Data Processing with Stata 14.1 Cheat Sheet

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

Useful Shortcuts

F2 — keyboard buttons
describe data

Ctrl + **9**
open a new .do file

Ctrl + **8**
open the data editor

Ctrl + **D**
highlight text in .do file, then ctrl + d executes it in the command line

clear
delete data in memory

At Command Prompt

PgUp **PgDn** scroll through previous commands

Tab autocompletes variable name after typing part

cls clear the console (where results are displayed)

Set up

pwd
print current (working) directory

cd "C:\Program Files (x86)\Stata13"
change working drive

dir
display filenames in working directory

fs *.dta
List all Stata files in working directory

capture log close
close the log on any existing do files

underlined parts are shortcuts – use "capture" or "cap"

log using "myDoFile.do", **replace**
create a new log file to record your work and results

search mdesc
find the package mdesc to install

ssc install mdesc
install the package mdesc; needs to be done once

packages contain extra commands that expand Stata's toolkit

Import Data

sysuse auto, clear
load system data (Auto data)

for many examples, we use the auto dataset.

use "yourStataFile.dta", **clear**
load a dataset from the current directory

import excel "yourSpreadsheet.xlsx", **/***
***/ sheet**("Sheet1") **cellrange**(A2:H11) **firstrow**
import an Excel spreadsheet

frequently used commands are highlighted in yellow

import delimited"yourFile.csv", **/***
***/ rowrange**(2:11) **colrange**(1:8) **varnames**(2)
import a .csv file

webuse set "https://github.com/GeoCenter/StataTraining/raw/master/Day2/Data"
webuse "wb_indicators_long"
set web-based directory and load data from the web

Basic Syntax

All Stata functions have the same format (syntax):

[by varlist1**:]** — apply the *command* across each unique combination of variables in *varlist1*

command — function: what are you going to **do** to *varlists*?

[varlist2] — column to apply *command* to

[=exp] — save output as a new variable

[if exp] — condition: only apply the function *if* something is true

[in range**]** — apply to specific rows

[weight] — apply weights

[using filename**]** — pull data from a file (if not loaded)

[,options] — special options for *command*

```
bysort rep78 : summarize price if foreign == 0 & price <= 9000, detail
```

In this example, we want a *detailed* summary with stats like kurtosis, plus mean and median

To find out more about any command – like what options it takes – type **help** *command*

Basic Data Operations

Arithmetic

\+ add (numbers) combine (strings)
\− subtract
* multiply
/ divide
^ raise to a power

Logic

& and
! or ~ not
| or

== tests if something is equal
= sets a value to a variable name

== equal
!= or ~= not equal
< less than
<= less than or equal to
> greater than
>= greater or equal to

if foreign != 1 & price >= 10000

make	foreign	price
Chevy Colt	0	3,984
Buick Riviera	0	10,372
Honda Civic	1	4,499
Volvo 260	1	11,995

if foreign != 1 | price >= 10000

make	foreign	price
Chevy Colt	0	3,984
Buick Riviera	0	10,372
Honda Civic	1	4,499
Volvo 260	1	11,995

Explore Data

View Data Organization

describe make price
display variable type, format, and any value/variable labels

count
count if price > 5000
number of rows (observations)
Can be combined with logic

ds, has(type string)
lookfor "in."
search for variable types, variable name, or variable label

isid mpg
check if mpg uniquely identifies the data

See Data Distribution

codebook make price
overview of variable type, stats, number of missing/unique values

summarize make price mpg
print summary statistics (mean, stdev, min, max) for variables

inspect mpg
show histogram of data, number of missing or zero observations

histogram mpg, **frequency**
plot a histogram of the distribution of a variable

Browse Observations within the Data

browse or **Ctrl** + **8**
open the data editor

Missing values are treated as the largest positive number. To exclude missing values, ask whether the value is less than "."

list make price **if** price > 10000 & price < **.** **clist** ... (compact form)
list the make and price for observations with price > $10,000

display price[4]
display the 4th observation in price; only works on single values

gsort price mpg (ascending) **gsort –**price **–**mpg (descending)
sort in order, first by price then miles per gallon

duplicates report
finds all duplicate values in each variable

levelsof rep78
display the unique values for rep78

Change Data Types

Stata has 6 data types, and data can also be missing:

no data	true/false	words	numbers
missing	**byte**	**string**	**int long float double**

