graph twoway fpfitci — Two-way fractional-polynomial prediction plots with CIs

Description

`twoway fpfitci` calculates the prediction for *yvar* from estimation of a fractional polynomial of *xvar* and plots the resulting curve along with the confidence interval of the mean.

Quick start

Fractional-polynomial prediction plot of y on x with 95% confidence interval

```
twoway fpfitci y1 x
```

Same as above, with a 90% confidence interval

```
twoway fpfitci y1 x, level(90)
```

Same as above, but estimate fractional polynomial of degree 4

```
twoway fpfitci y1 x, level(90) estopts(degree(4))
```

Overlay a scatterplot

```
twoway fpfitci y1 x || scatter y x
```

Same as above, but use small circles as markers

```
twoway fpfitci y1 x || scatter y x, msymbol(o)
```

Display confidence limits as a pair of lines

```
twoway fpfitci y1 x, ciplot(rline)
```

Same as above, with an overlaid scatterplot and medium-thick line for predicted values

```
twoway fpfitci y1 x, ciplot(rline) clwidth(medthick) || scatter y1 x
```

Predictions from estimation command `logit` with binary dependent variable `y2`

```
twoway fpfitci y2 x, estcmd(logit)
```

Add "My Title" as the title of the graph

```
twoway fpfitci y1 x || scatter y x, title("My Title")
```

Menu

Graphics > Two-way graph (scatter, line, etc.)

Syntax

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

options	Description
fpfit_options	any of the options of [G-2] **graph twoway fpfit**
`level(#)`	set confidence level; default is `level(95)`
`nofit`	prevent plotting the prediction
`fitplot(`*plottype*`)`	how to plot fit; default is `fitplot(line)`
`ciplot(`*plottype*`)`	how to plot CIs; default is `ciplot(rarea)`
fcline_options	change look of predicted line
fitarea_options	change look of CI
axis_choice_options	associate plot with alternative axis
twoway_options	titles, legends, axes, added lines and text, by, regions, name, aspect ratio, etc.

Option `level()` is *rightmost*; `nofit`, `fitplot()`, and `ciplot()` are *unique*; see [G-4] **Concept: repeated options**.

`aweights`, `fweights`, and `pweights` are allowed. Weights, if specified, affect estimation but not how the weighted results are plotted. See [U] **11.1.6 weight**.

Options

fpfit_options refers to any of the options of `graph twoway fpfit`; see [G-2] **graph twoway fpfit**. These options are seldom specified.

`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] **20.8 Specifying the width of confidence intervals**.

`nofit` prevents the prediction from being plotted.

`fitplot(`*plottype*`)` is seldom specified. It 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 plottypes that expect one y variable 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 plottypes 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***.

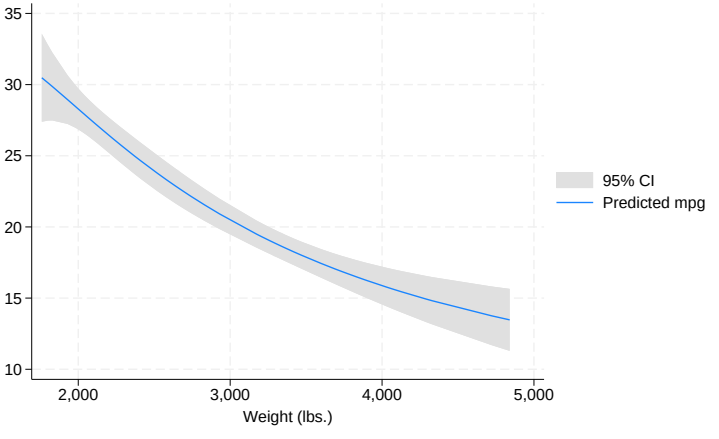
Remarks and examples

Remarks are presented under the following headings:

