graph twoway pcarrow — Paired-coordinate plot with arrows

Syntax

Directional arrows

twoway pcarrow y1var x1var y2var x2var [if] [in] [ , options ]

Bidirectional arrows

twoway pcbarrow y1var x1var y2var x2var [if] [in] [ , options ]

options       Description

mstyle(markerstyle)     overall style of arrowhead
msize(markersizestyle)  size of arrowhead
mangle(anglestyle)      angle of arrowhead
barbsize(markersizestyle) size of filled portion of arrowhead
mcolor(colorstyle)      color of arrowhead, inside and out
mfcolor(colorstyle)     arrowhead “fill” color
mlcolor(colorstyle)     arrowhead outline color
mlwidth(linewidthstyle) arrowhead outline thickness
mlstyle(linestyle)      thickness and color

line_options        change look of arrow shaft lines

marker_label_options add marker labels; change look or position
headlabel            label head of arrow, not tail
vertical             orient plot naturally; the default
horizontal           orient plot transposing y and x values
axis_choice_options  associate plot with alternative axis
twoway_options       titles, legends, axes, added lines and text, by regions, name,
                      aspect ratio, etc.


Most options are rightmost, except axis_choice_options, headlabel, vertical, and horizontal,
which are unique, and twoway_options, which are a mix of forms; see
Menu

Graphics > Twoway graph (scatter, line, etc.)

Description

twoway pcarrow draws an arrow for each observation in the dataset. The arrow starts at the coordinate \((y1var, x1var)\) and ends at the coordinate \((y2var, x2var)\), with an arrowhead drawn at the ending coordinate.

twoway pcbarrow draws an arrowhead at each end; that is, it draws bidirectional arrows.

Options

\texttt{mstyle(markerstyle)} specifies the overall look of arrowheads, including their size, their color, etc. The other options allow you to change each attribute of the arrowhead, but \texttt{mstyle()} is the point from which they start.

You need not specify \texttt{mstyle()} just because you want to change the look of the arrowhead. In fact, most people seldom specify the \texttt{mstyle()} option. You specify \texttt{mstyle()} when another style exists that is exactly what you desire or when another style would allow you to specify fewer changes to obtain what you want.

pcarrow plots borrow their options and associated “look” from standard markers, so all its options begin with \texttt{m}. See \texttt{[G-4] markerstyle} for a list of available marker/arrowhead styles.

\texttt{msize(markersizestyle)} specifies the size of arrowheads. See \texttt{[G-4] markersizestyle} for a list of size choices.

\texttt{mangle(anglestyle)} specifies the angle that each side of an arrowhead forms with the arrow’s line. For most schemes, the default angle is 28.64.

\texttt{barbsize(markersizestyle)} specifies the portion of the arrowhead that is to be filled. \texttt{barbsize(0)} specifies that just the lines for the arrowhead be drawn. When \texttt{barbsize()} is equal to \texttt{msize()}, the arrowhead is filled to a right angle with the arrow line. The effect of \texttt{barbsize()} is easier to see than to describe:

Example barbsize()s with msize(4)

\begin{verbatim}
barbsize(0)
barbsize(2)
barbsize(4)
\end{verbatim}
mcolor(colorstyle) specifies the color of the arrowhead. This option sets both the color of the line used to outline the arrowhead and the color of the inside the arrowhead. Also see options mfcolor() and mlcolor() below. See [G-4] colorstyle for a list of color choices.

mfcolor(colorstyle) specifies the color of the inside the arrowhead. See [G-4] colorstyle for a list of color choices.

mlstyle(linestyle), mlwidth(linewidthstyle), and mlcolor(colorstyle) specify the look of the line used to outline the arrowhead. See [G-4] concept: lines, but you cannot change the line pattern of an arrowhead.

line_options specify the look of the lines used to draw the shaft of the arrow, including pattern, width, and color; see [G-3] line_options.

marker_label_options specify if and how the arrows are to be labeled. By default, the labels are placed at the tail of the arrow, the point defined by y1var and x1var. See [G-3] marker_label_options for options that change the look of the labels.

headlabel specifies that labels be drawn at the arrowhead, the (y2var,x2var) points rather than at the tail of the arrow, the (y1var,x1var) points. By default, when the mlabel() option is specified, labels are placed at the tail of the arrows; headlabel moves the labels from the tail to the head.

vertical and horizontal specify whether the y and x coordinates are to be swapped before plotting—vertical (the default) does not swap the coordinates, whereas horizontal does.

These options are rarely used when plotting only paired-coordinate data; they can, however, be used to good effect when combining paired-coordinate plots with range plots, such as twoway rspike or twoway rbar; see [G-2] graph twoway rspike and [G-2] graph twoway rbar.

axis_choice_options associate the plot with a particular y or x axis on the graph; see [G-3] axis_choice_options.

twoway_options are a set of common options supported by all twoway graphs. These options allow you to title graphs, name graphs, control axes and legends, add lines and text, set aspect ratios, create graphs over by( ) groups, and change some advanced settings. See [G-3] twoway_options.

Remarks and examples stata.com

Remarks are presented under the following headings:

Basic use
Advanced use

Basic use

We have longitudinal data from 1968 and 1988 on the earnings and total experience of U.S. women by occupation. We will input data for two arrows, both originating at (0,0) and extending at right angles from each other, and plot them.
We could add labels to the heads of the arrows while also adding a little room in the plot region and constraining the plot region to be square:

```
. drop _all
. input y1 x1 y2 x2 str10 time pos
  1. 0 0 0 1 "3 o’clock" 3
  2. 0 0 1 0 "12 o’clock" 12
. end
. twoway pcarrow y1 x1 y2 x2, aspect(1) mlabel(time) headlabel
   mlabvposition(pos) plotregion(margin(vlarge))
```

For examples of arrows in graphing multivariate results, see [MV] biplot.
Advanced use

As with many `twoway` plottypes, `pbarrow` and `pbarrow` can be usefully combined with other `twoway` plottypes (see [G-2] `graph twoway`). Here a `scatter` plot is used to label ranges drawn by `pbarrow` (though admittedly the ranges might better be represented using `twoway rcap`).

```
. use http://www.stata-press.com/data/r13/nlsw88, clear
(NLSW, 1988 extract)
. keep if occupation <= 8
(224 observations deleted)
. collapse (p05) p05=wage (p95) p95=wage (p50) p50=wage, by(occupation)
. gen mid = (p05 + p95) / 2
. gen dif = (p95 - p05)
. gsort -dif
. gen srt = _n
. twoway pbarrow srt p05 srt p95 ||
    scatter srt mid, msymbol(i) mlabel(occupation)
    mlabpos(12) mlabcolor(black)
    plotregion(margin(t=5)) yscale(off)
    ylabel(, nogrid) legend(off)
    ytitle(Hourly wages)
    title("90 Percentile Range of US Women's Wages by Occupation")
    note("Source: National Longitudinal Survey of Young Women")
```

References


Also see

[G-2] graph twoway — Twoway graphs
[G-2] graph twoway pcarrowi — Twoway parrow with immediate arguments
[G-2] graph twoway pccapsym — Paired-coordinate plot with spikes and marker symbols
[G-2] graph twoway pci — Twoway paired-coordinate plot with immediate arguments
[G-2] graph twoway pcscatter — Paired-coordinate plot with markers
[G-2] graph twoway pcspike — Paired-coordinate plot with spikes