To convert between numbers & strings:

1 **gen** foreignString = **string**(foreign) "1"
tostring foreign, **gen**(foreignString) "1"
decode foreign , **gen**(foreignString) "foreign"

1 **gen** foreignNumeric = **real**(foreignString) "1"
destring foreignString, **gen**(foreignNumeric) "1"
encode foreignString, **gen**(foreignNumeric) "foreign"

recast double mpg
generic way to convert between types

Summarize Data

include missing values — create binary variable for every rep78 value in a new variable, repairRecord

tabulate rep78, **mi gen**(repairRecord)
one-way table: number of rows with each value of rep78

tabulate rep78 foreign, **mi**
two-way table: cross-tabulate number of observations for each combination of rep78 and foreign

bysort rep78**: tabulate** foreign
for each value of rep78, apply the command tabulate foreign

tabstat price weight mpg, **by**(foreign) **stat**(mean sd n)
create compact table of summary statistics

displays stats for all data — formats numbers

table foreign, **contents**(mean price sd price) f(%9.2fc) **row**
create a flexible table of summary statistics

collapse (mean) price (max) mpg, **by**(foreign) – replaces data
calculate mean price & max mpg by car type (foreign)

Create New Variables

generate mpgSq = mpg^2 **gen byte** lowPr = price < 4000
create a new variable. Useful also for creating binary variables based on a condition (**generate byte**)

generate id = **_n** **bysort** rep78**: gen** repairIdx = **_n**
_n creates a running index of observations in a group

generate totRows = **_N** **bysort** rep78**: gen** repairTot = **_N**
_N creates a running count of the total observations per group

pctile mpgQuartile = mpg, **nq** = 4
create quartiles of the mpg data

egen meanPrice = **mean**(price), **by**(foreign)
calculate mean price for each group in foreign

see **help egen** for more options

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

geocenter.github.io/StataTraining

updated January 2016

Data Transformation with Stata 14.1 Cheat Sheet

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

Select Parts of Data (Subsetting)

Select Specific Columns

drop make
remove the 'make' variable

keep make price
opposite of drop; keep only columns 'make' and 'price'

Filter Specific Rows

drop if mpg < 20 **drop in** 1/4
drop observations based on a condition (left) or rows 1-4 (right)

keep in 1/30
opposite of drop; keep only rows 1-30

keep if inrange(price, 5000, 10000)
keep values of price between $5,000 – $10,000 (inclusive)

keep if inlist(make, "Honda Accord", "Honda Civic", "Subaru"**)**
keep the specified values of make

sample 25
sample 25% of the observations in the dataset (use **set seed** # command for reproducible sampling)

Replace Parts of Data

Change Column Names

rename (rep78 foreign**) (**repairRecord carType**)**
rename one or multiple variables

Change Row Values

replace price = 5000 if price < 5000
replace all values of price that are less than $5,000 with 5000

recode price (0 / 5000 = 5000**)**
change all prices less than 5000 to be $5,000

recode foreign (0 = 2 "US"**)(**1 = 1 "Not US"**), gen(**foreign2**)**
change the values and value labels then store in a new variable, foreign2

Replace Missing Values

mvdecode _all**, mv(**9999**)** useful for cleaning survey datasets
replace the number 9999 with missing value in all variables

mvencode _all**, mv(**9999**)** useful for exporting data
replace missing values with the number 9999 for all variables

Label Data

Value labels map string descriptions to numers. They allow the underlying data to be numeric (making logical tests simpler) while also connecting the values to human-understandable text.

label define myLabel 0 "US" 1 "Not US"
label values foreign myLabel
define a label and apply it the values in foreign

label list
list all labels within the dataset

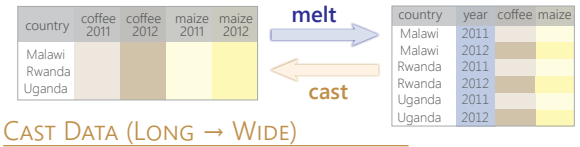
Reshape Data

webuse set https://github.com/GeoCenter/StataTraining/raw/master/Day2/Data
webuse "coffeeMaize.dta" load demo dataset

Melt Data (Wide → Long)

reshape variables starting with coffee and maize — unique id variable (key) — create new variable which captures the info in the column names

reshape long coffee@ maize@**, i(**country**) j(**year**)** — new variable
convert a wide dataset to long



Tidy Datasets have each observation in its own row and each variable in its own column.

