...STATA RELEASE 9

Stata 9 ships April 27th. Place your order now.

Highlights of Stata 9 include

- New matrix language Mata, with 620-page manual.

- New survey features, including balanced repeated replications (BRR) and jackknife variance estimates, multistage designs, and poststratification.

- Linear mixed models, including two-way, multilevel, and hierarchical random-effects — random-intercepts and random-coefficients — models.

- Multinomial probit models, including support for several correlation structures and for user-defined structures.

- Probit and tobit with endogenous regressors, including maximum likelihood and two-step estimators.

- Stereotype logistic regression, which relaxes the proportional-odds assumption.

- Zero-truncated Poisson and negative binomial, including prediction of incidence rates.

- Multivariate analysis, including multidimensional scaling, correspondence analysis, biplots, tetrachoric correlations, and Procrustean analysis, along with the ability to analyze proximity matrices as well as raw data.

- Seasonal ARIMA models, including robust standard errors.

- Nonlinear least squares that is now as easy to use as linear least squares, including robust and clustered-robust standard errors.

- Bootstrapping and jackknifing is easier than ever, including full VCE estimates for testing linear and nonlinear combinations; just add `vce(bootstrap)` or `vce(jackknife)` to your estimation command.

- XML support.

- Enhanced GUI, including multiple Do-file editors, multiple Viewers, multiple Graph windows, all of which can move outside the main Stata window; multiple windowing preferences; dockable windows; copy text to HTML; editable toolbar; and more.

- Stata with 64-bit support, including 64-bit Windows and 64-bit Linux on Itanium, Opteron, Athlon 64, and EM64T; AIX; IRIX; Solaris; and Tru64.

Linear mixed models

Stata's new mixed-models estimation makes it easy to specify and to fit two-way, multilevel, and hierarchical random-effects models.


To fit a model of SAT scores with fixed coefficient on `x1` and random coefficient on `x2` at the school level, and with random intercepts at both the school and class-within-school level, you type

```
. xtmixed sat x1 x2 || school: x2 || class:
```

Estimation is either by ML or REML, and standard errors and confidence intervals (in fact, the full covariance matrix) are estimated for all variance components.

`xtmixed` provides four random-effects variance structures — identity, independent, exchangeable, and unstructured — and you can combine them to form even more complex block-diagonal structures.

After estimation, you can obtain best linear unbiased predictions (BLUPs) of random effects and of conditional means (fitted values).
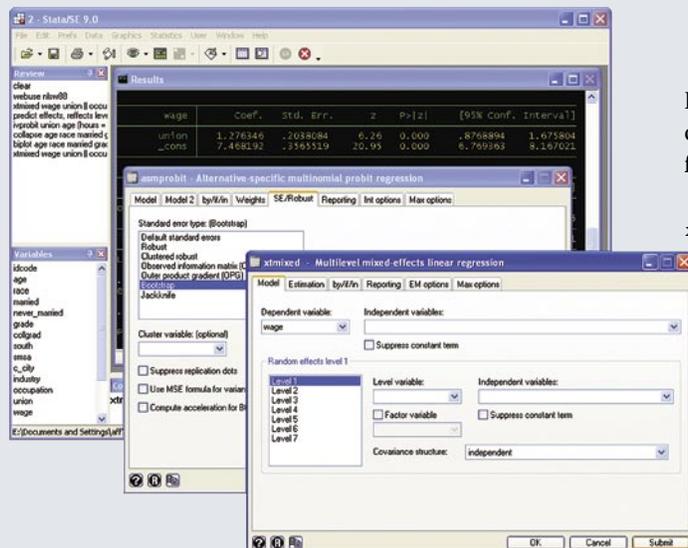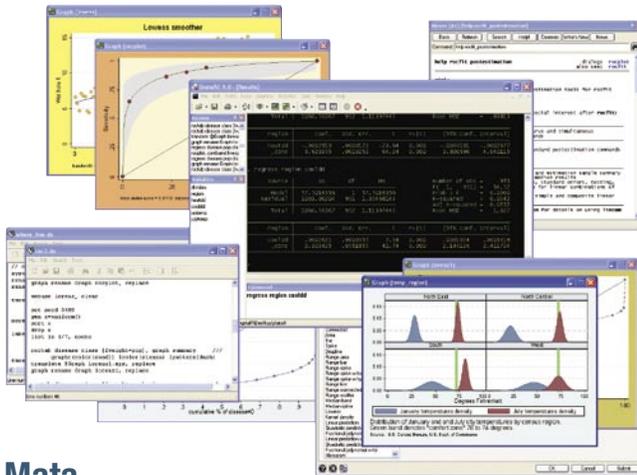
Mata

