**graph twoway kdensity — Kernel density plots**

### Syntax

```
twoway kdensity varname [   if   ] [   in   ] [   weight   ] [   ,   options   ]
```

**options**

- `bwidth(#)` smoothing parameter
- `kernel(kernel)` specify kernel function; default is `kernel(epanechnikov)`
- `range(# #)` range for plot, minimum and maximum
- `range(varname)` range for plot obtained from `varname`
- `n(#)` number of points to evaluate
- `area(#)` rescaling parameter
- `horizontal` graph horizontally
- `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.


### Description

**Kernel**

- `epanechnikov` Epanechnikov kernel function; the default
- `epan2` alternative Epanechnikov kernel function
- `biweight` biweight kernel function
- `cosine` cosine trace kernel function
- `gaussian` Gaussian kernel function
- `parzen` Parzen kernel function
- `rectangle` rectangular kernel function
- `triangle` triangular kernel function

fweights and aweights are allowed; see [U] 11.1.6 weight.

### Menu

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

`graph twoway kdensity` plots a kernel density estimate for `varname` using `graph twoway line`; see [G-2] `graph twoway line`.

Options

`bwidth(#)` and `kernel(kernel)` specify how the kernel density estimate is to be obtained and are in fact the same options as those specified with the command `kdensity`; see [R] `kdensity`.

`bwidth(#)` specifies the smoothing parameter.

`kernel(kernel)` specify the kernel-weight function to be used. The default is `kernel(epanechnikov)`. See [R] `kdensity` for more information about these options.

All the other `graph twoway kdensity` options modify how the result is displayed, not how it is obtained.

`range(# #)` and `range(varname)` specify the range of values at which the kernel density estimates are to be plotted. The default is `range(m M)`, where `m` and `M` are the minimum and maximum of the `varname` specified on the `graph twoway kdensity` command.

`range(# #)` specifies a pair of numbers to be used as the minimum and maximum.

`range(varname)` specifies another variable for which its minimum and maximum are to be used.

`n(#)` specifies the number of points at which the estimate is evaluated. The default is `n(300)`.

`area(#)` specifies a multiplier by which the density estimates are adjusted before being plotted. The default is `area(1)`. `area()` is useful when overlaying a density estimate on top of a histogram that is itself not scaled as a density. For instance, if you wished to scale the density estimate as a frequency, `area()` would be specified as the total number of nonmissing observations.

`horizontal` specifies that the result be plotted horizontally (i.e., reflected along the identity line).

`cline_options` specify how the density line is rendered and its appearance; [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`.

`towoway_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

`graph twoway kdensity varname` uses the `kdensity` command to obtain an estimate of the density of `varname` and uses `graph twoway line` to plot the result.

Remarks are presented under the following headings:

- `Typical use`
- `Use with by()`
**Typical use**

The density estimate is often graphed on top of the histogram:

```
. use http://www.stata-press.com/data/r13/lifeexp
   (Life expectancy, 1998)
. twoway histogram lexp, color(*.5) || kdensity lexp
```

Notice the use of `graph twoway histogram`’s `color(*.5)` option to dim the bars and make the line stand out; see [G-4] `colorstyle`.

Notice also the $y$ and $x$ axis titles: “Density/kdensity lexp” and “Life expectancy at birth/x”. The “kdensity lexp” and “x” were contributed by the `twoway kdensity`. 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 kdensity may be used with by():

```
. use http://www.stata-press.com/data/r13/lifeexp, clear
   (Life expectancy, 1998)
. twoway histogram lexp, color(*.5) || kdensity lexp ||, by(region)
```

References


Also see

[R] kdensity — Univariate kernel density estimation
[G-2] graph twoway histogram — Histogram plots