



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

THE STATA JOURNAL

Editor

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

Editor

Nicholas J. Cox
Geography Department
Durham University
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
Ben Jann
ETH Zurich, Switzerland
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

Stata Press Copy Editors

Lisa Gilmore
Gabe Waggoner, John Williams

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 tip 25: Sequence index plots

Ulrich Kohler and Christian Brzinsky-Fay
Wissenschaftszentrum Berlin
kohler@wz-berlin.de, brzinsky-fay@wz-berlin.de

Sequence index plots of longitudinal or panel data use stacked bars or line segments to show how individuals move between a set of conditions or states over time. Changes of state are shown by changes of color. The term *sequence index plot* was proposed by Brüderl and Scherer (2005, in press). See Scherer (2001) for an application.

It is possible to draw sequence index plots with Stata by using the `twoway rbar`. Starting from data in survival-time form (see `help st`), you simply overlay separate range-bar plots for each state.

For example, suppose that you have data on times for entering and leaving various states of employment:

```
. list in 1/10
```

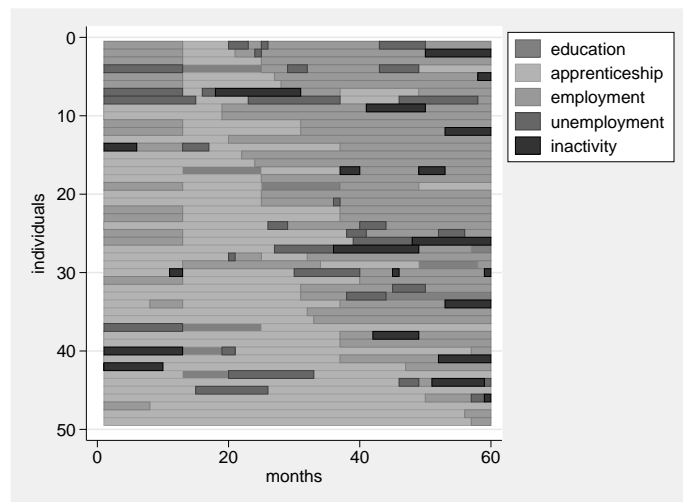
	id	type	begin	end
1.	1	employed	1	13
2.	1	apprenticeship	13	20
3.	1	unemployed	20	23
4.	1	employed	23	25
5.	1	unemployed	25	26
6.	1	employed	26	43
7.	1	unemployed	43	50
8.	1	employed	50	60
9.	2	employed	1	13
10.	2	apprenticeship	13	21

First, **separate** the start and end dates for the different states:

```
. separate begin, by(type)  
. separate end, by(type)
```

Then plot overlaid range bars for each state:

```
. graph twoway  
> (rbar begin1 end1 id, horizontal)  
> (rbar begin2 end2 id, horizontal)  
> (rbar begin3 end3 id, horizontal)  
> (rbar begin4 end4 id, horizontal)  
> (rbar begin5 end5 id, horizontal)  
> , legend(order(1 "education" 2 "apprenticeship"  
> 3 "employment" 4 "unemployment" 5 "inactivity")  
> cols(1) pos(2) symxsize(5))  
> xtitle("months") yla(, angle(h)) yscale(reverse)
```



It is common to put personal identifiers on the y -axis, using the option `horizontal`, and put time on the x -axis.

In practice, with many individuals in a large panel, the bars become thinner lines. In such cases, you could use the plotype `rspike` instead. Note also that you can make room for more individuals by tuning the aspect ratio of the graph (see Cox 2004). There is no upper limit to how many individuals are shown, although as the number increases, the resulting graph may become too difficult to interpret. The readability, however, largely depends on how far similar individuals are grouped together. The sort order should therefore be some criterion of similarity between sequences.

To fine tune the graph, use any option allowed with `graph twoway`; type `help twoway_options`. Our example provides some simple illustrations. `legend()` changes the contents and placement of the legend. `xtitle()` defines the title along the x -axis. `ylabel()` is used to display the y -axis labels horizontally, instead of vertically. `yscale(reverse)` reverses the scale of the y -axis so that the first individual is plotted at the very top of the graph.

References

- Brüderl, J. and S. Scherer. 2005, in press. Methoden zur Analyse von Sequenzdaten. *Kölner Zeitschrift für Soziologie und Sozialpsychologie* Sonderheft 44.
- Cox, N. J. 2004. Stata tip 12: Tuning the plot region aspect ratio. *Stata Journal* 4(3): 357–358.
- Scherer, S. 2001. Early career patterns: a comparison of Great Britain and West Germany. *European Sociological Review* 17(2): 119–144.