Mata is a full-blown matrix programming language that compiles what you type into byte-code, optimizes it, and executes it fast. Behind the scenes, many of the new features of Stata 9, such as linear mixed models and multinomial probit, were written in Mata. You can use Mata to implement big systems, or you can use it interactively.

To enter Mata, type `mata` at Stata's dot prompt. To exit, type `end`:

```
. mata
                   ———— mata (type end to exit) ————
: sqrt(-4)
.

: sqrt(-4+0i)
2i

: end
———————————————————————————————————
```

Mata supports real and complex numbers, binary and text strings (up to 2,147,483,647 characters long), and, for advanced programming problems, even supports pointers!

Mata uses LAPACK routines for its advanced matrix features, such as Cholesky decomposition, LU decomposition, QR decomposition, SV decomposition, eigenvalues and eigenvectors, and solvers and inverters.

Mata supports matrices that are views onto, not copies of, the data. Say you have loaded a dataset of 200,000 observations and 150 variables and you need a matrix of 80 of those variables in 180,000 of the observations. Rather than requiring 110,000,000 bytes, Mata needs only 640 bytes.

Everybody knows that matrix languages evaluate matrix expressions, such as `b=invsym(X'X)*X'y`, and Mata is no exception. Because of Mata's design, however, it is fast enough to work at the element level. Here is Mata's polynomial solver:

```
numeric rowvector polysolve(numeric vector y,
                            numeric vector x)
{
    numeric rowvector    res, c, empty
    real scalar          i, j, n

    if (cols(y)!=cols(x) | rows(y)!=rows(x))
        _error(3200)
    if ((n=length(x))==0) _error(3200)
    res = (iscomplex(y) | iscomplex(x) ? 0i : 0)
    for (j=1; j<=n; j++) {
        c = (1)
        for (i=1; i<=n; i++) {
            if (i!=j) {
                c = polymult(c,(-x[i],1):/(x[j]-x[i]))
            }
        }
        res = polyadd(res,y[j]:*c)
    }
    while (res[cols(res)]==0)
        res = res[|1,1\1,cols(res)-1|]
    return(res)
}
```

Much of Mata is written in Mata.

Survey methods

With the addition of balanced repeated replications (BRR) and survey jackknife to cluster-based linearization, Stata is now the only full-featured statistical package to support all three variance estimators for survey and correlated data.

Complete support is now included for multistage designs and for poststratification. To handle multistage designs, you specify the design when you `svyset` your data. To set a two-stage cluster design on `city` and `schools` within cities, stratifying on `state`, you set

```
. svyset city [pw=wgt], strata(state) fpc(ncities) ||
        school, fpc(nschools)
```

If you also wanted to poststratify on gender, you would add `poststrata(gender) postweight(ngender)`.

After this `svyset`, all Stata's survey estimators will properly account for your design.

