Data Visualization with Stata Cheat Sheet

For more info, see Stata's reference manual (stata.com)

Basic plot syntax: **graph** <plot type> y1 y2 ... yn x **[in]** **[if],** <plot options> **by(var)** **xline(**xint**) yline(**yint**) text(**y x "annotation"**)**

title("title**") subtitle("**subtitle**") xtitle("**x-axis title**") ytitle("**y axis title**") xscale(range(**low high**) log reverse off noline) yscale(**<options>**)**

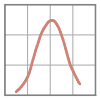
scheme(s1mono**) play(**customTheme**) xsize(**5**) ysize(**4**) saving("**myPlot.gph**", replace)**

One variable

sysuse auto, clear

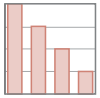
Continuous

histogram mpg, **width(**5**) freq kdensity kdenopts(bwidth(**5**))**
histogram
bin(#) • width(#) • density • fraction • frequency • percent • addlabels addlabopts(<options>) • normal • normopts(<options>) • kdensity kdenopts(<options>)

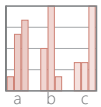


kdensity mpg, **bwidth(**3**)**
smoothed histogram
bwidth • kernel(<options>) ← main plot-specific options; see help for complete set
normal • normopts(<line options>)

Discrete

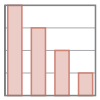


graph bar (count**), over(**foreign**, gap(***0.5**)) intensity(***0.5**)**
bar plot **graph hbar** draws horizontal bar charts
(asis) • (percent) • (count) • over(<variable>, <options: gap(*#) • relabel • descending • reverse>) • cw • missing • nofill • allcategories • percentages • stack • bargap(#) • intensity(*#) • yalternate • xalternate

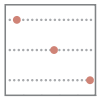


graph bar (percent**), over(**rep78**) over(**foreign**)**
grouped bar plot **graph hbar** ...
(asis) • (percent) • (count) • over(<variable>, <options: gap(*#) • relabel • descending • reverse>) • cw • missing • nofill • allcategories • percentages • stack • bargap(#) • intensity(*#) • yalternate • xalternate

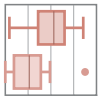
Discrete x, continuous y



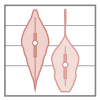
graph bar (median**) price, over(**foreign**)** **graph hbar** ...
bar plot (asis) • (percent) • (count) • (stat: mean median sum min max ...) over(<variable>, <options: gap(*#) • relabel • descending • reverse sort(<variable>)>) • cw • missing • nofill • allcategories • percentages stack • bargap(#) • intensity(*#) • yalternate • xalternate



graph dot (mean**) length headroom, over(**foreign**) m(**1, ms(S)**)**
dot plot (asis) • (percent) • (count) • (stat: mean median sum min max ...) over(<variable>, <options: gap(*#) • relabel • descending • reverse sort(<variable>)>) • cw • missing • nofill • allcategories • percentages linegap(#) • marker(#, <options>) • linetype(dot | line | rectangle) dots(<options>) • lines(<options>) • rectangles(<options>) • rwidth



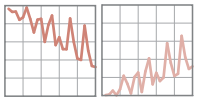
graph hbox mpg, **over(**rep78, descending**) by(**foreign**) missing**
box plot **graph box** draws vertical boxplots
over(<variable>, <options: total • gap(*#) • relabel • descending • reverse sort(<variable>)>) • missing • allcategories • intensity(*#) • boxgap(#) medtype(line | line | marker) • medline(<options>) • medmarker(<options>)



violplot price, **over(**foreign**)** ssc install violplot
violin plot over(<variable>, <options: total • missing>) • nofill • vertical • horizontal • obs • kernel(<options>) • bwidth(#) • barwidth(#) • dscale(#) • ygap(#) • ogap(#) • density(<options>) bar(<options>) • median(<options>) • obsopts(<options>)

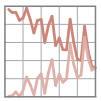
Plot placement

Juxtapose (facet)



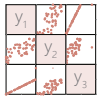
twoway scatter mpg price, **by(**foreign**,** norescale**)**
msymbol(<symbolstylelist>) • mcolor(<colorstylelist>) • msize(<markersizestylelist>) • mlabel(<varlist>) • title(<tinfo>) • connect(<connectstylelist>) • legend([contents] [location]) • name(name[, replace]) • saving(filename [, suboptions])

Superimpose

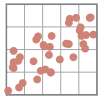


graph combine plot1.gph plot2.gph...
combine two or more saved graphs into one plot
scatter trunk headroom rep78 price**, msymbol(**D O T**)**
mlabel(trunk headroom rep78**)**
plot several *y* values for one *x* value
graph twoway scatter mpg price **|| scatter** mpg price **/**/ if** mpg < 15, mlabel(make) m(T) legend(label(2 "mpg<15"))
combine two-way plots using ||

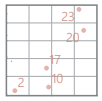
Two+ continuous variables



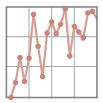
graph matrix mpg price weight**, half**
scatterplot of each combination of variables
half • jitter(#) • jitterseed(#) diagonal • [aweights(<variable>)]



twoway scatter mpg weight**, jitter(**7**)**
scatterplot
jitter(#) • jitterseed(#) • sort • cmissing(yes | no) connect(<options>) • [aweight(<variable>)]

