Data Visualization with Stata Cheat Sheet

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

Basic Plot Syntax: **graph** <plot type> variables: y first y_1 y_2 … y_n x **[in]** **[if],** plot-specific options <plot options> – facet – **by(var)** annotations **xline(**xint**) yline(**yint**) text(**y x "annotation"**)**

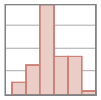
titles: **title(**"title"**) subtitle(**"subtitle"**) xtitle(**"x-axis title"**) ytitle(**"y axis title"**)** axes: **xscale(range(**low high**) log reverse off noline) yscale(**<options>**)**

custom appearance: <marker, line, text, axis, legend, background options> **scheme(**s1mono**) play(**customTheme**)** plot size: **xsize(**5**) ysize(**4**)** save: **saving(**"myPlot.gph"**, replace)**

One Variable

sysuse auto, clear

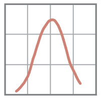
Continuous



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>)

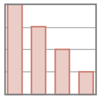


kdensity mpg, **bwidth(**3**)**

smoothed histogram

bwidth • kernel(<options> normal • normopts(<line options>) ← main plot-specific options; see help for complete set

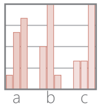
Discrete



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

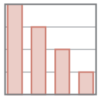


graph bar (percent**), over(**rep78**) over(**foreign**)**

grouped bar plot graph hbar ...

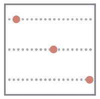
(asis) • (percent) • (count) • over(<variable>, <options: gap(*#) • relabel • descending • reverse>) • cw •missing • nofill • allcategories • percentages • stack • bargap(#) • intensity(*#) • yalternate • xalternate

Discrete X, Continuous Y



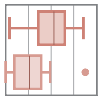
graph bar (median**)** price**, over(**foreign**)** graph hbar ...

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)**)**

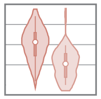
dot plot (asis) • (percent) • (count) • (stat: mean median sum min max ...) over(<variable>, <options: gap(*#) • relabel • descending • reverse sort(<variable>)>) • cw • missing • nofill • allcategories • percentages linegap(#) • marker(#, <options>) • linetype(dot | line | rectangle) dots(<options>) • 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>)

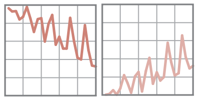


vioplot price**, over(**foreign**)** ssc install vioplot

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

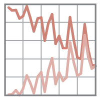
Juxtapose (Facet)



twoway scatter mpg price, **by(foreign, norescale)**

total • missing • colfirst • rows(#) • cols(#) • holes(<numlist>) compact • [no]edgelabel • [no]rescale • [no]yrescal • [no]xrescale [no]iyaxes • [no]ixaxes • [no]iytick • [no]ixtick • [no]iylabel [no]ixlabel • [no]iytitle • [no]ixtitle • imargin(<options>)

Superimpose



graph combine plot1.gph plot2.gph...

combine two or more saved graphs into a single plot

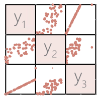
scatter y3 y2 y1 x, msymbol(i o i) mlabel(var3 var2 var1)

plot several y values for a single x value

graph twoway scatter mpg price in 27/74 || scatter mpg price /*
***/ if mpg < 15 & price > 12000 in 27/74**, mlabel(make) m(i)

combine twoway plots using ||

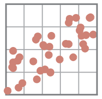
Two+ Continuous Variables



graph matrix mpg price weight**, half**

scatterplot of each combination of variables

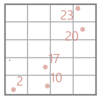
half • jitter(#) • jitterseed(#) diagonal • [aweights(<variable>)]



twoway scatter mpg weight**, jitter(**7**)**

scatterplot

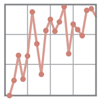
jitter(#) • jitterseed(#) • sort • cmissing(yes | no) connect(<options>) • [aweight(<variable>)]



twoway scatter mpg weight**, mlabel(**mpg**)**

scatterplot with labelled values

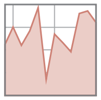
jitter(#) • jitterseed(#) • sort • cmissing(yes | no) connect(<options>) • [aweight(<variable>)]