Renaissance Painters

Source: Cox and Cox (2001). Multidimensional Scaling, 2nd edition.
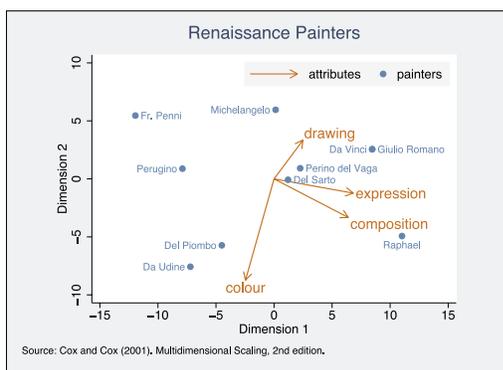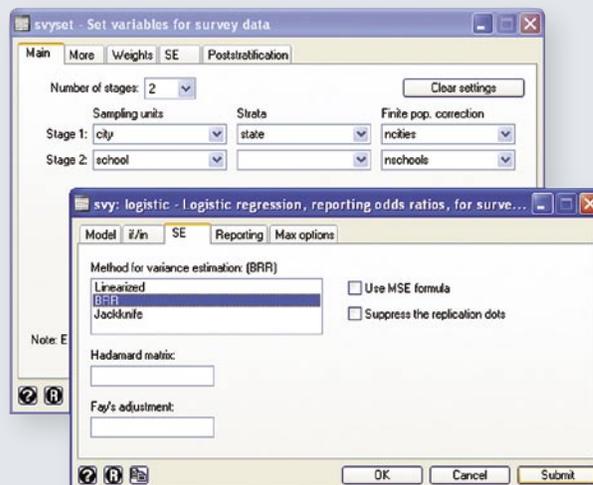
Multivariate analysis

Stata 9 includes four new methods for analyzing multivariate data, and it includes many extensions to existing methods, especially for factor and principal-component analysis.

Stata now performs multidimensional scaling (MDS) on raw data, on proximity matrices, and on proximity datasets; 33 similarity/dissimilarity measures are supported. Configuration graphs and Shepard diagrams are available.

Stata now performs two-way correspondence analysis on datasets or on count matrices. You can obtain row and column profiles, chi-squared distances, and inertias. Biplots and dimensional projection plots are available.

Stata now performs Procrustean transformations for comparing the similarity between two sets of variables or datasets. Overlay plots are available. Stata now performs biplot analysis and produces two-dimensional biplots of results. Variables are plotted as arrows — the cosine of the angle between arrows approximates the correlation — and observations are plotted so that distances are approximately preserved.

Stata's factor analysis and principal component analysis commands will now analyze correlation matrices as well as raw data and provide over 20 oblique and orthogonal rotations.

Stata's PCA command now will compute the VCE of the eigenvalues and eigenvectors assuming multivariate normality, giving you access to most of Stata's postestimation facilities — including tests — and CIs on scree plots.
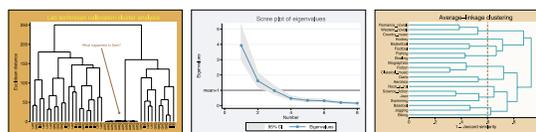
More ...

Those were what we consider the highlights; you may find other additions more important, additions such as rolling and recursive regressions; robust and clustered-robust standard errors for random-effects and fixed-effects regression; mean, ratio, total, and proportion estimators for groups with full VCE; paired-coordinate plot types; value labels up to 32,000 characters; and much more.

The full description of what is new takes 30 pages. To find out more, go to **www.stata.com/stata9.**
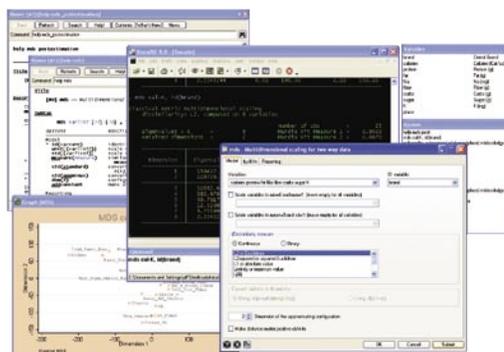
Stata 9 Documentation

Stata 9 has new manuals for Mata, Data Management, and Multivariate Analysis. Find out more about your documentation options at **www.stata.com/bookstore/documentation.html.**

ORDER NOW

Stata 9 starts shipping April 27, 2005, and orders will be shipped in the order received. Place your order using the enclosed order form or order online at

www.stata.com

or call

800-782-8272 (800-STATAPC)	(USA)
800-248-8272	(Canada)
979-696-4600	(Worldwide)
979-696-4601	(FAX)

or email

stata@stata.com

or call your local distributor.

