

THE STATA JOURNAL

[Metadata, citation and similar papers at c](#)

Research Papers in Economics

Department of Statistics
Texas A & M University
College Station, Texas 77843
979-845-3142; FAX 979-845-3144
jnewton@stata-journal.com

Department of Geography
University of Durham
South Road
Durham City DH1 3LE UK
n.j.cox@stata-journal.com

Associate Editors

Christopher Baum
Boston College

Rino Bellocco
Karolinska Institutet

David Clayton
Cambridge Inst. for Medical Research

Mario A. Cleves
Univ. of Arkansas for Medical Sciences

William D. Dupont
Vanderbilt University

Charles Franklin
University of Wisconsin, Madison

Joanne M. Garrett
University of North Carolina

Allan Gregory
Queen's University

James Hardin
University of South Carolina

Stephen Jenkins
University of Essex

Ulrich Kohler
WZB, Berlin

Jens Lauritsen
Odense University Hospital

Stanley Lemeshow
Ohio State University

J. Scott Long
Indiana University

Thomas Lumley
University of Washington, Seattle

Roger Newson
King's College, London

Marcello Pagano
Harvard School of Public Health

Sophia Rabe-Hesketh
University of California, Berkeley

J. Patrick Royston
MRC Clinical Trials Unit, London

Philip Ryan
University of Adelaide

Mark E. Schaffer
Heriot-Watt University, Edinburgh

Jeroen Weesie
Utrecht University

Nicholas J. G. Winter
Cornell University

Jeffrey Wooldridge
Michigan State University

Stata Press Production Manager

Lisa Gilmore

Copyright Statement: The Stata Journal and the contents of the supporting files (programs, datasets, and help files) are copyright © by StataCorp LP. The contents of the supporting files (programs, datasets, and help files) may be copied or reproduced by any means whatsoever, in whole or in part, as long as any copy or reproduction includes attribution to both (1) the author and (2) the Stata Journal.

The articles appearing in the Stata Journal may be copied or reproduced as printed copies, in whole or in part, as long as any copy or reproduction includes attribution to both (1) the author and (2) the Stata Journal.

Written permission must be obtained from StataCorp if you wish to make electronic copies of the insertions. This precludes placing electronic copies of the Stata Journal, in whole or in part, on publicly accessible web sites, file servers, or other locations where the copy may be accessed by anyone other than the subscriber.

Users of any of the software, ideas, data, or other materials published in the Stata Journal or the supporting files understand that such use is made without warranty of any kind, by either the Stata Journal, the author, or StataCorp. In particular, there is no warranty of fitness of purpose or merchantability, nor for special, incidental, or consequential damages such as loss of profits. The purpose of the Stata Journal is to promote free communication among Stata users.

The *Stata Journal*, electronic version (ISSN 1536-8734) is a publication of Stata Press, and Stata is a registered trademark of StataCorp LP.

Stata at 20: a personal view

Patrick Royston

I bought my first copy of Stata in May 1989, and it was version 2.05. I still use Stata most days, but now it is version 8.2. Why has it survived and prospered so long in my statistical armory?

I still have my 1989 shipment of Biturbo Stata version 2.05 and Stage 1.0 Graphics Editor, on five 3.5-inch, 720 Kb floppies. On opening at random my copy of the version 2.05 reference manual (copyright March 1989 © Computing Resource Center, Los Angeles, California), the page fell open at page 539, a summary of something called `Stat.Kit`. I recalled then the excitement of the arrival of “kits”; they were the fore-runners of the now familiar and quintessential ado-files. In those days, there were 4 such kits (`Stat.Kit`, `Graph.Kit`, `Data.Kit`, `Survive.Kit`), and they provided a variety of programs in each relevant area. You typed, for example, `run Stat.Kit`, and the associated 17 programs were loaded into memory. After that you used them exactly as one now does an ado-file.

