graph twoway mspline — Two-way median-spline plots	
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Description	Quick start	Menu	Syntax
Options	Remarks and examples	Also see	

Description

twoway mspline calculates cross medians and then uses the cross medians as knots to fit a cubic spline. The resulting spline is graphed as a line plot.

Quick start

Median-spline plot of y versus x

twoway mspline y x

Same as above, and overlay the median-spline plot on a scatterplot of the observed data

twoway scatter y x || mspline y x

Same as above, but specify 10 cross-median knots

twoway scatter y x || mspline y x, bands(10)

Specify 5 points between knots

twoway scatter y x || mspline y x, n(5)

Separate graph areas for each level of catvar

twoway scatter y x || mspline y x, n(5) by(catvar)

Label the y axis from 0 to 10 in increments of 2 twoway scatter y x || mspline y x, n(5) ylabel(0(2)10)

Specify "My X Variable" as the title for the x axis

twoway scatter y x || mspline y x, xtitle("My X Variable")

Same as above, but suppress the legend

twoway scatter y x || mspline y x, xtitle("My X Variable") ///
legend(off)

Menu

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

Syntax

options	Description
<u>b</u> ands(#) n(#)	number of cross-median knots number of points between knots
cline_options	change look of the line
axis_choice_options	associate plot with alternative axis
twoway_options	titles, legends, axes, added lines and text, by, regions, name, aspect ratio, etc.

twoway mspline yvar xvar [if] [in] [, options]

All options are *rightmost*; see [G-4] Concept: repeated options.

Options

bands (#) specifies the number of bands for which cross medians should be calculated. The default is $\max{\{\min(b_1, b_2), b_3\}}$, where b_1 is round $\{10 * \log 10(N)\}$, b_2 is round (\sqrt{N}) , b_3 is $\min(2, N)$, and N is the number of observations.

The x axis is divided into # equal-width intervals and then the median of y and the median of x are calculated in each interval. It is these cross medians to which a cubic spline is then fit.

n(#) specifies the number of points between the knots for which the cubic spline should be evaluated. n(10) is the default. n() does not affect the result that is calculated, but it does affect how smooth the result appears.

cline_options specify how the median-spline 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

Remarks are presented under the following headings:

Typical use Cautions Use with by()

Typical use

Median splines provide a convenient way to show the relationship between y and x:

The important part of the above command is mspline mpg weight. On the scatter, we specified msize(*.5) to make the marker symbols half their normal size; see [G-4] *size*.

Cautions

The graph shown above illustrates a common problem with this technique: it tracks wiggles that may not be real and can introduce wiggles if too many bands are chosen. An improved version of the graph above would be



Use with by()

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



Also see

- [R] makespline Spline generation
- [G-2] graph twoway fpfit Two-way fractional-polynomial prediction plots
- [G-2] graph twoway lfit Two-way linear prediction plots
- [G-2] graph twoway line Two-way line plots
- [G-2] graph twoway mband Two-way median-band plots
- [G-2] graph twoway qfit Two-way quadratic prediction plots

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