**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 pbarrow draws an arrowhead at each end; that is, it draws bidirectional arrows.

**Quick start**

Directional arrow plot from \((y1, x1)\) to \((y2, x2)\)

\[
\text{twoway pcarrow y1 x1 y2 x2}
\]

Bidirectional arrow plot

\[
\text{twoway pbarrow y1 x1 y2 x2}
\]

Specify arrowheads of size 4

\[
\text{twoway pcarrow y1 x1 y2 x2, msize(4)}
\]

As above, but specify barbs of size 4

\[
\text{twoway pcarrow y1 x1 y2 x2, msize(4) barbsize(4)}
\]

As above, but specify orange lines

\[
\text{twoway pcarrow y1 x1 y2 x2, msize(4) barbsize(4) lcolor(orange)}
\]

Label the arrows using the values of labvar

\[
\text{twoway pcarrow y1 x1 y2 x2, mlabel(labvar)}
\]

As above, with labels near the arrowhead

\[
\text{twoway pcarrow y1 x1 y2 x2, mlabel(labvar) headlabel}
\]

**Menu**

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

Directional arrows

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

Bidirectional arrows

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

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**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 [G-4] Concept: repeated options.

Options

**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 **mstyle()** is the point from which they start.

You need not specify **mstyle()** just because you want to change the look of the arrowhead. In fact, most people seldom specify the **mstyle()** option. You specify **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 **m**. See [G-4] **markerstyle** for a list of available marker/arrowhead styles.
**msize(markersizestyle)** specifies the size of arrowheads. See [G-4] *markersizestyle* for a list of size choices.

**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.

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

![Example barbsize()s with msize(4)](image)

**mcolor(colorstyle)** specifies the color of the arrowhead. This option sets the color and opacity of both the line used to outline the arrowhead and the inside of the arrowhead. Also see options **mfcolor()** and **mlcolor()** below. See [G-4] *colorstyle* for a list of color choices.

**mfcolor(colorstyle)** specifies the color and opacity of the inside of 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

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.

```
. input y1 x1 y2 x2
   1. 0 0 0 1
   2. 0 0 1 0
   3. end

. twoway pcarrow y1 x1 y2 x2
```

```
0 .2 .4 .6 .8 1
y1/y2
0 .2 .4 .6 .8 1
x1/x2
```

```
0 2 4 6 8 1
```

```
6 .2 .4 .6 .8 .1
x1/x2
```

```
1 0
```

```
```

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

```
.use https://www.stata-press.com/data/r16/nlsw88, clear
(NLSW, 1988 extract)
.keep if occupation <= 8
(224 observations deleted)
collapse (p05) p05=wage (p95) p95=wage (p50) p50=wage, by(occupation)
generate mid = (p05 + p95) / 2
generate dif = (p95 - p05)
gsort -dif
generate srt = _n
twoway pcbarrow 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")
```
90 Percentile Range of US Women’s Wages by Occupation

Source: National Longitudinal Survey of Young Women

References


Also see

[G-2] `graph twoway` — Twoway graphs

[G-2] `graph twoway pcarrowi` — Twoway pcarrow 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 pscatter` — Paired-coordinate plot with markers

[G-2] `graph twoway pcspike` — Paired-coordinate plot with spikes