serrbar — Graph standard error bar chart

Description

serrbar is typically used with a dataset containing means, standard deviations or standard errors, and an xvar. serrbar uses these data to create a standard error bar chart. The means are plotted against xvar, and error bars around the means have a width determined by the standard deviation or standard error. While it is most common to use serrbar with this type of data, serrbar may also be used to create a scatterplot with error bars for other types of data.

Quick start

Plot of y versus x with error bars representing $y \pm s$

serrbar y s x

As above, but with error bars for $y \pm 2 \times s$

serrbar y s x, scale(2)

Menu

Statistics > Other > Quality control > Standard error bar chart
Syntax

```
serrbar mvar svar xvar [if] [in] [ , options ]
```

```
options                  Description

Main
 scale(#)                 scale length of graph bars; default is scale(1)

Error bars
 rcap_options             affect rendition of capped spikes

Plotted points
 mvopts(scatter_options)  affect rendition of plotted points

Add plots
 addplot(plot)            add other plots to generated graph

Y axis, X axis, Titles, Legend, Overall
twoway_options           any options other than by() documented in [G-3] twoway_options
```

Options

- **Main**
  
  `scale(#)` controls the length of the bars. The upper and lower limits of the bars will be `mvar + scale() × svar` and `mvar − scale() × svar`. The default is `scale(1)`.

- **Error bars**
  
  `rcap_options` affect the rendition of the plotted error bars (the capped spikes). See [G-2] `graph twoway rcap`.

- **Plotted points**
  
  `mvopts(scatter_options)` affects the rendition of the plotted points (`mvar` versus `xvar`). See [G-2] `graph twoway scatter`.

- **Add plots**
  
  `addplot(plot)` provides a way to add other plots to the generated graph; see [G-3] `addplot_option`.

- **Y axis, X axis, Titles, Legend, Overall**
  
  `twoway_options` are any of the options documented in [G-3] `twoway_options`, excluding `by()`. These include options for titling the graph (see [G-3] `title_options`) and for saving the graph to disk (see [G-3] `saving_option`).
Remarks and examples

> Example 1

In quality-control applications, the three most commonly used variables with this command are the process mean, process standard deviation, and time. For instance, we have data on the average weights and standard deviations from an assembly line in San Francisco for the period January 8 to January 16. Our data are

```stata
use https://www.stata-press.com/data/r16/assembly
.list, sep(0) divider
```

<table>
<thead>
<tr>
<th>date</th>
<th>mean</th>
<th>std</th>
</tr>
</thead>
<tbody>
<tr>
<td>108</td>
<td>192.22</td>
<td>3.94</td>
</tr>
<tr>
<td>109</td>
<td>192.64</td>
<td>2.83</td>
</tr>
<tr>
<td>110</td>
<td>192.37</td>
<td>4.58</td>
</tr>
<tr>
<td>113</td>
<td>194.76</td>
<td>3.25</td>
</tr>
<tr>
<td>114</td>
<td>192.69</td>
<td>2.89</td>
</tr>
<tr>
<td>115</td>
<td>195.02</td>
<td>1.73</td>
</tr>
<tr>
<td>116</td>
<td>193.40</td>
<td>2.62</td>
</tr>
</tbody>
</table>

We type `serrbar mean std date, scale(2)` but, after seeing the result, decide to make it fancier:

```stata
serrbar mean std date, scale(2) title("Observed Weight Variation")
> sub("San Francisco plant, 1/8 to 1/16") yline(195) yaxis(1 2)
> ylab(195, axis(2)) ytitle("", axis(2))
```

Acknowledgment

`serrbar` was written by Nicholas J. Cox of the Department of Geography at Durham University, UK, and coeditor of the *Stata Journal* and author of *Speaking Stata Graphics*. 
Also see

[R] QC — Quality control charts