On reflection, Stata has a few key features that I value above all. First, I will illustrate one of these features in a little detail, and later I will briefly mention the others. This feature is *backwards compatibility*, which in Stata lingo is known as “version control”. As a simple experiment designed to test version control, I wrote and ran in Stata 8.2 the following do-file:

```
/*
Experiment to show version control.
Patrick Royston.
*/
* Set up version
version 2.05
set logtype text
log using stata.log, replace
* clear out all ado-file support
quietly forvalues j = 1/7 {
adopath -1
}
* Load Stat.Kit
run stat.kit
* Load old auto data
use auto
* Create mpg + uniform() * 5
gen mpg2 = mpg + uniform() * 5
* Perform equal-variance t-test
ttest mpg = mpg2
log close
```

What I am doing here is to set Stata 8.2 to version 2.05, remove *all* ado-file support, load `Stat.Kit` and the classic `auto.dta` dataset, generate a new variable `mpg2` from `mpg`

with on average about 2.5 mpg greater values, and run an unpaired t-test comparing mpg with mpg2. Here is the output as stored in stata.log:

```
-----
      log:  e:\tsj\stata20\stata.log
    log type:  text
  opened on:  28 Dec 2004, 10:03:35
. * clear out all ado-file support
. quietly forvalues j=1/7 {
. * Load Stat.Kit
. run stat.kit
Loading Stat.Kit Release 2.05 Copyright (c) 1986-1989 by ==C=R=C==
All rights reserved.
The following new commands are now available:
  blogit          genstd          kwallis          signrank          ttest
  bprobit         glogit          means            signtest
  dbeta           gprobit         ranksum          spearman
  genrank         ksmirnov        regdw           teststd
See help Stat.Kit.
. * Load old auto data
. use auto
(1978 Automobile Data)
. * Create mpg + uniform() * 5
. gen mpg2 = mpg + uniform() * 5
. * Perform equal-variance t-test
. ttest mpg = mpg2
      Variable |      Obs      Mean   Std. Dev.   Min      Max
-----+-----
          mpg |       74   21.2973   5.785503     12     41
        mpg2 |       74   23.68922  5.945047  14.43152  44.18587
Test: means of mpg and mpg2 are equal (assuming equal variances)
Difference = -2.3919258
t-statistic = -2.48 with 146 d.f.
Prob > |t| = 0.0143
. log close
      log:  e:\tsj\stata20\stata.log
    log type:  text
  closed on:  28 Dec 2004, 10:03:35
-----
```

Lo and behold, Stata 8.2 runs correctly under version 2.05 control using 2.05 program code and data. This to my mind is impressive. How many other statistical packages would stand up to such a severe test? For me, version control is an apparently unglamorous property of Stata that shows StataCorp's strong commitment to the practical needs of its users, and is one reason why Stata still has a rosy future. I dread to think how many lines of C program code sit behind the scenes supporting the innocent-looking `version #` command. Surely this is virtuoso computer programming of a high order?

Other essential features of Stata I particularly value are its graphics, its simple but elegant command syntax (which in essence has not changed since version 2.05), its seamless programmability via ado-files, and last, but by no means least, its excellent documentation. I do recall that having fast, high-resolution graphics was in 1989 an

important selling point and a key determinant of why I bought Stata. The fact that formulas are given in the manual even for quite complex mathematical calculations such as the partial likelihood in a Cox regression model has been immensely useful, and StataCorp even now continues to pay attention to improving this aspect of the product. I could add other far-sighted innovations that were even rather shocking at the time of their introduction, such as increasing levels of integration with the Internet for updating Stata and for installing add-on packages. Certainly the list-server Statalist has played a useful role in the development of user awareness, although I myself don't find much time to access it nowadays. One must also mention the *Stata Journal* and its predecessor, the *Stata Technical Bulletin*. No serious package can be without such a publication.

Is Stata now perfect? Of course not. Areas in which I would like to see improvements include documentation of graphics and GUI dialog programming, greater searchability and flexibility of the help system (I have lost count of the number of times I have trawled through the help system in search of some obscure graphics option), acceleration of drawing a graph, and a facility to make it easier to write help files in Stata's markup language, SMCL. A graphics editor would be nice too; my 1989 shipment included Stage 1.0, the first and only edition of the Stata graphics editor, a fine program that has not yet been replaced.

Above all, though, StataCorp's encouragement of users to get involved and StataCorp's habit of valuing and responding to their subsequent efforts have been some of the most delightful and productive aspects of Stata. If that interaction is ever lost, Stata will probably die.

About the Author

Patrick Royston is a medical statistician of 25 years of experience, with a strong interest in biostatistical methodology and in statistical computing and algorithms. At present, he works in clinical trials and related research issues in cancer. Currently he is focusing on problems of model building and validation with survival data, including prognostic factors studies, on parametric modeling of survival data, and on novel trial designs.