twoway connected mpg price**, sort(**price**)**

scatterplot with connected lines and symbols

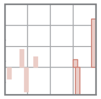
jitter(#) • jitterseed(#) • sort connect(<options>) • cmissing(yes | no) see also **line**



twoway area mpg price**, sort(**price**)**

line plot with area shading

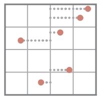
sort • cmissing(yes | no) • vertical, • horizontal base(#)



twoway bar price rep78

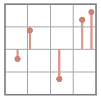
bar plot

vertical, • horizontal • base(#) • barwidth(#)



twoway dot mpg rep78

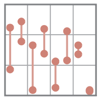
dot plot vertical, • horizontal • base(#) • ndots(#) dcolor(<color>) • dfcolor(<color>) • dlcolor(<color>) dsize(<markersize>) • dsymbol(<marker type>) dlwidth(<strokesize>) • dotextend(yes | no)



twoway dropline mpg price **in** 1/5

dropped line plot

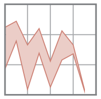
vertical, • horizontal • base(#)



twoway rcapsym length headroom price

range plot ($y_1 \div y_2$) with capped lines

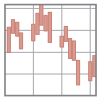
vertical • horizontal see also **rcap**



twoway rarea length headroom price**, sort**

range plot ($y_1 \div y_2$) with area shading

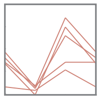
vertical • horizontal • sort cmissing(yes | no)



twoway rbar length headroom price

range plot ($y_1 \div y_2$) with bars

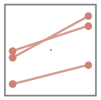
vertical • horizontal • barwidth(#) • mwidth msize(<marker size>)



twoway pcspike wage68 ttl_exp68 wage88 ttl_exp88

Parallel coordinates plot **(sysuse nlswide1)**

vertical, • horizontal

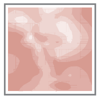


twoway pccapsym wage68 ttl_exp68 wage88 ttl_exp88

Slope/bump plot **(sysuse nlswide1)**

vertical • horizontal • headlabel

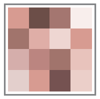
Three Variables



twoway contour mpg price weight**, level(**20**) crule(**intensity**)**

3D contour plot

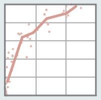
ccuts(#s) • levels(#) • minmax • crule(hue | chue | intensity | linear) • scolor(<color>) • ecolor (<color>) • ccolors(<colorlist>) • heatmap interp(thinplatespline | shepard | none)



regress price mpg trunk weight length turn**, nocons**
matrix regmat = **e(V)** ssc install plotmatrix
plotmatrix, mat(regmat**) color(**green**)**

heatmap mat(<variable) • split(<options>) • color(<color>) • freq

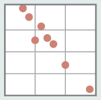
Summary Plots



twoway mband mpg weight **|| scatter** mpg weight

plot median of the y values

bands(#)

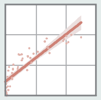


binscatter weight mpg**, line(**none**)** ssc install binscatter

plot a single value (mean or median) for each x value

medians • nquantiles(#) • discrete • controls(<variables>) • linetype(lfit | qfit | connect | none) • aweight[<variable>]

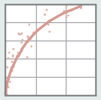
Fitting Results



twoway lfitci mpg weight **|| scatter** mpg weight

calculate and plot linear fit to data with confidence intervals

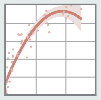
level(#) • stdp • stdf • nofit • fitplot(<plottype>) • ciplot(<plottype>) • range(# #) • n(#) • atobs • estopts(<options>) • predopts(<options>)



twoway lowess mpg weight **|| scatter** mpg weight

calculate and plot lowess smoothing

bwidth(#) • mean • noweight • logit • adjust

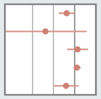


twoway qfitci mpg weight**, alwidth(**none**) || scatter** mpg weight

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>)

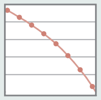
Regression Results



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

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follow us @flaneuseks and @StataRGIS

inspired by RStudio's awesome Cheat Sheets (rstudio.com/resources/cheatsheets)

geocenter.github.io/StataTraining

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