**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

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### 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, \( N = \) 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`. 

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**Graph:**

![Graph showing a scatter plot with a local linear smooth and fitted values. The points are dimmed with `mcolor(*.6)` to highlight the smooth line.](image-url)
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)
```

![Graphs by Car type](image.png)

References


Also see

[R] lowess — Lowess smoothing

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