When datasets are tidy, they have a consistent, standard format that is easier to manipulate and analyze.

Cast Data (Long → Wide)

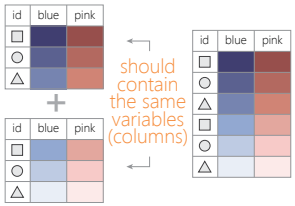
create new variables named coffee2011, maize2012... — what will be unique id variable (key) — create new variables with the year added to the column name

reshape wide coffee maize**, i(**country**) j(**year**)**
convert a long dataset to wide

xpose, clear varname
transpose rows and columns of data, clearing the data and saving old column names as a new variable called "_varname"

Combine Data

Adding (Appending) New Data



webuse coffeeMaize2.dta**, clear**
save coffeeMaize2.dta**, replace**
webuse coffeeMaize.dta**, clear** load demo data

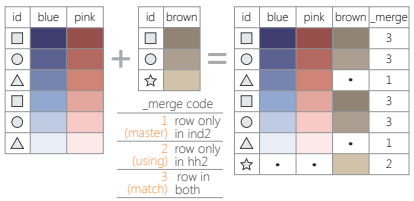
append using "coffeeMaize2.dta"**, gen(**filenum**)**
add observations from "coffeeMaize2.dta" to current data and create variable "filenum" to track the origin of each observation

Merging Two Datasets Together

must contain a common variable (id)

webuse ind_age.dta**, clear**
save ind_age.dta**, replace**
webuse ind_ag.dta**, clear**

merge 1:1 id **using** "ind_age.dta"
one-to-one merge of "ind_age.dta" into the loaded dataset and create variable "_merge" to track the origin



webuse hh2.dta**, clear**
save hh2.dta**, replace**
webuse ind2.dta**, clear**

merge m:1 hid **using** "hh2.dta"
many-to-one merge of "hh2.dta" into the loaded dataset and create variable "_merge" to track the origin

Combining Two Datasets without a Common ID

reclink fuzzy wuzzy was a bear ssc install reclink
fuzzy fuzzy wuzzy had no hair ssc install fuzzy

merge m:1 hid **using** "hh2.dta"
many-to-one merge of "hh2.dta" into the loaded dataset and create variable "_merge" to track the origin

Manipulate Strings

Get String Properties

display length("This string has 29 characters"**)**
return the length of the string

charlist make * user-defined package
display the set of unique characters within a string

display strpos("Stata", "a"**)**
return the position in Stata where a is first found

Find Matching Strings

display strmatch("123.89", "1??.?9"**)**
return true (1) or false (0) if string matches pattern

display substr("Stata", 3, 5**)**
return the string located between characters 3-5

list make **if regexm(**make, "[0-9]"**)**
list observations where make matches the regular expression (here, records that contain a number)

list if regexm(make, "(Cad.|Chev.|Datsun)"**)**
return all observations where make contains "Cad.", "Chev." or "Datsun"

compare the given list against the first word in make

list if inlist(word(make, 1**), "Cad.", "Chev.", "Datsun")**
return all observations where the first word of the make variable contains the listed words

Transform Strings

display regexr("My string", "My", "Your"**)**
replace string1 ("My") with string2 ("Your")

replace make **= subinstr(**make, "Cad.", "Cadillac", 1**)**
replace first occurrence of "Cad." with Cadillac in the make variable

display stritrim(" Too much Space"**)**
replace consecutive spaces with a single space

display trim(" leading / trailing spaces "**)**
remove extra spaces before and after a string

display strlower("STATA should not be ALL-CAPS"**)**
change string case; see also **strupper**, **strproper**

display strtoname("1Var name"**)**
convert string to Stata-compatible variable name

display real("100"**)**
convert string to a numeric or missing value

Save & Export Data

save "myData.dta"**, replace** Stata 12-compatible file
saveold "myData.dta"**, replace version(12)**
save data in Stata format, replacing the data if a file with same name exists

export excel "myData.xls"**, /* */ firstrow(variables) replace**
export data as an Excel file (.xls) with the variable names as the first row

export delimited "myData.csv"**, delimiter(",") replace**
export data as a comma-delimited file (.csv)