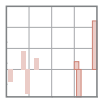


twoway scatter mpg weight**, mlabel(**mpg**)**
scatterplot with labeled values
jitter(#) • jitterseed(#) • sort • cmissing(yes | no) connect(<options>) • [aweight(<variable>)]



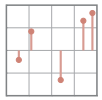
twoway connected mpg price**, sort(**price**)**
scatterplot with connected lines and symbols
jitter(#) • jitterseed(#) • sort see also **line**
connect(<options>) • cmissing(yes | no)

twoway area mpg price**, sort(**price**)**
line plot with area shading
sort • cmissing(yes | no) • vertical, • horizontal base(#)

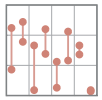


twoway bar price rep78
bar plot
vertical, • horizontal • base(#) • barwidth(#)

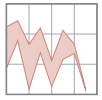
twoway dot mpg rep78
dot plot vertical, • horizontal • base(#) • ndots(#) dcolor(<color>) • dfcolor(<color>) • dlcolor(<color>) dsize(<markersize>) • dsymbol(<marker type>) dlwidth(<strokesize>) • dotextend(yes | no)



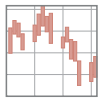
twoway dropline mpg price **in** 1/5
dropped line plot
vertical, • horizontal • base(#)



twoway rcapsym length headroom price
range plot (y_1 ÷ y_2) with capped lines
vertical • horizontal see also **rcap**



twoway rarea length headroom price**, sort**
range plot (y_1 ÷ y_2) with area shading
vertical • horizontal • sort cmissing(yes | no)



twoway rbar length headroom price
range plot (y_1 ÷ y_2) with bars
vertical • horizontal • barwidth(#) • mwidth msize(<marker size>)

twoway pcspike wage68 ttl_exp68 wage88 ttl_exp88 **(sysuse nlswide1)**
Parallel coordinates plot
vertical, • horizontal

twoway pccapsym wage68 ttl_exp68 wage88 ttl_exp88 **(sysuse nlswide1)**
Slope/bump plot
vertical • horizontal • headlabel

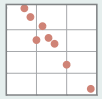
Three variables

twoway contour mpg price weight**, level(**20**) crule(**intensity**)**
3D contour plot
ccuts(#s) • levels(#) • minmax • crule(hue | chue | intensity | linear) • scolor(<color>) • ecolor (<color>) • ccolors(<colorlist>) • heatmap interp(thinplatespline | shepard | none)

regress price mpg trunk weight length turn**, nocons**
matrix regmat **= e(V)** ssc install plotmatrix
plotmatrix, mat(regmat**) color(**green**) aspect(**1**) legend(**off**)**
heatmap mat(<variable>) • split(<options>) • color(<color>) • freq

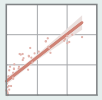
Summary plots

twoway mband mpg weight **|| scatter** mpg weight
plot median of the y values
bands(#)

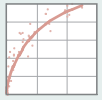


binscatter weight mpg**, line(**none**)** ssc install binscatter
plot one value (mean or median) for each x value
medians • nquantiles(#) • discrete • controls(<variables>) • linetype(lfit | qfit | connect | none) • aweight[<variable>]

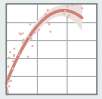
Fitting results



twoway lfitci mpg weight **|| scatter** mpg weight
calculate and plot linear fit to data with confidence intervals
level(#) • stdp • stdf • nofit • fitplot(<plottype>) • ciplot(<plottype>) • range(# #) • n(#) • atobs • estopts(<options>) • predopts(<options>)

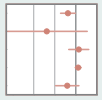


twoway lowess mpg weight **|| scatter** mpg weight
calculate and plot lowess smoothing
bwidth(#) • mean • noweight • logit • adjust

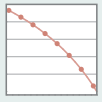


twoway qfitci mpg weight**, alwidth(**none**) || scatter** mpg weight
calculate and plot quadriatic fit to data with confidence intervals
level(#) • stdp • stdf • nofit • fitplot(<plottype>) • ciplot(<plottype>) • range(# #) • n(#) • atobs • estopts(<options>) • predopts(<options>)

Regression results



regress price mpg headroom trunk length turn
coefplot, drop(_cons**) xline(**0**)** ssc install coefplot
Plot regression coefficients
baselevels • b(<options>) • at(<options>) • noci • levels(#) keep(<variables>) • drop(<variables>) • rename(<list>) horizontal • vertical • generate(<variable>)



regress mpg weight length turn
margins, eyex(weight**) at(**weight = (1800(200)4800)**)**
marginsplot, noci
Plot marginal effects of regression
horizontal • noci

Tim Essam (tessam@usaid.gov) • Laura Hughes (lhughes@scripps.edu)

geocenter.github.io/StataTraining

Disclaimer: we are not affiliated with Stata. But we like it.

updated April 2025