**Description**

`graph twoway lowess` plots a lowess smooth of `yvar` on `xvar` using `graph twoway line`; see [G-2] `graph twoway line`.

**Quick start**

Local linear smooth plot of `y` versus `x` using Cleveland’s tricube weighting function with a bandwidth of 0.8

```
twoway lowess y x
```

As above, overlaid on a scatterplot of `y` versus `x`

```
twoway scatter y x || lowess y x
```

As above, but draw points with less intense color to make the line more visible

```
twoway scatter y x, mcolor(*.6) || lowess y x
```

Use running-mean smoothing

```
twoway scatter y x || lowess y x, mean
```

Specify a bandwidth of 0.5

```
twoway scatter y x || lowess y x, bwidth(.5)
```

Suppress use of Cleveland’s tricube weighting function

```
twoway scatter y x || lowess y x, noweight
```

**Menu**

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

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

<table>
<thead>
<tr>
<th>options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bwidth(#)</td>
<td>smoothing parameter</td>
</tr>
<tr>
<td>mean</td>
<td>use running-mean smoothing</td>
</tr>
<tr>
<td>noweight</td>
<td>use unweighted smoothing</td>
</tr>
<tr>
<td>logit</td>
<td>transform the smooth to logits</td>
</tr>
<tr>
<td>adjust</td>
<td>adjust smooth’s mean to equal yvar’s mean</td>
</tr>
<tr>
<td>cline_options</td>
<td>specify how the line is rendered and its appearance; see [G-3] cline_options.</td>
</tr>
<tr>
<td>axis_choice_options</td>
<td>associate plot with alternative axis; see [G-3] axis_choice_options.</td>
</tr>
<tr>
<td>twoway_options</td>
<td>titles, legends, axes, added lines and text, by, regions, name, aspect ratio, etc.</td>
</tr>
</tbody>
</table>

Options

- `bwidth(#)` specifies the bandwidth. `bwidth(.8)` is the default. Centered subsets of $N \times bwidth()$ observations, $N =$ number of observations, are used for calculating smoothed values for each point in the data except for endpoints, where smaller, uncentered subsets are used. The greater the `bwidth()`, the greater the smoothing.
- `mean` specifies running-mean smoothing; the default is running-line least-squares smoothing.
- `noweight` prevents the use of Cleveland’s (1979) tricube weighting function; the default is to use the weighting function.
- `logit` transforms the smoothed `yvar` into logits.
- `adjust` adjusts by multiplication the mean of the smoothed `yvar` to equal the mean of `yvar`. This is useful when smoothing binary (0/1) data.
- `cline_options` specify how the lowess line is rendered and its appearance; see [G-3] cline_options.
- `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

`graph twoway lowess yvar xvar` uses the `lowess` command—see [R] lowess—to obtain a local linear smooth of `yvar` on `xvar` and uses `graph twoway line` to plot the result.

Remarks are presented under the following headings:

- Typical use
- Use with by()
Typical use

The local linear smooth is often graphed on top of the data, possibly with other regression lines:

```
. use https://www.stata-press.com/data/r16/auto
(1978 Automobile Data)
. twoway scatter mpg weight, mcolor(*.6) ||
   lfit mpg weight ||
   lowess mpg weight
```

Notice our use of `mcolor(*.6)` to dim the points and thus make the lines stand out; see [G-4] `colorstyle`.
Use with by()

`graph twoway lowess` may be used with `by()`:

```
. use https://www.stata-press.com/data/r16/auto, clear
   (1978 Automobile Data)
. twoway scatter mpg weight, mcolor(*.6) ||
   lfit mpg weight ||
   lowess mpg weight ||, by(foreign)
```

References


Also see

[R] `lowess` — Lowess smoothing

[G-2] `graph twoway mspline` — Twoway median-spline plots