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

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updated March 2016

Data Analysis with Stata 14.1 Cheat Sheet

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

Results are stored as either r -class or e -class. See Programming Cheat Sheet

Summarize Data

Examples use auto.dta (sysuse auto, clear) unless otherwise noted

univar price mpg, **boxplot** — ssc install univar
calculate univariate summary, with box-and-whiskers plot

stem mpg
return stem-and-leaf display of mpg

summarize price mpg, **detail** — frequently used commands are highlighted in yellow
calculate a variety of univariate summary statistics

ci mpg price, **level**(99)
compute standard errors and confidence intervals

correlate mpg price
return correlation or covariance matrix

pwcorr price mpg weight, **star**(0.05)
return all pairwise correlation coefficients with sig. levels

mean price mpg
estimates of means, including standard errors

proportion rep78 foreign
estimates of proportions, including standard errors for categories identified in varlist

ratio
estimates of ratio, including standard errors

total price
estimates of totals, including standard errors

Statistical Tests

tabulate foreign rep78, **chi2 exact expected**
tabulate foreign and repair record and return chi^2 and Fisher's exact statistic alongside the expected values

ttest mpg, **by**(foreign)
estimate t test on equality of means for mpg by foreign

prtest foreign == 0.5
one-sample test of proportions

ksmirnov mpg, **by**(foreign) **exact**
Kolmogorov-Smirnov equality-of-distributions test

ranksum mpg, **by**(foreign) **exact**
equality tests on unmatched data (independent samples)

anova systolic drug — **webuse** systolic, clear
analysis of variance and covariance

pwmean mpg, **over**(rep78) **pveffects mcompare**(tukey)
estimate pairwise comparisons of means with equal variances include multiple comparison adjustment

Declare Data

By declaring data type, you enable Stata to apply data munging and analysis functions specific to certain data types

Time Series

webuse sunspot, clear

tsset time, **yearly**
declare sunspot data to be yearly time series

tsreport
report time series aspects of a dataset

generate lag_spot = L1.spot
create a new variable of annual lags of sun spots

tsline plot

tsline spot
plot time series of sunspots

arima spot, **ar**(1/2)
estimate an auto-regressive model with 2 lags

Time Series Operators

L.	lag x_{t-1}	L2.	2-period lag x_{t-2}
F.	lead x_{t+1}	F2.	2-period lead x_{t+2}
D.	difference $x_t - x_{t-1}$	D2.	difference of difference $x_t - x_{t-1} - (x_{t-1} - x_{t-2})$
S.	seasonal difference $x_t - x_{t-1}$	S2.	lag-2 (seasonal difference) $x_t - x_{t-2}$

Useful Add-Ins

tscollap	compact time series into means, sums and end-of-period values
carryforward	carry non-missing values forward from one obs. to the next
tsspell	identify spells or runs in time series

Survival Analysis

webuse drugtr, clear

stset studytime, **failure**(died)
declare survey design for a dataset

stsum
summarize survival-time data

stcox drug age
estimate a cox proportional hazard model

Panel / Longitudinal

webuse nlswork, clear

xtset id year
declare national longitudinal data to be a panel

xtdescribe
report panel aspects of a dataset

xtsum hours
summarize hours worked, decomposing standard deviation into between and within components

xtline plot

xtline ln_wage if id <= 22, **tlabel**(#3)
plot panel data as a line plot

xtreg ln_w c.age##c.age ttl_exp, **fe vce**(robust)
estimate a fixed-effects model with robust standard errors

Survey Data

webuse nhanes2b, clear

svyset psuid [**pweight** = finalwgt], **strata**(stratid)
declare survey design for a dataset

svydescribe
report survey data details

svy: mean age, **over**(sex)
estimate a population mean for each subpopulation

svy, subpop(rural)**:** mean age
estimate a population mean for rural areas

svy: tabulate sex heartatk
report two-way table with tests of independence

svy: reg zinc c.age##c.age female weight rural
estimate a regression using survey weights