Copyright © 2005 by StataCorp LP

DISTRIBUTORS

Chips Electronics
Serving Brunei, Indonesia, Malaysia, Singapore
62 - 21 - 452 17 61
puyuh23@indo.net.id

Cosinus Computing BV
Serving The Netherlands
+31 416-378 125
info@cosinus.nl

Dittrich & Partner Consulting
Serving Austria, Czech Republic, Germany, Hungary
+49 2 12 / 26 066 - 0
sales@dpc.de

Ixon Technology Company, Ltd.
Serving Taiwan
+886-(0)2-27045535
hank@ixon.com.tw

JasonTG
Serving South Korea
+82-2-470-4143
info@jasontg.com

MercoStat Consultores
Serving Argentina, Brazil, Paraguay, Uruguay
598-2-613-7905
mercost@adinet.com.uy

Metrika Consulting
Serving the Baltic States, Denmark, Finland, Iceland, Norway, Sweden
+46 (0)8 - 792 47 47
sales@metrika.se

MultiON Consulting S.A. de C.V.
Serving Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama
52 (55) 55 59 40 50
direccion@multion.com.mx

Ritme Informatique
Serving Belgium, France, Luxembourg
+33 (0)1 42 46 00 42
info@ritme.com

Scientific Solutions, S.A.
Serving Switzerland
41 (0)21 711 15 20
info@scientific-solutions.ch

SOFTWARE shop, Inc.
Serving Belize, Bolivia, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Peru, Venezuela
425-651-4090
ventas@software-shop.com

Survey Design & Analysis Services
Serving Australia, New Zealand
+61 (0)3 9878 7373
sales@survey-design.com.au

Timberlake Consultants
Serving Eire, Ireland, U.K.
+44 (0)208 697 3377
info@timberlake.co.uk

Timberlake Consulting S.L.
Serving Spain
+34 (9) 5 560 14 30
timberlake@timberlakeconsulting.com

Timberlake Consultores, Lda.
Serving Portugal
+351 214 702 869
info@timberlake.pt

TStat S.r.l.
Serving Italy
+39 0864 210101
tstat@tstat.it

Vishvas Marketing-Mix Services
Serving India
91-22-25892639
vishvas@vsnl.com

RESELLERS

Columbia CP, Ltd.
Serving China, Hong Kong, Indonesia, Malaysia, Philippines, Singapore
+852-28580080
info@columbiacp.com

CreActive snc
Serving Italy
+39 0575 333297
staff@creactive.net

East Asia Training & Consultancy
Serving Malaysia, Singapore
+65 62199062
stata@eastasiatc.com.sg

IEM
Serving Botswana, Lesotho, Mozambique, Namibia, South Africa, Swaziland, Zimbabwe
+27-11-8286169
instruments@mweb.co.za

Informatique, Inc.
Serving Japan
+81-3-3505-1250
sales@informatiq.co.jp

MP & Associates
Serving Greece, Cyprus
+30-210-7600955
info@mpassociates.gr

NFUCA
Serving Japan
81-3-5307-1133
softinfo@univcoop.or.jp

Quantec Research (Pty), Ltd.
Serving South Africa, Southern Africa, Côte d'Ivoire, Ghana
+27-12-3615154
software@quantec.co.za

SoftLine Company
Serving Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgystan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan
+7-095-2320023
info@softline.ru

Tashtit Scientific Consultants, Ltd.
Serving Israel
+972-3-523-0825
info@tashtitsoft.co.il

Timberlake Consultores Brasil
Serving Brazil
+55-11-3040-3042
info@timberlake.com.br

Timberlake Consultants Polska
Serving Poland
+48 600 370 435
info@timberlake.pl

Token Communication, Ltd.
Serving Romania
+40 264 450201
token@pcnet.ro