

The use of Stata in Biostat Teaching

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Outline

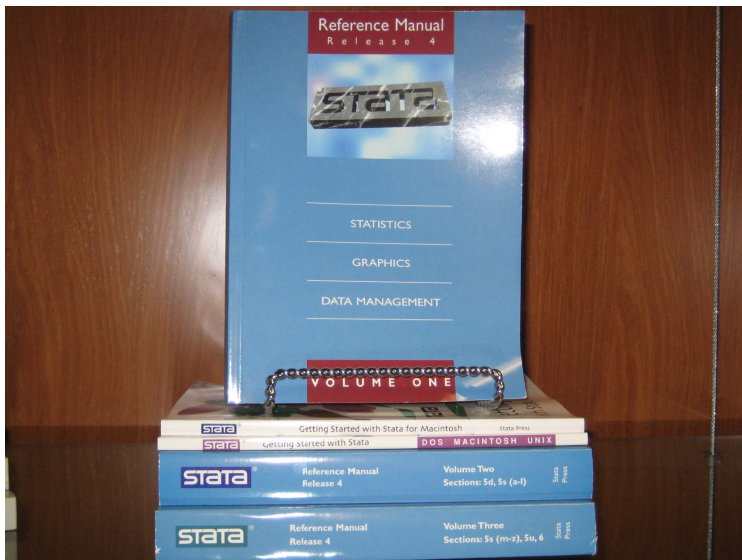
- 1 Introduction
- 2 Stata Progress
- 3 Teaching Medical Statistics, Epidemiology with Stata

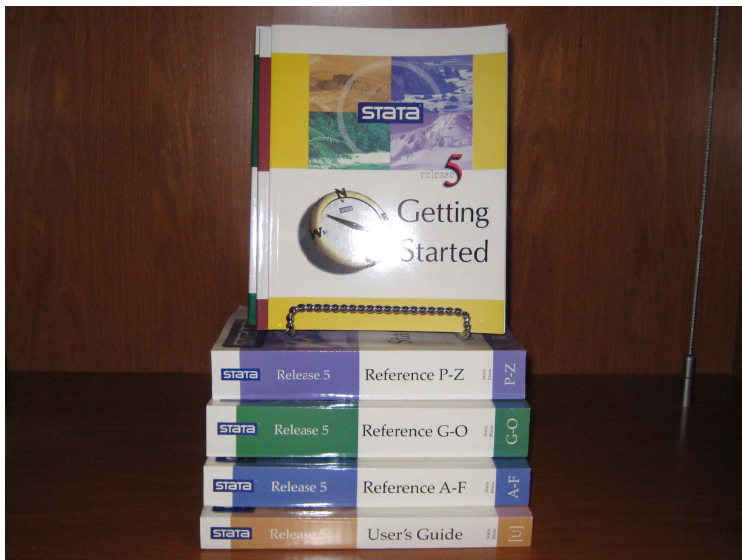
Some History

Releases of Stata

- Version: 1.0-1.5, January 1985 - February 1987
- Version: 2.0-2.1, June 1989 - September 1990
- Version: 3.0-3.1, March 1992 - August 1993
- Version: 4.0, January 1995
- Version: 5.0, October 1996
- Version: 6.0, January 1999
- Version: 7.0, December 2000
- Version: 8.0-8.2, October 2003
- Version: 9.0-9.2, April 2005
- Version: 10.0-10.1, June 2007









Stata/SE 8.2

File Edit Prefs Data Graphics Statistics User Window Help

Review

Stata Results

```

STATISTICStm 8.2 Copyright 1984-2005
Statistics/Data Analysis StataCorp
Special Edition 4905 Lakeway Drive
College Station, Texas 77845 USA
800-STATA-PC http://www.stata.com
979-696-4600 stata@stata.com
979-696-4601 (Fax)

Single-user Stata for Windows perpetual license:
Serial number: 1
Licensed to: Annette Fett
StataCorp LP

Notes:
1. (/m# option or -set memory-) 20.00 MB allocated to data
2. (/v# option or -set maxvar-) 5000 maximum variables