1 Estimate Models

stores results as e -class

regress price mpg weight, **robust**
estimate ordinary least squares (OLS) model on mpg weight and foreign, apply robust standard errors

regress price mpg weight **if** foreign == 0, **cluster**(rep78)
regress price only on domestic cars, cluster standard errors

rreg price mpg weight, **genwt**(reg_wt)
estimate robust regression to eliminate outliers

probit foreign turn price, **vce**(robust)
estimate probit regression with robust standard errors

logit foreign headroom mpg, **or**
estimate logistic regression and report odds ratios

bootstrap, reps(100)**: regress** mpg /* */ weight gear foreign
estimate regression with bootstrapping

jackknife r(mean)**, double: sum** mpg
jackknife standard error of sample mean

Additional Models

pca ←	built-in Stata command	principal components analysis
factor		factor analysis
poisson • nbreg		count outcomes
tobit		censored data
ivregress	ivreg2	instrumental variables
diff	user-written	difference-in-difference
rd	ssc install ivreg2	regression discontinuity
xtabond	xtabond2	dynamic panel estimator
psmatch2		propensity score matching
synth		synthetic control analysis
oaxaca		Blinder-Oaxaca decomposition

2 Diagnostics

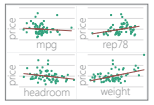
not appropriate with robust standard errors

estat hettest test for heteroskedasticity
ovtest test for omitted variable bias
vif report variance inflation factor

dfbeta(length)
calculate measure of influence

Type help regress postestimation plots for additional diagnostic plots

rvfplot, yline(0)
plot residuals against fitted values



avplots
plot all partial-regression leverage plots in one graph

3 Postestimation

commands that use a fitted model

regress price headroom length — Used in all postestimation examples

display _b[length] **display** _se[length]
return coefficient estimate or standard error for mpg from most recent regression model

margins, dydx(length) — returns e-class information when post option is used
return the estimated marginal effect for mpg

margins, eyex(length)
return the estimated elasticity for price

predict yhat if **e**(sample)
create predictions for sample on which model was fit

predict double resid, **residuals**
calculate residuals based on last fit model

test mpg = 0
test linear hypotheses that mpg estimate equals zero

lincom headroom - length
test linear combination of estimates (headroom = length)

Estimation with Categorical & Factor Variables

more details at http://www.stata.com/manuals14/u25.pdf

Continuous Variables
measure something

Categorical Variables
identify a group to which an observations belongs

Indicator Variables
T F denote whether something is true or false

Operator	Description	Example	
i.	specify indicators	regress price **i.**rep78	specify rep78 variable to be an indicator variable
ib.	specify base indicator	regress price **ib(3).**rep78	set the third category of rep78 to be the base category
fvset	command to change base	fvset base frequent rep78	set the base to most frequently occurring category for rep78
c.	treat variable as continuous	regress price i.foreign#**c.**mpg i.foreign	treat mpg as a continuous variable and specify an interaction between foreign and mpg
o.	omit a variable or indicator	regress price **io(2).**rep78	set rep78 as an indicator; omit observations with rep78 == 2
#	specify interactions	regress price mpg c.mpg**#**c.mpg	create a squared mpg term to be used in regression
##	specify factorial interactions	regress price c.mpg**##**c.mpg	create all possible interactions with mpg (mpg and mpg^2)

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updated March 2016

Data Visualization with Stata 14.1 Cheat Sheet

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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)**

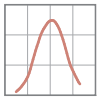
<options: marker, line, text, axis, legend, background options>

One Variable

sysuse auto, clear

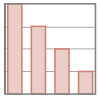
Continuous

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>)

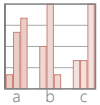


kdensity mpg, **bwidth(**3**)**
smoothed histogram
bwidth • kernel(<options> ← main plot-specific options; see help for complete set
normal • normopts(<line options>)

Discrete

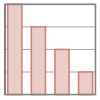


graph bar (count**), over(**foreign**, gap(***0.5**)) intensity(***0.5**)**
bar plot graph hbar draws horizontal bar charts
(asis) • (percent) • (count) • over(<variable>, <options: gap(*#) • relabel • descending • reverse>) • cw •missing • nofill • allcategories • percentages • stack • bargap(#) • intensity(*#)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

