Graph twoway area — Twoway line plot with area shading

Syntax

```
twoway area yvar xvar [if] [in] [ , options ]
```

<table>
<thead>
<tr>
<th>options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>vertical</td>
<td>vertical area plot; the default</td>
</tr>
<tr>
<td>horizontal</td>
<td>horizontal area plot</td>
</tr>
<tr>
<td>cmissing(y</td>
<td>n)</td>
</tr>
<tr>
<td>base(#)</td>
<td>value to drop to; default is 0</td>
</tr>
<tr>
<td>nodropbase</td>
<td>programmer’s option</td>
</tr>
<tr>
<td>sort</td>
<td>sort by xvar; recommended</td>
</tr>
</tbody>
</table>

area_options change look of shaded areas
axis_choice_options associate plot with alternative axis
twoway_options titles, legends, axes, added lines and text, by, regions, name, aspect ratio, etc.


Option base() is rightmost; vertical, horizontal, nodropbase, and sort are unique; see [G-4] concept: repeated options.

Menu

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

Description

twoway area displays \((y,x)\) connected by straight lines and shaded underneath.

Options

vertical and horizontal specify either a vertical or a horizontal area plot. vertical is the default. If horizontal is specified, the values recorded in yvar are treated as \(x\) values, and the values recorded in xvar are treated as \(y\) values. That is, to make horizontal plots, do not switch the order of the two variables specified.

In the vertical case, shading at each xvar value extends up or down from 0 according to the corresponding yvar values. If 0 is not in the range of the \(y\) axis, shading extends up or down to the \(x\) axis.
In the horizontal case, shading at each \textit{xvar} value extends left or right from 0 according to the corresponding \textit{yvar} values. If 0 is not in the range of the \textit{x} axis, shading extends left or right to the \textit{y} axis.

\texttt{cmissing(y|n)} specifies whether missing values are to be ignored when drawing the area or if they are to create breaks in the area. The default is \texttt{cmissing(y)}, meaning that they are ignored.

Consider the following data:

<table>
<thead>
<tr>
<th></th>
<th>y1</th>
<th>y2</th>
<th>x</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>11</td>
<td>12</td>
<td>8</td>
</tr>
</tbody>
</table>

Say that you graph these data by using \texttt{twoway area y1 y2 x}. Do you want a break in the area between 3 and 5? If so, you type

\begin{verbatim}
   . twoway area y1 y2 x, cmissing(n)
\end{verbatim}

and two areas will be drawn, one for the observations before the missing values at observation 4 and one for the observations after the missing values.

If you omit the option (or type \texttt{cmissing(y)}), the data are treated as if they contained

<table>
<thead>
<tr>
<th></th>
<th>y1</th>
<th>y2</th>
<th>x</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>11</td>
<td>12</td>
<td>8</td>
</tr>
</tbody>
</table>

meaning that one contiguous area will be drawn over the range (1,8).

\texttt{base(#)} specifies the value from which the shading should extend. The default is \texttt{base(0)}, and in the above description of options \texttt{vertical} and \texttt{horizontal}, this default was assumed.

\texttt{nodropbase} is a programmer’s option and is an alternative to \texttt{base()}. It specifies that rather than the enclosed area dropping to \texttt{base(#)}—or \texttt{base(0)}—it drops to the line formed by \((y_1,x_1)\) and \((y_N,x_N)\), where \((y_1,x_1)\) are the \textit{y} and \textit{x} values in the first observation being plotted and \((y_N,x_N)\) are the values in the last observation being plotted.

\texttt{sort} specifies that the data be sorted by \textit{xvar} before plotting.

\textit{area_options} set the look of the shaded areas. The most important of these options is \texttt{color(colorstyle)}, which specifies the color of both the area and its outline; see \[G-4\] \textit{colorstyle} for a list of color choices. See \[G-3\] \textit{area_options} for information on the other \textit{area_options}.

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

\textit{twoway_options} are a set of common options supported by all \textit{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 \texttt{by()} groups, and change some advanced settings. See \[G-3\] \textit{twoway_options}.
Remarks and examples

Remarks are presented under the following headings:

Typical use
Advanced use
Cautions

Typical use

We have quarterly data recording the U.S. GNP in constant 1996 dollars:

. use http://www.stata-press.com/data/r13/gnp96
. list in 1/5

<table>
<thead>
<tr>
<th>date</th>
<th>gnp96</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1967q1</td>
</tr>
<tr>
<td>2.</td>
<td>1967q2</td>
</tr>
<tr>
<td>3.</td>
<td>1967q3</td>
</tr>
<tr>
<td>4.</td>
<td>1967q4</td>
</tr>
<tr>
<td>5.</td>
<td>1968q1</td>
</tr>
</tbody>
</table>

In our opinion, the area under a curve should be shaded only if the area is meaningful:

. use http://www.stata-press.com/data/r13/gnp96, clear
. twoway area d.gnp96 date
Advanced use

Here is the same graph, but greatly improved with some advanced options:

```
  . twoway area d.gnp96 date, xlabel(36(8)164, angle(90))
  ylabel(-100(50)200, angle(0))
  ytitle("Billions of 1996 Dollars")
  xtitle(""")
  subtitle("Change in U.S. GNP", position(11))
  note("Source: U.S. Department of Commerce, Bureau of Economic Analysis")
```

![Graph showing changes in U.S. GNP from 1969q1 to 2001q1. The y-axis represents billions of 1996 dollars, and the x-axis represents quarters from 1969 to 2001. The graph includes a subtitle and a note about the source: U.S. Department of Commerce, Bureau of Economic Analysis.](source: U.S. Department of Commerce, Bureau of Economic Analysis)
Cautions

Be sure that the data are in the order of \textit{xvar}, or specify \texttt{area}'s \texttt{sort} option. If you do neither, you will get something that looks like modern art:

\begin{verbatim}
. use http://www.stata-press.com/data/r13/gnp96, clear
. generate d = d.gnp96
   (1 missing value generated)
. generate u = runiform()
. sort u
   (put in random order)
. twoway area d date
\end{verbatim}

Also see

[G-2] \texttt{graph twoway scatter} — Twoway scatterplots
[G-2] \texttt{graph twoway dot} — Twoway dot plots
[G-2] \texttt{graph twoway dropline} — Twoway dropped-line plots
[G-2] \texttt{graph twoway histogram} — Histogram plots
[G-2] \texttt{graph twoway spike} — Twoway spike plots
[G-2] \texttt{graph bar} — Bar charts