical process.

Sincerely,



Jing Shyr, Ph.D.  
Vice President and Chief Statistician  
SPSS Inc.



Kyle A. Weeks, Ph.D.  
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## Linear Mixed Models procedure

Do you have data that display correlation and non-constant variability, such as data that represent students nested within classrooms or consumers nested within families? You can model not only means but also variances and covariances in your data using the powerful Linear Mixed Models procedure. Its flexibility means you can formulate a wide variety of models, such as multilevel models with fixed-effects covariances, hierarchical-linear models, random-effects models, random-coefficient models and linear-growth models. In addition, you can work with repeated measure designs, including incomplete repeated measurements in which the number of observations varies across subjects.

## General Linear Models (GLM) procedure — multivariate

Do you need a flexible procedure that works simultaneously with related multiple dependent variables? SPSS' GLM multivariate procedure does just that — providing flexible design and contrast options to estimate means and variances and to test and predict means. Mix and match categorical and continuous data to build models. Because GLM multivariate doesn't limit you to one data type, you have options giving you a wealth of model-building possibilities. Also, you can easily visualize relationships using profile plots (interaction plots) resulting from estimated predicted mean values.

## General Linear Models (GLM) procedure — repeated measures

Do you need to measure the same people over time, for example, to measure how overall employee satisfaction increases or decreases? Using SPSS' GLM repeated measures procedure you can analyze variances when you make the same measurement a fixed number of times on

individual subjects or cases. Get the flexibility to mix and match categorical and continuous-level predictors — including interactions. As with the GLM multivariate procedure, you can see relationships in your data using profile plots.

## Nonlinear Regression (NLR) and Constrained Nonlinear Regression (CNLR) procedures

Are you working with models that have nonlinear relationships, such as predicting coupon redemption as a function of time and number of coupons distributed? Estimate nonlinear equations using one of two SPSS procedures: NLR for unconstrained problems and CNLR for both constrained and unconstrained problems. CNLR empowers you to write your own algorithms. CNLR also gives you the flexibility to:

- Use linear and nonlinear constraints on any combination of parameters
- Estimate parameters by minimizing any smooth loss function (objective function)
- Compute bootstrap estimates of parameter standard errors and correlations

## Everything you need for predicting numerical outcomes

SPSS' procedures for predicting numerical outcomes aren't limited to the ones we just described. The following procedures help give SPSS 11.0 what you need for prediction:

- Linear Regression
- Weighted Least Squares Regression
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- Survival Analysis procedures
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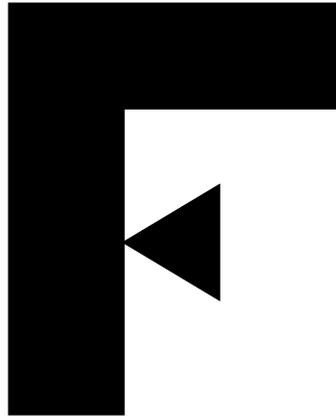


