

graph twoway lfitci — Twoway linear prediction plots with CIs

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Description

`twoway lfitci` calculates the prediction for *yvar* from a linear regression of *yvar* on *xvar* and plots the resulting line, along with a confidence interval.

Quick start

A linear fit prediction plot for *y* on *x* with a 95% confidence interval of the prediction

```
twoway lfitci y x
```

As above, but with confidence intervals for an individual forecast

```
twoway lfitci y x, stdf
```

Specify a 99% confidence interval

```
twoway lfitci y x, level(99)
```

Overlay a scatterplot showing observed data

```
twoway lfitci y x || scatter y x
```

Display confidence limits using a pair of lines

```
twoway lfitci y x, ciplot(rline) || scatter y x
```

As above, but with confidence limits displayed using dashed lines

```
twoway lfitci y x, ciplot(rline) blpattern(dash) || scatter y x
```

Display confidence limits using a range plot with spikes

```
twoway lfitci y x, ciplot(rspike) || scatter y x
```

A separate graph area for each level of *catvar*

```
twoway lfitci y x || scatter y x, by(catvar)
```

Menu

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

Syntax

```
twoway lfitci yvar xvar [if] [in] [weight] [, options]
```

<i>options</i>	Description
<code>stdp</code>	CIs from SE of prediction; the default
<code>stdf</code>	CIs from SE of forecast
<code>stdr</code>	CIs from SE of residual; seldom specified
<code>level(#)</code>	set confidence level; default is <code>level(95)</code>
<code>range(# #)</code>	range over which predictions are calculated
<code>n(#)</code>	number of prediction points
<code>atobs</code>	calculate predictions at <i>xvar</i>
<code>estopts(<i>regress_options</i>)</code>	options for <code>regress</code>
<code>predopts(<i>predict_options</i>)</code>	options for <code>predict</code>
<code>nofit</code>	do not plot the prediction
<code>fitplot(<i>plotype</i>)</code>	how to plot fit; default is <code>fitplot(line)</code>
<code>ciplot(<i>plotype</i>)</code>	how to plot CIs; default is <code>ciplot(rarea)</code>
<i>fcline_options</i>	change look of predicted line
<i>fitarea_options</i>	change look of CI
<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 `range()`, `estopts()`, `predopts()`, `n()`, and `level()` are *rightmost*; `atobs`, `nofit`, `fitplot()`, `ciplot()`, `stdp`, `stdf`, and `stdr` are *unique*; see [G-4] **concept: repeated options**.

yvar and *xvar* may contain time-series operators; see [U] **11.4.4 Time-series varlists**.

`aweight`s, `fweight`s, and `pweight`s are allowed. Weights, if specified, affect estimation but not how the weighted results are plotted. See [U] **11.1.6 weight**.

Options

`stdp`, `stdf`, and `stdr` determine the basis for the confidence interval. `stdp` is the default.

`stdp` specifies that the confidence interval be the confidence interval of the mean.

`stdf` specifies that the confidence interval be the confidence interval for an individual forecast, which includes both the uncertainty of the mean prediction and the residual.

`stdr` specifies that the confidence interval be based only on the standard error of the residual.

`level(#)` specifies the confidence level, as a percentage, for the confidence intervals. The default is `level(95)` or as set by `set level`; see [U] **20.7 Specifying the width of confidence intervals**.

`range(# #)` specifies the *x* range over which predictions are calculated. The default is `range(. .)`, meaning the minimum and maximum values of *xvar*. `range(0 10)` would make the range 0 to 10, `range(. 10)` would make the range the minimum to 10, and `range(0 .)` would make the range 0 to the maximum.

`n(#)` specifies the number of points at which the predictions and the CI over `range()` are to be calculated. The default is `n(100)`.

`atobs` is an alternative to `n()` and specifies that the predictions be calculated at the *xvar* values. `atobs` is the default if `predopts()` is specified and any statistic other than the *xb* is requested.

`estopts(regress_options)` specifies options to be passed along to `regress` to estimate the linear regression from which the line will be predicted; see [R] [regress](#). If this option is specified, also commonly specified is `estopts(nocons)`.