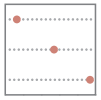


graph bar (percent**), over(**rep78**) over(**foreign**)**
grouped bar plot graph hbar ...
(asis) • (percent) • (count) • over(<variable>, <options: gap(*#) • relabel • descending • reverse>) • cw •missing • nofill • allcategories • percentages • stack • bargap(#) • intensity(*#) • yalternate • xalternate

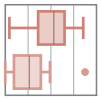
Discrete X, Continuous Y



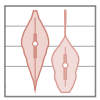
graph bar (median**) price, over(**foreign**)** graph hbar ...
bar plot (asis) • (percent) • (count) • (stat: mean median sum min max ...) over(<variable>, <options: gap(*#) • relabel • descending • reverse sort(<variable>)>) • cw • missing • nofill • allcategories • percentages stack • bargap(#) • intensity(*#)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



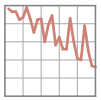
graph hbox mpg, **over(**rep78, descending**) by(**foreign**) missing**
box plot graph box draws vertical boxplots
over(<variable>, <options: total • gap(*#) • relabel • descending • reverse sort(<variable>)>) • missing • allcategories • intensity(*#) • boxgap(#) medtype(line | line | marker) • medline(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

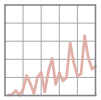


violplot price, **over(**foreign**)** ssc install vioplot
violin plot over(<variable>, <options: total • missing>)>) • nofill • vertical • horizontal • obs • kernel(<options>) • bwidth(#) • barwidth(#) • dscale(#) • ygap(#) • ogap(#) • density(<options>) bar(<options>) • median(<options>) • obsopts(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

Plot Placement

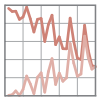
Juxtapose (Facet)





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

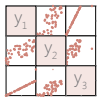


graph combine plot1.gph plot2.gph...
combine 2+ saved graphs into a single plot

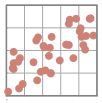
scatter y3 y2 y1 x, **marker(**i o i**) mlabel(**var3 var2 var1**)**
plot several y values for a single x value

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 ||

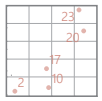
Two+ Continuous Variables



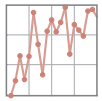
graph matrix mpg price weight, **half**
scatter plot of each combination of variables
half • jitter(#) • jitterseed(#)
diagonal • [aweights(<variable>)]



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

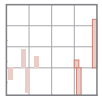


twoway scatter mpg weight, **mlabel(**mpg**)**
scatter plot with labelled values
jitter(#) • jitterseed(#) • sort • cmissing(yes | no)
connect(<options>) • [aweight(<variable>)]

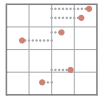


twoway connected mpg price, **sort(**price**)**
scatter plot with connected lines and symbols
jitter(#) • jitterseed(#) • sort see also line
connect(<options>) • cmissing(yes | no)

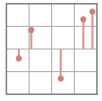
twoway area mpg price, **sort(**price**)**
line plot with area shading
sort • cmissing(yes | no) • vertical, • horizontal
base(#)



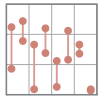
twoway bar price rep78
bar plot
vertical, • horizontal • base(#) • barwidth(#)



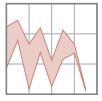
twoway dot mpg rep78
dot plot vertical, • horizontal • base(#) • ndots(#)
dcolor(<color>) • dfcolor(<color>) • dlcolor(<color>)
dsize(<markersize>) • dsymbol(<marker type>)
dlwidth(<strokesize>) • dotextend(yes | no)



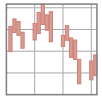
twoway dropline mpg price **in** 1/5
dropped line plot
vertical, • horizontal • base(#)



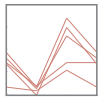
twoway rcapsym length headroom price
range plot (y_1 ÷ y_2) with capped lines
vertical • horizontal see also rcap



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
Parallel coordinates plot **(sysuse nlswide1)**
vertical, • horizontal

