graph twoway lowess — Local linear smooth plots

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 ]
```

### options Description

<table>
<thead>
<tr>
<th>Option</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>
</tbody>
</table>

### cline_options

change look of the line

### axis_choice_options

associate plot with alternative axis

### twoway_options

titles, legends, axes, added lines and text, by, regions, name, aspect ratio, etc.

## Options

- **bwidth(#)** specifies the bandwidth. `bwidth(.8)` is the default. Centered subsets of \( N \times bwidth() \) observations, \( N = \text{number of observations} \), 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

**stata.com**

`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 http://www.stata-press.com/data/r15/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 http://www.stata-press.com/data/r15/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