### Syntax

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

<table>
<thead>
<tr>
<th>options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>vertical</code></td>
<td>vertical bar plot; the default</td>
</tr>
<tr>
<td><code>horizontal</code></td>
<td>horizontal bar plot</td>
</tr>
<tr>
<td><code>base(#)</code></td>
<td>value to drop to; default is 0</td>
</tr>
<tr>
<td><code>barwidth(#)</code></td>
<td>width of bar in <code>xvar</code> units</td>
</tr>
<tr>
<td><code>barlook_options</code></td>
<td>change look of bars</td>
</tr>
<tr>
<td><code>axis_choice_options</code></td>
<td>associate plot with alternative axis</td>
</tr>
<tr>
<td><code>twoway_options</code></td>
<td>titles, legends, axes, added lines and text, by, regions, name, aspect ratio, etc.</td>
</tr>
</tbody>
</table>


Options `base()` and `barwidth()` are `rightmost`, and `vertical` and `horizontal` are `unique`; see [G-4] `concept: repeated options`.

### Menu

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

### Description

`twoway bar` displays numeric \((y,x)\) data as bars. `twoway bar` is useful for drawing bar plots of time-series data or other equally spaced data and is useful as a programming tool. For finely spaced data, also see [G-2] `graph twoway spike`.


### Options

`vertical` and `horizontal` specify either a vertical or a horizontal bar 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, bars are drawn at the specified \textit{xvar} values and extend up or down from 0 according to the corresponding \textit{yvar} values. If 0 is not in the range of the \textit{y} axis, bars extend up or down to the \textit{x} axis.

In the horizontal case, bars are drawn at the specified \textit{xvar} values and extend left or right from 0 according to the corresponding \textit{yvar} values. If 0 is not in the range of the \textit{x} axis, bars extend left or right to the \textit{y} axis.

\texttt{base(\#)} specifies the value from which the bar 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{barwidth(\#)} specifies the width of the bar in \textit{xvar} units. The default is \texttt{width(1)}. When a bar is plotted, it is centered at \textit{x}, so half the width extends below \textit{x} and half above.

\texttt{barlook_options} set the look of the bars. The most important of these options is \texttt{color(colorstyle)}, which specifies the color of the bars; see \texttt{G-4 colorstyle} for a list of color choices. See \texttt{G-3 barlook_options} for information on the other \texttt{barlook_options}.

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

\texttt{twoway_options} are a set of common options supported by all \texttt{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 \texttt{G-3 twoway_options}.

**Remarks and examples**

Remarks are presented under the following headings:

- Typical use
- Advanced use: Overlaying
- Advanced use: Population pyramid
- Cautions

**Typical use**

We have daily data recording the values for the S&P 500 in 2001:

\begin{verbatim}
   . use http://www.stata-press.com/data/r13/sp500
   (S&P 500)
   . list date close change in 1/5

<table>
<thead>
<tr>
<th>date</th>
<th>close</th>
<th>change</th>
</tr>
</thead>
<tbody>
<tr>
<td>02jan2001</td>
<td>1283.27</td>
<td></td>
</tr>
<tr>
<td>03jan2001</td>
<td>1347.56</td>
<td>64.29004</td>
</tr>
<tr>
<td>04jan2001</td>
<td>1333.34</td>
<td>-14.22009</td>
</tr>
<tr>
<td>05jan2001</td>
<td>1298.35</td>
<td>-34.98999</td>
</tr>
<tr>
<td>08jan2001</td>
<td>1295.86</td>
<td>-2.48999</td>
</tr>
</tbody>
</table>
\end{verbatim}
We will use the first 57 observations from these data:

```
twoway bar change date in 1/57
```

We get a different visual effect if we reduce the width of the bars from 1 day to .6 days:

```
twoway bar change date in 1/57, barw(.6)
```
Advanced use: Overlaying

The useful thing about `twoway bar` is that it can be combined with other `twoway` plottypes (see \[G-2\] `graph twoway`):

```
twoway line close date || bar change date || in 1/52
```
We can improve this graph by typing

```
  . twoway
       line close date, yaxis(1)
       ||
       bar change date, yaxis(2)
       ||
  in 1/52,
       ysca(axis(1) r(1000 1400)) ylab(1200(50)1400, axis(1))
       ysca(axis(2) r(-50 300)) ylab(-50 0 50, axis(2))
       ytick(-50(25)50, axis(2) grid)
       legend(off)
       xtitle("Date")
       title("S&P 500")
       subtitle("January - March 2001")
       note("Source: Yahoo!Finance and Commodity Systems, Inc.")
       yline(1150, axis(1) lstyle(foreground))
```

Notice the use of

```
yline(1150, axis(1) lstyle(foreground))
```

The 1150 put the horizontal line at \( y = 1150 \); \( \text{axis(1)} \) stated that \( y \) should be interpreted according to the left \( y \) axis; and \( \text{lstyle(foreground)} \) specified that the line be drawn in the foreground style.