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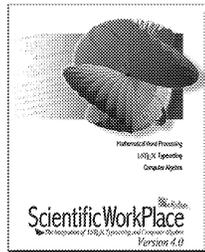
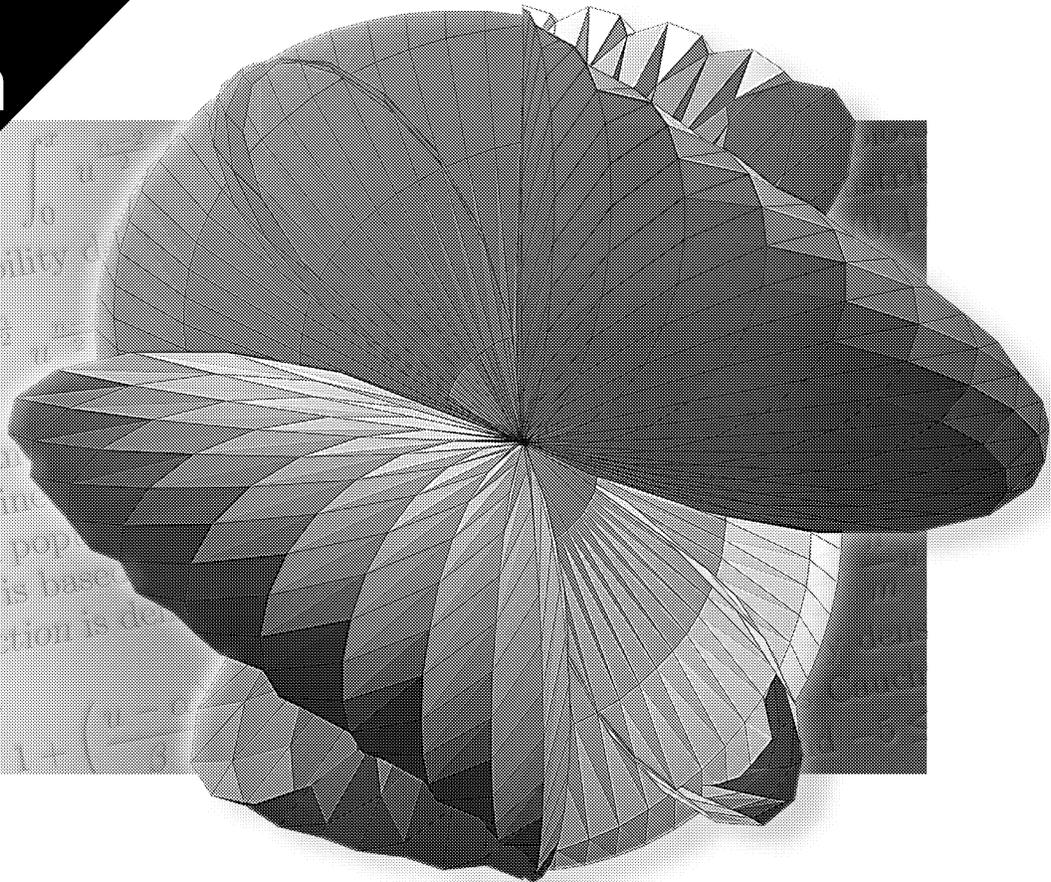
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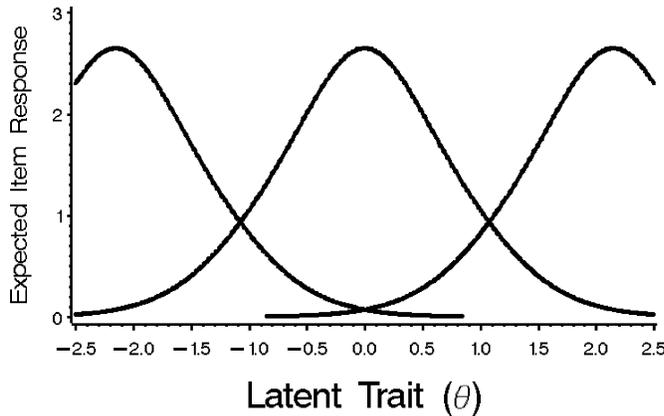
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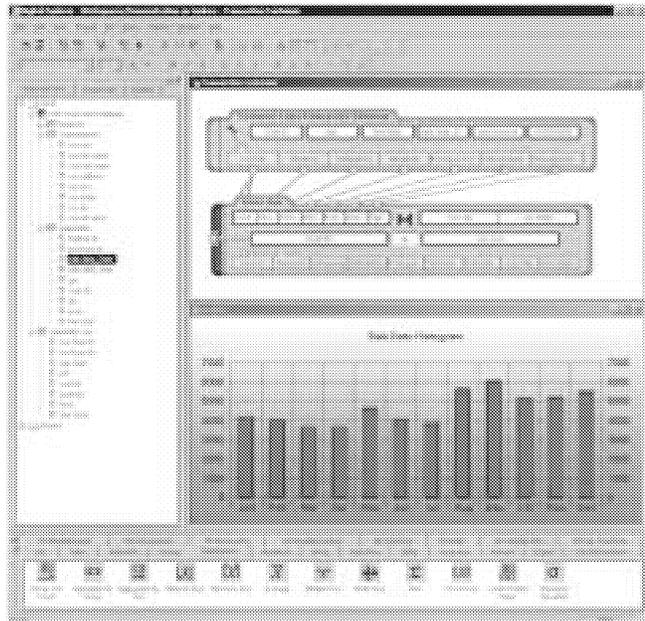
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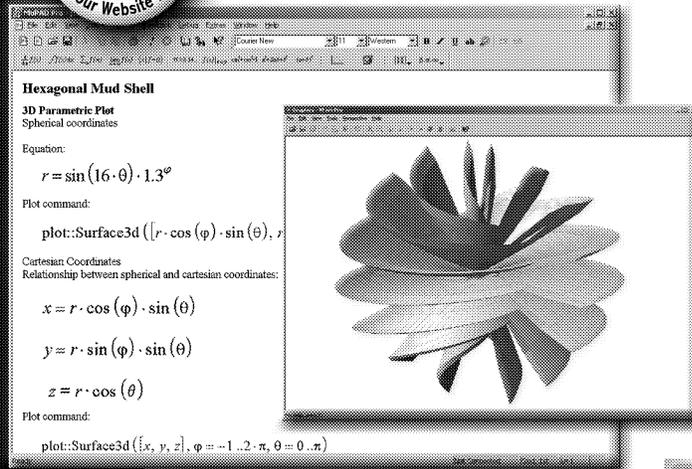