```

Stata Command

C:\DATA



Table 3: Stata 1.0 and Stata 1.1

append	dir	infile	plot	spool
beep	do	input	query	summarize
by	drop	label	regress	tabulate
capture	erase	list	rename	test
confirm	exit	macro	replace	type
convert	expand	merge	run	use
correlate	format	modify	save	
count	generate	more	set	
describe	help	outfile	sort	

Stata 1.0 had int, long, float, and double variables; it did not have byte or str#.

Stata/SE 10.0 - C:\Program Files\Stata10\ado\base\l\auto.dta

File Edit Data Graphics **Statistics** User Window Help

Summaries, tables, and tests

Review

Command

```
1 sysuse auto
2 help regress
3 regress mpg weight
```

Variables

Name	Label
make	Make and Model
price	Price
mpg	Mileage (mpg)
rep78	Repair Record 1979
headroom	Headroom (in.)
trunk	Trunk space (cu. ft.)
weight	Weight (lbs.)
length	Length (in.)
turn	Turn Circle (ft.)
displace...	Displacement (cu. in.)
gear_ratio	Gear Ratio
foreign	Car type

Statistics

- Linear models and related
 - Linear regression
 - Regression diagnostics
 - ANOVA/MANOVA
 - Constrained linear regression
 - Censored regression
 - Truncated regression
 - Box-Cox regression
 - Fractional polynomials
 - Quantile regression
 - Errors-in-variables regression
 - Frontier models
 - Panel data
 - Multiple-equation models
 - Other
- Binary outcomes
- Ordinal outcomes
- Categorical outcomes
- Count outcomes
- Exact statistics
- Endogenous covariates
- Sample selection models
- Multilevel mixed-effects models
- Generalized linear models
- Nonparametric analysis
- Time series
- Multivariate time series
- Longitudinal/panel data
- Survival analysis
- Epidemiology and related
- Survey data analysis
- Multivariate analysis
- Resampling
- Postestimation
- Other

Linear regression

MB allocated to data
Maximum variables

```
Number of obs = 74
F( 1, 72) = 134.62
Prob > F = 0.0000
R-squared = 0.6515
Adj R-squared = 0.6467
Root MSE = 3.4389
```

Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-.0060087	.0005179	-11.60	0.000	-.0070411 -.0049763
39.44028	1.614003	24.44	0.000	36.22283 42.65774

C:\Users\root

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Version 1 - Version 2: Some Important Steps

- Survival Analysis, Kaplan-Meier estimate and Cox regression was implemented in its basic form in Version 2.
- The first Stata book was *Statistics with Stata*, from L. Hamilton Teaching of Statistics with Stata, or of Stata itself, has never been the first concern of Stata's developers, who see Stata as primarily software for research, but there has been always been strong and positive support for people who write texts linked to Stata (A quote from Nick Cox)
- The release of Stataques: the "student" statistical package, where the first version of the menu system was incorporated. Lawrence Hamilton suggested a "statistical calculator" in the program to take advantage of the "immediate" commands,

Version 3: much added

- logistic, ologit, oprobit, clogit, mlogit
- tobit, cnreg, rreg, qreg, weibull, ereg
- epitab
- weights reconsidered: pweights
- mvreg, sureg, heckman, nlreg, areg, canon
- nbreg
- constrained linear regression
- ml (first version)
- codebook

Version 3: EpiTab, a friend for epidemiologists

- Cohort studies
 - ir & iri
 - cs & csi
- Case control studies
 - cc & cci
 - tabodds
 - mhodds
- Matched Case control studies
 - cc & cci
 - tabodds
 - mhodds

Version 4 - Version 5

- Stata marries Windows
- Mac version released
- Stata.com
- glm
- xt commands introduced
- st package