Typical use

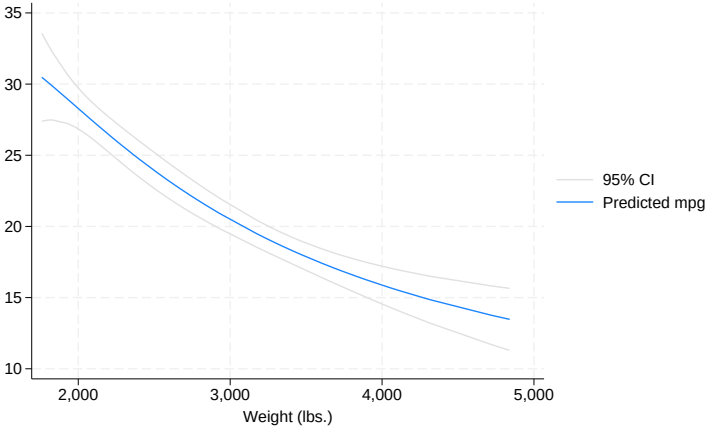
`twoway fpfitci` by default draws the confidence interval of the predicted mean:

```
. use https://www.stata-press.com/data/r19/auto
(1978 automobile data)
. twoway fpfitci mpg weight
```



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

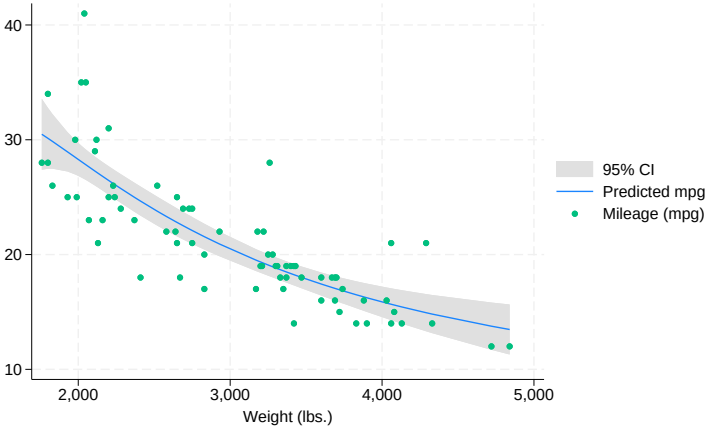
```
. twoway fpfitci mpg weight, ciplot(rline)
```



Advanced use

`fpfitci` can be usefully overlaid with other plots:

```
. use https://www.stata-press.com/data/r19/auto, clear
(1978 automobile data)
. twoway fpfitci mpg weight || scatter mpg weight
```



In the above graph, the shaded area corresponds to the 95% confidence interval for the mean.

It is of great importance to note that we typed

```
. twoway fpfitci ... || scatter ...
```

and not

```
. twoway scatter ... || fpfitci ...
```

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

Cautions

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

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

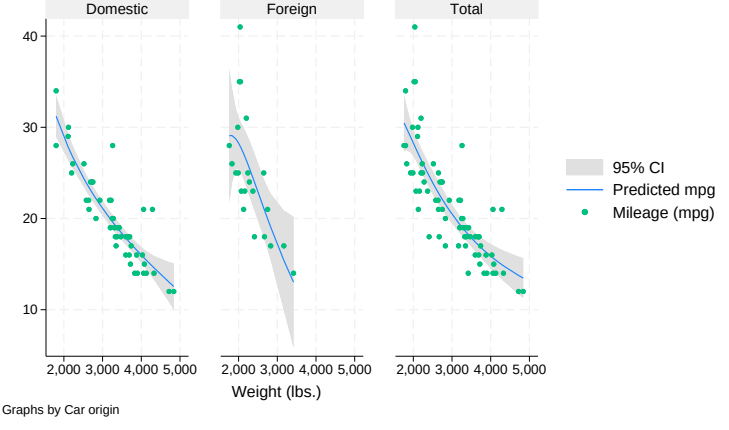
will produce a curve that will be fit from a fractional polynomial regression of `mpg` on `weight` rather than `log(weight)`.

See *Cautions* in [G-2] **graph twoway lfitci**.

Use with by()

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

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



Also see

[G-2] **graph twoway lfitci** — Two-way linear prediction plots with CIs

[G-2] **graph twoway qfitci** — Two-way quadratic prediction plots with CIs

[G-2] **graph twoway fpfit** — Two-way fractional-polynomial prediction plots