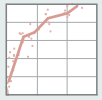
twoway pccapsym wage68 ttl_exp68 wage88 ttl_exp88
Slope/bump plot **(sysuse nlswide1)**
vertical • horizontal • headlabel

Three Variables

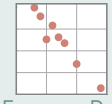
twoway contour mpg price weight, **level(**20**) crule(**intensity**)**
3D contour plot
ccuts(#s) • levels(#) • minmax • crule(hue | chue| intensity) • scolor(<color>) • ecolor (<color>) • ccolors(<colorlist>) • heatmap interp(thinplatespline | shepard | none)

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

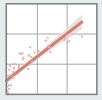


twoway mband mpg weight **|| scatter** mpg weight
plot median of the y values
bands(#)

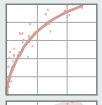


binscatter weight mpg, **line(**none**)** ssc install binscatter
plot a single value (mean or median) for each x value
medians • nquantiles(#) • discrete • controls(<variables>) • linetype(lfit | qfit | connect | none) • aweight[<variable>]

Fitting Results



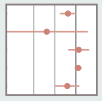
twoway lfitci mpg weight **|| scatter** mpg weight
calculate and plot linear fit to data with confidence intervals
level(#) • stdp • stdf • nofit • fitplot(<plottype>) • ciplot(<plottype>) • range(# #) • n(#) • atobs • estopts(<options>) • predopts(<options>)



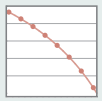
twoway lowess mpg weight **|| scatter** mpg weight
calculate and plot lowess smoothing
bwidth(#) • mean • noweight • logit • adjust

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

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

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

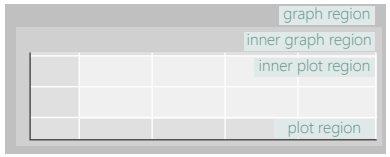
geocenter.github.io/StataTraining

updated January 2016

Plotting in Stata 14.1

Customizing Appearance

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

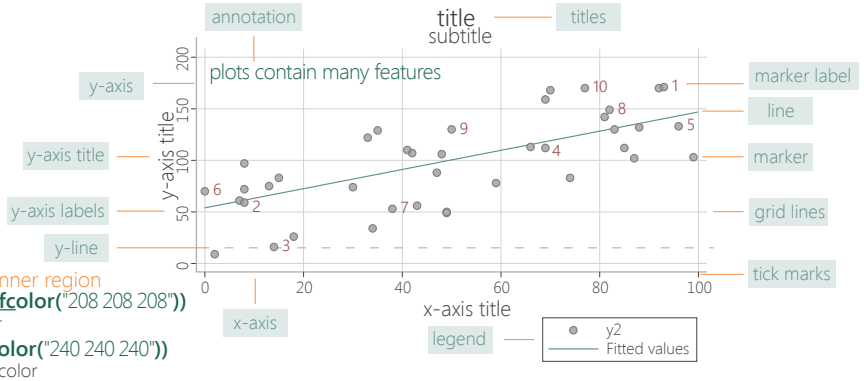


outer region — inner region

scatter price mpg, **graphregion(fcolor("192 192 192") ifcolor("208 208 208"))**
specify the fill of the background in RGB or with a Stata color

scatter price mpg, **plotregion(fcolor("224 224 224") ifcolor("240 240 240"))**
specify the fill of the plot background in RGB or with a Stata color

Anatomy of a Plot



Syntax

marker <marker options>

arguments for the plot objects (in green) go in the options portion of these commands (in orange)

for example:
scatter price mpg, **xline**(20, **lwidth**(vthick))

line <line options> xline(...) yline(...)

marker <marker options>

legend legend(region(...))

axes xscale(...) yscale(...)

tick marks / grid lines xlabel(...) ylabel(...)

marker label <marker options>

annotation text(...)

titles title(...) subtitle(...) xtitle(...) ytitle(...)

axis labels xlabel(...) ylabel(...)

legend legend(...)

