

graph twoway lowess — Local linear smooth plots

Syntax Remarks and examples	Menu References	Description Also see	Options
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Syntax

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

<i>options</i>	Description
<code><u>bwidth</u>(#)</code>	smoothing parameter
<code><u>mean</u></code>	use running-mean smoothing
<code><u>noweight</u></code>	use unweighted smoothing
<code><u>logit</u></code>	transform the smooth to logits
<code><u>adjust</u></code>	adjust smooth's mean to equal <i>yvar</i> 's mean
<code><i>cline_options</i></code>	change look of the line
<code><i>axis_choice_options</i></code>	associate plot with alternative axis
<code><i>twoway_options</i></code>	titles, legends, axes, added lines and text, by, regions, name, aspect ratio, etc.

See [G-3] [cline_options](#), [G-3] [axis_choice_options](#), and [G-3] [twoway_options](#).

Menu

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

Description

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

Options

`bwidth(#)` specifies the bandwidth. `bwidth(.8)` is the default. Centered subsets of $N * \text{bwidth}()$ 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:

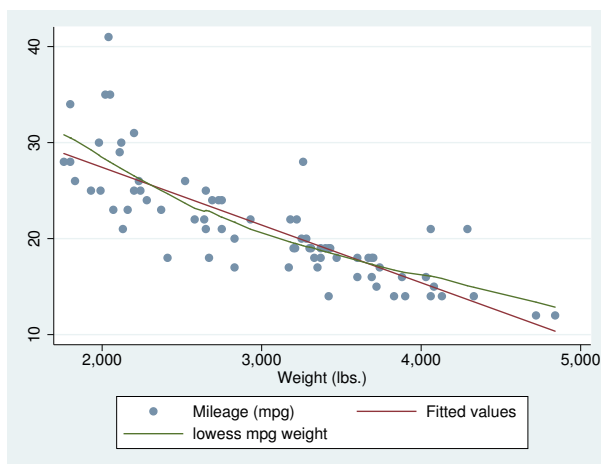
Typical use

Use with `by()`

Typical use

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

```
. use http://www.stata-press.com/data/r13/auto
(1978 Automobile Data)
. twoway scatter mpg weight, mcolor(*.6) ||
  lfit mpg weight ||
  lowess mpg weight
```



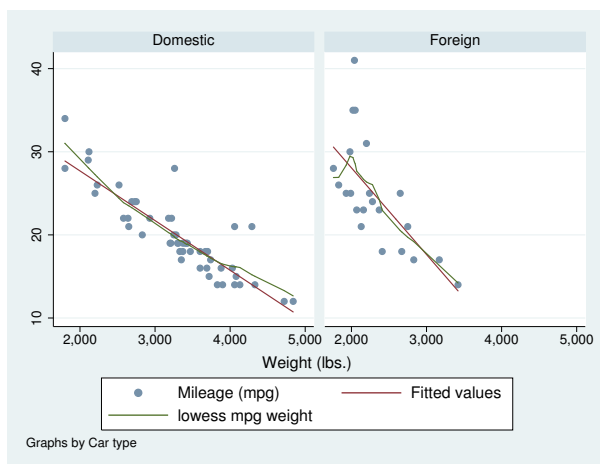
Notice our use of `mcolor(*.6)` to dim the points and thus make the lines stand out; see [G-4] [colorstyle](#).

Notice also the y -axis title: “Mileage (mpg)/Fitted values/lowess mpg weight”. The “Fitted values” was contributed by `twoway lfit` and “lowess mpg weight” by `twoway lowess`. When you overlay graphs, you nearly always need to respecify the axis titles using the `axis_title_options` `ytitle()` and `xtitle()`; see [G-3] [axis_title_options](#).

Use with by()

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

```
. use http://www.stata-press.com/data/r13/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.
- 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