Version 6

- web aware (use `http://`, updating, etc.)
- st rewritten

Version 7

- frailty
- cluster analysis
- roc
- Stata for MAC OS X
- Windowed UNIX
- *An Introduction to Survival Analysis using Stata*

Version 8

- graphics
- extended GUI, dialog boxes available for all commands
- gllamm

Version 9 - Version 10

- xtmixed
- mata
- improved do editor
- graphic editor
- exact methods
- power calculation

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Key textbooks

- Regression with graphics (Hamilton)
- A short introduction to Stata for Biostatistics (Hill and De Stavola):
effmenu
- Medical Statistics (Kirkwood, Sterne)
- An Introduction to Stata for Health Researchers (Juul)
- An handbook of Statistical analysis using Stata (Rabe-Hesketh, Everitt)
- Statistical modeling for biomedical researchers (Dupont)

Key web: <http://www.ats.ucla.edu/stat/stata/>

The screenshot shows a Mozilla Firefox browser window displaying the Stata website. The address bar shows the URL <http://www.ats.ucla.edu/stat/stata/>. The page title is "Resources to help you learn and use Stata - Mozilla Firefox". The browser's toolbar includes navigation buttons (back, forward, home, stop, refresh) and a search bar with "Google" as the search engine. The website content is organized into several sections:

- Resources to help you learn and use Stata** (Section Header)
- Learning Stata**
 - [Stata Starter Kit](#)
 - [Classes and Seminars](#)
 - [Learning Modules](#)
 - [Frequently Asked Questions](#)
- Statistical Analysis**
 - [Data Analysis Examples](#)
 - [Annotated Output](#)
 - [Textbook Examples](#)
 - [Paper Examples](#)
 - [Web Books](#)
 - [What statistical analysis should I use?](#)
- Advanced Usage**
 - [Stata Programs for Research and Teaching Library](#)
 - [Code Fragments](#)
 - [Stata Tools for LaTeX](#)
- Important Links**
 - [How can I get my own copy of Stata 10?](#)
 - [Where to run Stata? How to get Stata?](#)
 - [Installing, Customizing, Updating Stata](#)
 - [Top 10 Questions about Stata](#)
 - [The Stata Journal Archives](#)
- Links by Topic**
 - [Stata 9 and 10](#)
 - [Data Management](#)
 - [Graphics](#)
 - [ANOVA](#)
 - [Regression](#)
 - [Logistic \(and Categorical\) Regression](#)
 - [Count Models](#)
 - [Multilevel Modeling](#)
 - [Survival Analysis](#)
 - [Survey Data Analysis](#)
- Lookup help for Stata command**
 -
- Use Google to search our Stata pages for**
 -

The browser's status bar at the bottom left shows "Done". The Stata logo is visible in the bottom right corner of the browser window.

University supporting teaching of Medical Statistics with Stata

- UCLA
- Harvard University, School of Public Health
- John Hopkins, School of Public Health
- Karolinska Institutet, Medical Epidemiology and Biostatistics
- London School of Tropical Medicine and Hygiene, Medical Statistics Unit
- Too many others to list

Advantage of Stata

- Simple
- Direct
- Fast
- Affordable
- Fun to learn and to apply

Applied Statistics

- Introductory Statistics (summarize, tabulate, tabstat)
- Categorical Data Analysis (epitab, standardization, kappa, logistic)
- Analysis of Prospective Studies (epitab, poisson)
- Longitudinal Data Analysis (xtmixed)
- Survival Analysis (st, sttcc)

Statistics

- Mata
- Programming
- Simulation
- Bootstrapping

Suggestions for Graduate teaching of Biostatistics

- Discrete Survival Time
- Score Test
- Complete longitudinal procedure

C:\Z:\STATA1\stata.exe

```
==S=T=A=T=A==1.0== Copyright (C) 1984 by ==C=R=C== <Professional Vers
```

```
- _
```