latebalance density — Covariate balance density[+]

[+]This command is part of StataNow.

Description

latebalance density produces kernel density plots that are used to check for covariate balance after estimation by lateffects ipwra or lateffects kappa.

Quick start

Kernel density plot of x1 after lateffects

    latebalance density x1

Same as above, but rescale the kernel bandwidth by a factor of 2

    latebalance density x1, bwidth(*2)

Menu

Statistics > Postestimation

Syntax

    latebalance density *varname* [, *options*]

options	Description
Main	
kernel(*kernel*)	specify the kernel function; default is kernel(epanechnikov)
line#opts(*line_options*)	twoway line options for density line number #
bwidth(*#)	rescale default bandwidth
Y axis, X axis, Titles, Legend, Overall	
twoway_options	any options other than by() documented in [G-3] *twoway_options*
By options	
byopts(*by_option*)	how subgraphs are combined, labeled, etc.

collect is allowed; see [U] 11.1.10 Prefix commands.

kernel	Description
epanechnikov	Epanechnikov kernel function; the default
triangle	triangle kernel function
epan2	alternative Epanechnikov kernel function
biweight	biweight kernel function
cosine	cosine trace kernel function
gaussian	Gaussian kernel function
parzen	Parzen kernel function
rectangle	rectangle kernel function

Options

    <u>Main</u>

kernel(*kernel*) specifies the kernel function for use in calculating the kernel density estimates. The default kernel is kernel(epanechnikov).

line#opts(*line_options*) specifies the line pattern, width, color, and overall style of density line number #. The line numbers are in the same order as the treatment levels specified in e(tlevels).

bwidth(*#) specifies the factor by which the default bandwidths are to be rescaled. A bandwidth is the half-width of the kernel, the width of the density window around each point. Each kernel density plot has its own bandwidth, and by default, each kernel density plot uses its own optimal bandwidth; see [R] **kdensity**. bwidth() rescales each plot's optimal bandwidth by the specified amount.

    <u>Y axis, X axis, Titles, Legend, Overall</u>

twoway_options are any of the options documented in [G-3] *twoway_options*, excluding by(). These include options for titling the graph (see [G-3] *title_options*) and for saving the graph to disk (see [G-3] *saving_option*). latebalance density uses by() to differentiate between raw and weighted or matched samples, and some *twoway_options* will be repeated for by graph and might be better specified as byopts().

    <u>By options</u>

byopts(*by_option*) is as documented in [G-3] *by_option*. byopts() affects how the subgraphs are combined, labeled, etc. byopts() generally affects the entire graph, and some *by_option*s may be better specified as *twoway_options*; see [G-3] *twoway_options*.

Remarks and examples

When the distribution of a covariate does not vary over the assigned treatment levels, the covariate is said to be balanced. latebalance density produces kernel density plots of a covariate over assigned treatment levels for the raw data and the weighted data produced by lateffects. If the weighted-sample kernel density plots of the covariate are the same over the assigned treatment levels, the covariate is balanced in the weighted sample.

We recommend that you read [CAUSAL] **latebalance** before proceeding because it provides an introduction to covariate balance. For an illustration, see example 2 of [CAUSAL] **lateffects**.

Stored results

`latebalance density` stores the following in `r()`:

Scalars
r(bwc_adj)	bandwidth for control in weighted sample
r(Nc_adj)	observations on control in weighted sample
r(bwt_adj)	bandwidth for treated in weighted sample
r(Nt_adj)	observations on treated in weighted sample
r(bwc_raw)	bandwidth for control in raw sample
r(Nc_raw)	observations on control in raw sample
r(bwt_raw)	bandwidth for treated in raw sample
r(Nt_raw)	observations on treated in raw sample

Macros
r(kernel)	name of kernel

Reference

Cattaneo, M. D. 2010. Efficient semiparametric estimation of multi-valued treatment effects under ignorability. *Journal of Econometrics* 155: 138–154. https://doi.org/10.1016/j.jeconom.2009.09.023.

Also see

[CAUSAL] **latebalance** — Check balance after lateffects estimation⁺

[CAUSAL] **lateffects** — Local average treatment-effect estimation⁺

[CAUSAL] **lateoverlap** — Overlap plots⁺