**Advanced use: Population pyramid**

We have the following aggregate data from the U.S. 2000 Census recording total population by age and sex. From this, we produce a population pyramid:
. list agegrp maletotal femtotal

<table>
<thead>
<tr>
<th>agegrp</th>
<th>maletotal</th>
<th>femtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>9,810,733</td>
<td>9,365,065</td>
</tr>
<tr>
<td>2.</td>
<td>10,523,277</td>
<td>10,026,228</td>
</tr>
<tr>
<td>3.</td>
<td>10,520,197</td>
<td>10,007,875</td>
</tr>
<tr>
<td>4.</td>
<td>9,391,004</td>
<td>8,928,886</td>
</tr>
<tr>
<td>5.</td>
<td>9,687,814</td>
<td>9,276,187</td>
</tr>
<tr>
<td>6.</td>
<td>9,798,760</td>
<td>9,582,576</td>
</tr>
<tr>
<td>7.</td>
<td>10,321,769</td>
<td>10,188,619</td>
</tr>
<tr>
<td>8.</td>
<td>11,318,696</td>
<td>11,387,968</td>
</tr>
<tr>
<td>9.</td>
<td>11,129,102</td>
<td>11,312,761</td>
</tr>
<tr>
<td>10.</td>
<td>9,889,506</td>
<td>10,202,898</td>
</tr>
<tr>
<td>11.</td>
<td>8,607,724</td>
<td>8,977,824</td>
</tr>
<tr>
<td>12.</td>
<td>6,508,729</td>
<td>6,960,508</td>
</tr>
<tr>
<td>13.</td>
<td>5,136,627</td>
<td>5,668,820</td>
</tr>
<tr>
<td>14.</td>
<td>4,400,362</td>
<td>5,133,183</td>
</tr>
<tr>
<td>15.</td>
<td>3,902,912</td>
<td>4,954,529</td>
</tr>
<tr>
<td>16.</td>
<td>3,044,456</td>
<td>4,371,357</td>
</tr>
<tr>
<td>17.</td>
<td>1,834,897</td>
<td>3,110,470</td>
</tr>
</tbody>
</table>

. replace maletotal = -maletotal/1e+6
(17 real changes made)
. replace femtotal = femtotal/1e+6
(17 real changes made)
. twoway bar maletotal agegrp, horizontal xvarlab(Males) || bar femtotal agegrp, horizontal xvarlab(Females) ||, ylabel(1(1)17, angle(horizontal) valuelabel labsize(*.8)) xtitle("Population in millions") ytitle("") xlabel(-10 "10" -7.5 "7.5" -5 "5" -2.5 "2.5" 2.5 5 7.5 10) legend(label(1 Males) label(2 Females)) title("US Male and Female Population by Age") subtitle("Year 2000") note("Source: U.S. Census Bureau, Census 2000, Tables 1, 2 and 3", span)
At its heart, the above graph is simple: we turned the bars sideways and changed the male total to be negative. Our first attempt at the above was simply

```
. replace maletotal = -maletotal
(17 real changes made)
. twoway bar maletotal agegrp, horizontal ||
    bar femtotal agegrp, horizontal
```

From there, we divided the population totals by 1 million and added options.

```
xlabel(-10 "10" -7.5 "7.5" -5 "5" -2.5 "2.5" 2.5 5 7.5 10) was a clever way to disguise that the bars for males extended in the negative direction. We said to label the values −10, −7.5, −5, −2.5, 2.5, 5, 7.5, and 10, but then we substituted text for the negative numbers to make it appear that they were positive. See [G-3] axis_label_options.

Using the span suboption to note() aligned the text on the left side of the graph rather than on the plot region. See [G-3] textbox_options.
```
For another rendition of the pyramid, we tried

```
. replace maletotal = -maletotal/1e+6
   (17 real changes made)
. replace femtotal = femtotal/1e+6
   (17 real changes made)
. generate zero = 0
. twoway
   `bar maletotal agegrp, horizontal xvarlab(Males)`
   ||
   `bar femtotal agegrp, horizontal xvarlab(Females)`
   ||
   `sc agegrp zero , mlabel(agegrp) mlabcolor(black) msymbol(i)`
   ||
   , xtitle("Population in millions") ytitle(""

    plotregion(style(none))
    yscas(noline) ylabel(none)  
    xscaas(noline titlegap(-3.5))
    xlabel(-12 "12" -10 "10" -8 "8" -6 "6" -4 "4" 4(2)12, tlength(0)
    grid gmin gmax)
    legend(label(1 Males) label(2 Females))
    title("US Male and Female Population by Age, 2000")
    note("Source: U.S. Census Bureau, Census 2000, Tables 1, 2 and 3")
```

In the above rendition, we moved the labels from the $x$ axis to inside the bars by overlaying a scatter on top of the bars. The points of the scatter we plotted at $y = \text{agegrp}$ and $x = 0$, and rather than showing the markers, we displayed marker labels containing the desired labelings. See [G-3] `marker_label_options`

We also played the following tricks:

1. `plotregion(style(none))` suppressed outlining the plot region; see [G-3] `region_options`.
2. `yscaas(noline)` suppressed drawing the $y$ axis—see [G-3] `axis_scale_options`—and `ylabel(none)` suppressed labeling it—see [G-3] `axis_label_options`.
3. `xscaas(noline titlegap(-3.5))` suppressed drawing the $x$ axis and moved the $x$-axis title up to be in between its labels; see [G-3] `axis_scale_options`.
Cautions

You must extend the scale of the axis, if that is necessary. Consider using `twoway bar` to produce a histogram (ignoring the better alternative of using `twoway histogram`; see [G-2] `graph twoway histogram`). Assume that you have already aggregated data of the form

```
x           frequency
  1            400
  2            800
  3           3,000
  4           1,800
  5           1,100
```

which you enter into Stata to make variables `x` and `frequency`. You type

```
   . twoway bar frequency x
```

to make a histogram-style bar chart. The `y` axis will be scaled to go between 400 and 3,000 (labeled at 500, 1,000, ..., 3,000), and the shortest bar will have zero height. You need to type

```
   . twoway bar frequency x, ysca(r(0))
```

Also see

[G-2] `graph twoway scatter` — Twoway scatterplots

[G-2] `graph twoway dot` — Twoway dot plots

[G-2] `graph twoway dropline` — Twoway dropped-line plots

[G-2] `graph twoway histogram` — Histogram plots

[G-2] `graph twoway spike` — Twoway spike plots

[G-2] `graph bar` — Bar charts