Color

mcolor("145 168 208") **mcolor**(none)
specify the fill and stroke of the marker in RGB or with a Stata color

mfcolor("145 168 208") **mfcolor**(none)
specify the fill of the marker

lcolor("145 168 208") **lcolor**(none)
specify the stroke color of the line or border

marker **mlcolor**("145 168 208")
tick marks **tlcolor**("145 168 208")
grid lines **glcolor**("145 168 208")

color("145 168 208") **color**(none)
specify the color of the text

marker label **mlabcolor**("145 168 208")
axis labels **labcolor**("145 168 208")

Size / Thickness

msize(medium) specify the marker size:

ehuge, vhuge, huge, vlarge, large, medlarge, medium, medsmall, small, vsmall, tiny, vtiny

lwidth(medthick) specify the thickness (stroke) of a line:

marker **mlwidth**(thin)
tick marks **tlwidth**(thin)
grid lines **glwidth**(thin)

vvvthick, vvthick, vthick, thick, medthick, medium, medthin, thin, vthin, vvthin, vvvthin, none

size(medsmall) specify the size of the text:

marker label **mlabsize**(medsmall)
axis labels **labsize**(medsmall)

28 pt.	vhuge	10 pt.	medsmall
20 pt.	huge	8 pt.	small
16 pt.	vlarge	6 pt.	vsmall
14 pt.	large	4 pt.	tiny
12 pt.	medlarge	2 pt.	half_tiny
11 pt.	medium	1.3 pt.	third_tiny
		1 pt.	quarter_tiny
		1 pt	minuscule

Appearance

msymbol(Dh) specify the marker symbol:

O, D, T, S, o, d, t, s, Oh, Dh, Th, Sh, oh, dh, th, sh, +, X, p, none, i

line / grid lines **lpattern**(dash) **glpattern**(dash) specify the line pattern

solid, longdash, longdash_dot, dash, shortdash, shortdash_dot, dot, dash_dot, blank

axes **noline** axes **off** no axis/labels
tick marks **noticks** tick marks **tlength**(2)
grid lines **nogrid** **nogmin** **nogmax**

marker label **mlabel**(foreign)
label the points with the values of the foreign variable

axis labels **nolabels**
no axis labels

axis labels **format**(%12.2f)
change the format of the axis labels

legend **off**
turn off legend

legend **label**(# "label")
change legend label text

Position

jitter(#)
randomly displace the markers

jitterseed(#)
set seed

tick marks **xlabel**(#10, **tposition**(crossing))
number of tick marks, position (outside | crossing | inside)

marker label **mlabposition**(5)
label location relative to marker (clock position: 0 – 12)

Apply Themes

Schemes are sets of graphical parameters, so you don't have to specify the look of the graphs every time.

Using a Saved Theme

twoway scatter mpg price, **scheme**(customTheme)

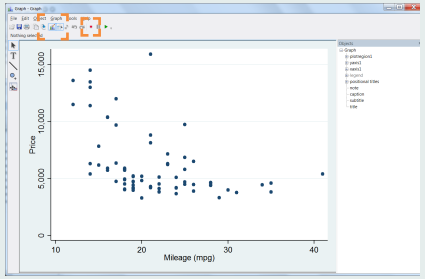
help scheme entries Create custom themes by saving options in a .scheme file
see all options for setting scheme properties

adopath ++ "~/<location>/StataThemes"
set path of the folder (StataThemes) where custom .scheme files are saved

set scheme customTheme, **permanently** set as default scheme
change the theme

Using the Graph Editor

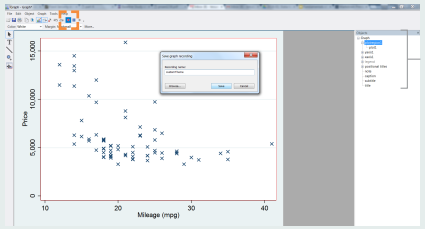
twoway scatter mpg price, **play**(graphEditorTheme)



Select the Graph Editor

Graph Editor

Click Record



Double click on symbols and areas on plot, or regions on sidebar to customize

Unclick Record

Save theme as a .grec file

Save Plots

graph twoway scatter y x, saving("myPlot.gph") replace
save the graph when drawing

graph save "myPlot.gph", **replace**
save current graph to disk

graph combine plot1.gph plot2.gph...
combine 2+ saved graphs into a single plot

graph export "myPlot.pdf", **as(.pdf)** see options to set size and resolution
export the current graph as an image file

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

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

geocenter.github.io/StataTraining

updated January 2016