

graph twoway lowess — Local linear smooth plots[Description](#)
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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]
```

<i>options</i>	Description
bwidth (#)	smoothing parameter
mean	use running-mean smoothing
noweight	use unweighted smoothing
logit	transform the smooth to logits
adjust	adjust smooth's mean to equal <i>yvar</i> 's mean
<i>cline_options</i>	change look of the line
<i>axis_choice_options</i>	associate plot with alternative axis
<i>twoway_options</i>	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 $N \times \text{bwidth}()$ 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

[stata.com](http://www.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.

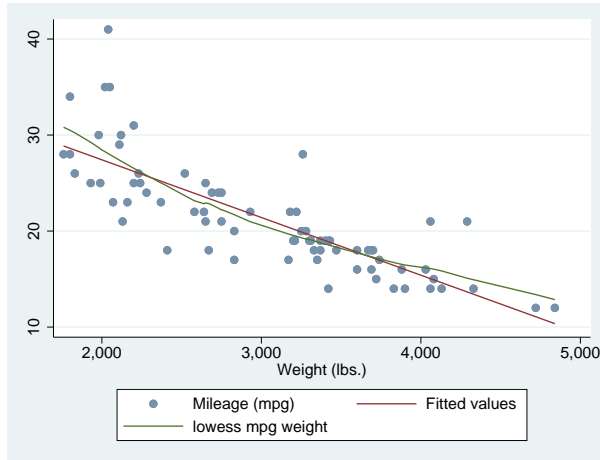
Remarks are presented under the following headings:

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 https://www.stata-press.com/data/r17/auto
(1978 automobile data)
. twoway scatter mpg weight, mcolor(*.6) ||
      lfit  mpg weight  ||
      lowess mpg weight
```

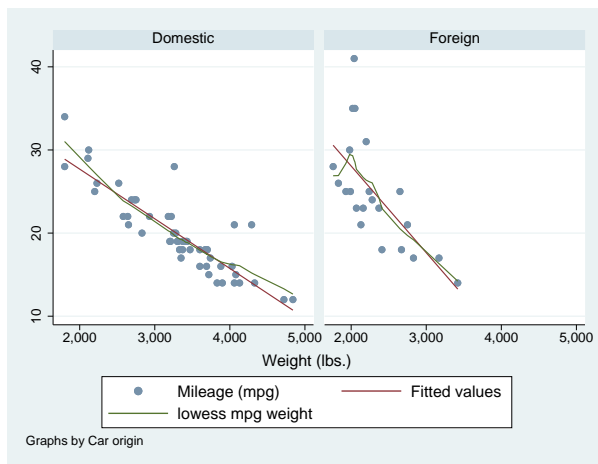


Notice our use of `mcolor(*.6)` to dim the points and thus make the lines stand out; see [G-4] [colorstyle](#).

Use with by()

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

```
. use https://www.stata-press.com/data/r17/auto, clear
(1978 automobile data)
. twoway scatter mpg weight, mcolor(*.6) ||
  lfit   mpg weight ||
  lowess mpg weight ||, by(foreign)
```

**References**

- Cleveland, W. S. 1979. Robust locally weighted regression and smoothing scatterplots. *Journal of the American Statistical Association* 74: 829–836. <https://doi.org/10.2307/2286407>.
- Cox, N. J. 2005. [Speaking Stata: Smoothing in various directions](#). *Stata Journal* 5: 574–593.
- . 2010. [Software Updates: Speaking Stata: Smoothing in various directions](#). *Stata Journal* 10: 164.
- Royston, P., and N. J. Cox. 2005. [A multivariable scatterplot smoother](#). *Stata Journal* 5: 405–412.

Also see

[R] [lowess](#) — Lowess smoothing

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