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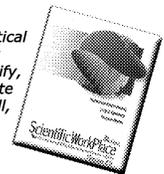
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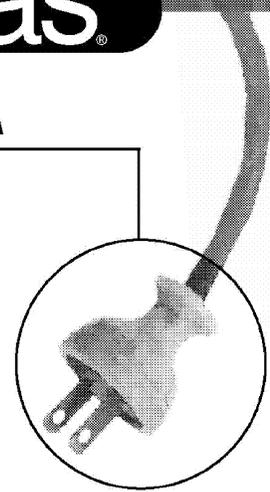
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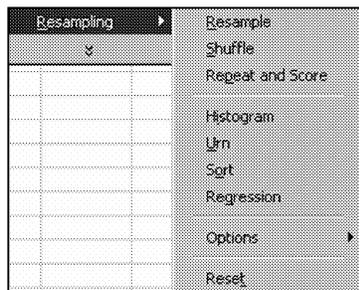
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Only LogXact 4 can fit a logistic regression model to the data on this page —even LogXact 2 cannot do it.

To solve this problem, you need a very powerful exact logistic regression algorithm. LogXact 4 implements a ground-breaking network Monte Carlo algorithm (published in *JASA*, April 2000), extending the scope of LogXact to problems previously beyond its capacity.

PLUS! LogXact 4 also provides exact Poisson regression (used extensively for cohort studies in epidemiology).



## Take the Cytel Challenge

Data were gathered on 2,493 hospitalized patients, of whom 60 suffered from *clostridium difficile*, an acute form of diarrhea. Of interest was the relationship between the occurrence of diarrhea and age, length of hospital stage, sex, use of the antibiotic Clindomycin, and the use of the antibiotic Cephalexin.

When you have data like these (low response rates,

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### 60 cases of diarrhea among 2,493 hospitalized patients

	Group 1	Group 2	•	Group 18
Cephalexin	0	0	•	1
Clindomycin	0	0	•	0
Sex	1	1	•	0
Age	0	0	•	1
LOS	0	1	•	1
<b>Diarrhea/Total ( 60/2,493)</b>	<b>0/174</b>	<b>1/113</b>	<b>•</b>	<b>4/4</b>

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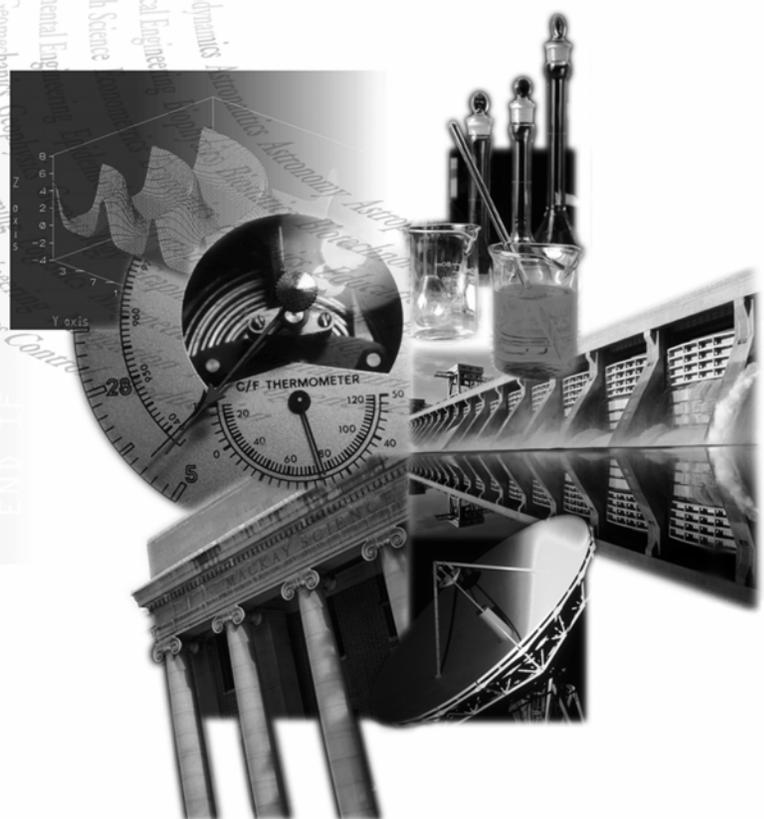
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SUBROUTINE poly_ini
TYPE(poly), INTENT
REAL(fpkind), INTE
IF ( .NOT. PRESENT
  NULLIFY ( p%coef
ELSE
  m = UBOUND(v,i)
  IF ( max_degree
  ALLOCATE ( p%
  p%coeffs
ELSE
  ALLOC
  p%coeffs
END IF
END IF
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