`predopts(predict_options)` specifies options to be passed along to `predict` to obtain the predictions after estimation by `regress`; see [R] [regress postestimation](#).

`nofit` prevents the prediction from being plotted.

`fitplot(plottype)`, which is seldom used, specifies how the prediction is to be plotted. The default is `fitplot(line)`, meaning that the prediction will be plotted by `graph twoway line`. See [G-2] [graph twoway](#) for a list of *plottype* choices. You may choose any that expect one *y* and one *x* variable.

`ciplot(plottype)` specifies how the confidence interval is to be plotted. The default is `ciplot(rarea)`, meaning that the prediction will be plotted by `graph twoway rarea`.

A reasonable alternative is `ciplot(rline)`, which will substitute lines around the prediction for shading. See [G-2] [graph twoway](#) for a list of *plottype* choices. You may choose any that expect two *y* variables and one *x* variable.

fcline_options specify how the prediction line is rendered; see [G-3] [fcline_options](#). If you specify `fitplot()`, then rather than using *fcline_options*, you should select options that affect the specified *plottype* from the options in `scatter`; see [G-2] [graph twoway scatter](#).

fitarea_options specify how the confidence interval is rendered; see [G-3] [fitarea_options](#). If you specify `ciplot()`, then rather than using *fitarea_options*, you should specify whatever is appropriate.

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)

Remarks are presented under the following headings:

Typical use

Advanced use

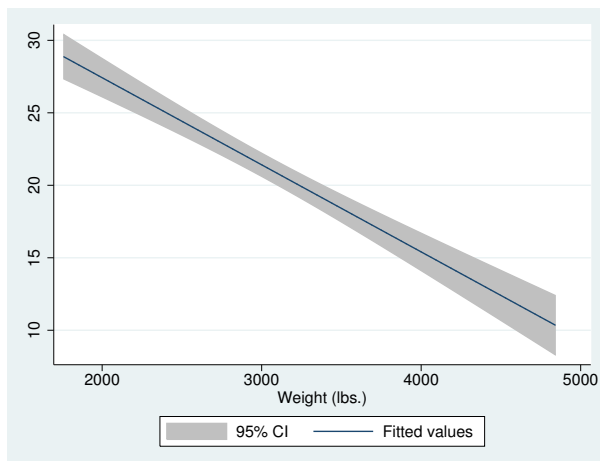
Cautions

Use with `by()`

Typical use

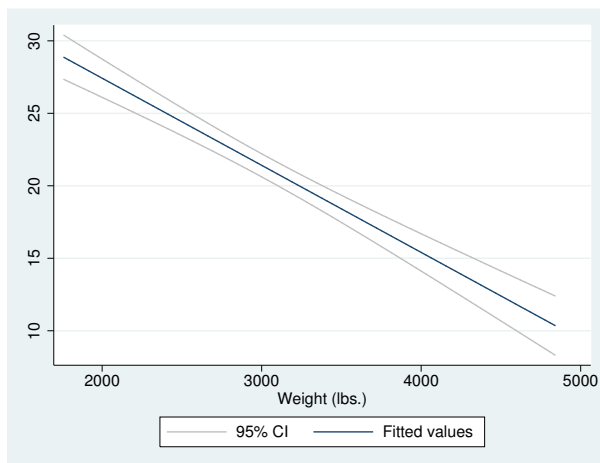
`twoway lfitci` by default draws the confidence interval of the predicted mean:

```
. use http://www.stata-press.com/data/r14/auto  
(1978 Automobile Data)  
. twoway lfitci mpg weight
```



If you specify the `ciplot(rline)` option, then rather than being shaded, the confidence interval will be designated by lines:

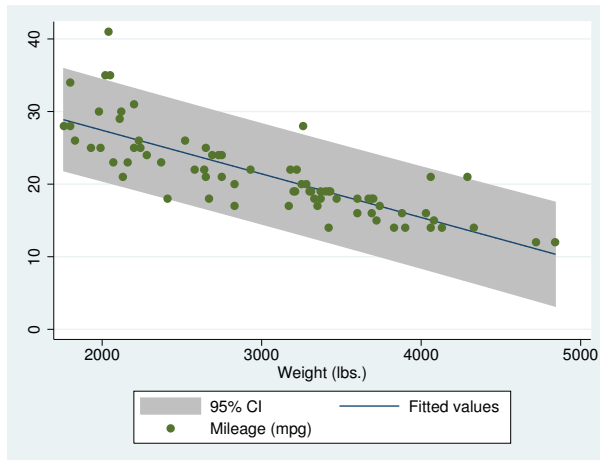
```
. twoway lfitci mpg weight, ciplot(rline)
```



Advanced use

`lfitci` can be usefully overlaid with other plots:

```
. use http://www.stata-press.com/data/r14/auto, clear
(1978 Automobile Data)
. twoway lfitci mpg weight, stdf || scatter mpg weight
```



In the above example, we specified `stdf` to obtain a confidence interval based on the standard error of the forecast rather than the standard error of the mean. This is more useful for identifying outliers.

We typed

```
. twoway lfitci ... || scatter ...
```

and not

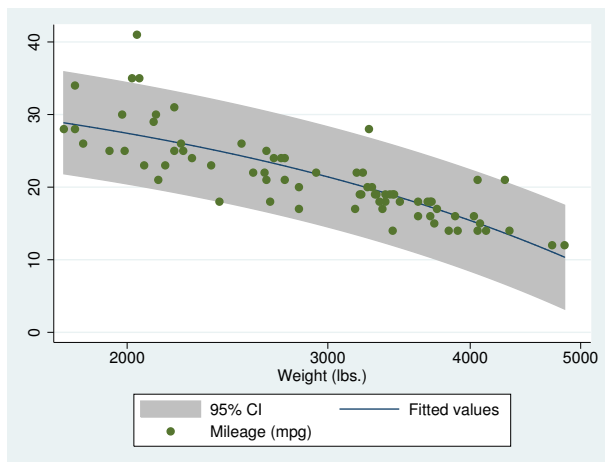
```
. twoway scatter ... || lfitci ...
```

Had we drawn the scatter diagram first, the confidence interval would have covered up most of the points.

Cautions

Do not use `twoway lfitci` when specifying the `axis_scale_options` `yscale(log)` or `xscale(log)` to create log scales. Typing

```
. twoway lfitci mpg weight, stdf || scatter mpg weight ||, xscale(log)
```

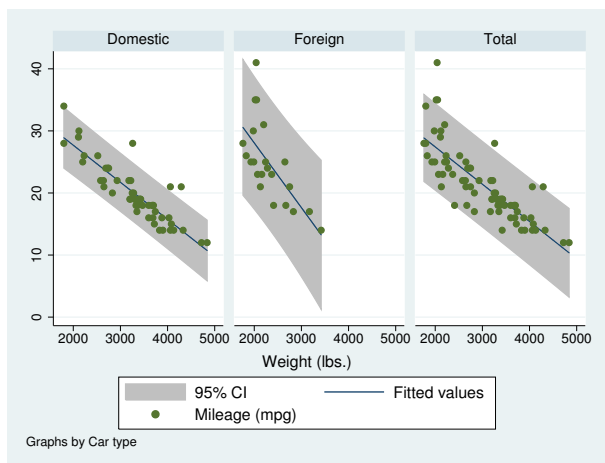


The result may look pretty, but if you think about it, it is not what you want. The prediction line is not straight because the regression estimated for the prediction was for mpg on weight, not for mpg on $\log(\text{weight})$.

Use with by()

`lfitci` may be used with `by()` (as can all the `twoway` plot commands):

```
. twoway lfitci mpg weight, stdf ||
      scatter mpg weight      ||
      , by(foreign, total row(1))
```



Also see

[G-2] [graph twoway qfitci](#) — Twoway quadratic prediction plots with CIs

[G-2] [graph twoway fpcitci](#) — Twoway fractional-polynomial prediction plots with CIs

[G-2] [graph twoway lfit](#) — Twoway linear prediction plots

[R] [regress](#) — Linear regression