

## graph twoway lfit — Twoway linear prediction plots

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## Description

`twoway lfit` calculates the prediction for *yvar* from a linear regression of *yvar* on *xvar* and plots the resulting line.

## Quick start

A linear fit prediction plot for *y* on *x*

```
twoway lfit y x
```

A scatterplot with line of best fit

```
twoway scatter y x || lfit y x
```

A separate graph area for each level of *catvar*

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

Distinct lines and points for *catvar* = 0 and *catvar* = 1 in the same graph area

```
twoway scatter y x if catvar==0 || scatter y x if catvar==1 || ///
    lfit y x if catvar==0 || lfit y x if catvar==1
```

Add the title “My Title” to a scatterplot with line of best fit

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

Add the title “X Variable” to the *x* axis

```
twoway scatter y x || lfit y x, title("My Title") ///
    xtitle("X Variable")
```

Display the line of best fit as a dashed black line

```
twoway scatter y x || lfit y x, lcolor(black) lpattern(dash)
```

## Menu

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

## Syntax

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

| <i>options</i>                             | Description  |
|--|--|
| <b>range</b> (# #)                         | range over which predictions calculated  |
| <b>n</b> (#)                               | number of prediction points  |
| <b>atobs</b>                               | calculate predictions at <i>xvar</i>   |
| <b>estopts</b> ( <i>regress_options</i> )  | options for <b>regress</b>   |
| <b>predopts</b> ( <i>predict_options</i> ) | options for <b>predict</b>   |
| <i>cline_options</i>                       | change look of predicted 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. |

All options are *rightmost*; 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

**range**(# #) specifies the *x* range over which predictions are to be 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 predictions over **range**() are to be calculated. The default is **n**(3).

**atobs** is an alternative to **n**(). It 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, **estopts**(**nocons**) is also often specified.

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

*cline\_options* specify how the prediction line is rendered; 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

Remarks are presented under the following headings:

*Typical use*

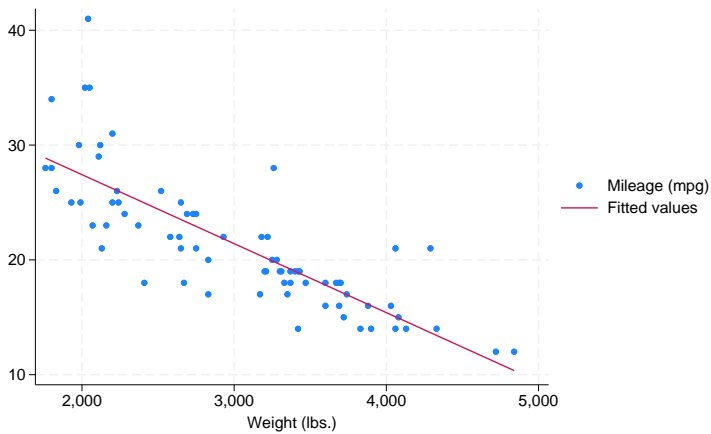
*Cautions*

*Use with by()*

### Typical use

twoway lfit is nearly always used in conjunction with other twoway plottypes, such as

```
. use https://www.stata-press.com/data/r18/auto
(1978 automobile data)
. scatter mpg weight || lfit mpg weight
```



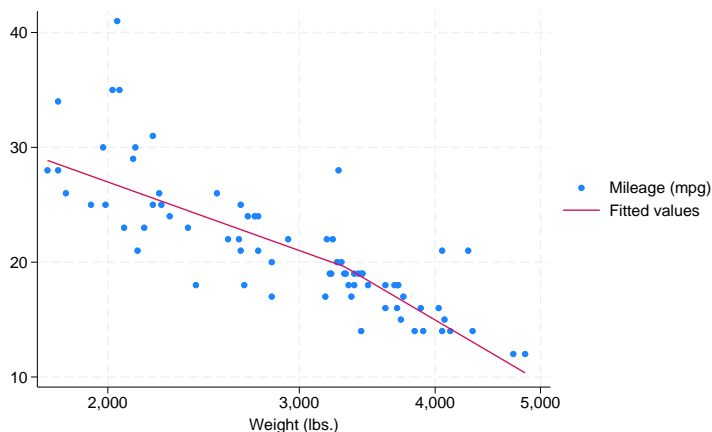
Results are visually the same as typing

```
. regress mpg weight
. predict fitted
. scatter mpg weight || line fitted weight
```

## Cautions

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

```
. scatter mpg weight, xscale(log) || lfit mpg weight
```

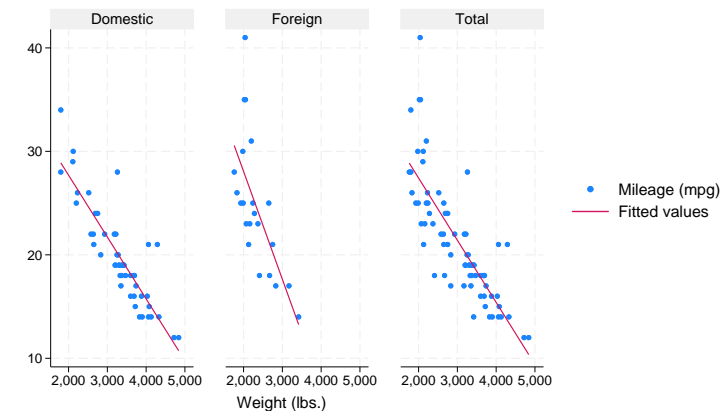


The line is not straight because the regression estimated for the prediction was for mpg on weight, not mpg on  $\log(\text{weight})$ . (The default for `n()` is 3 so that, if you make this mistake, you will spot it.)

## Use with by()

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

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



Graphs by Car origin

## Also see

- [G-2] [graph twoway ffit](#) — Twoway fractional-polynomial prediction plots
- [G-2] [graph twoway line](#) — Twoway line plots<sup>+</sup>
- [G-2] [graph twoway mband](#) — Twoway median-band plots
- [G-2] [graph twoway mspline](#) — Twoway median-spline plots
- [G-2] [graph twoway qfit](#) — Twoway quadratic prediction plots
- [G-2] [graph twoway lfitci](#) — Twoway linear prediction plots with CIs
- [R] [regress](#) — Linear regression

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