

http://dss.princeton.edu/training/

## Using outreg2 to report regression output, descriptive statistics, frequencies and basic crosstabulations

(v1.6 draft)

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DET

## Linear regression

The command outreg2 gives you the type of presentation you see in academic papers. It is important to notice that outreg2 is not a Stata command, it is a user-written procedure, and you need to install it by typing (only the first time)

#### ssc install outreg2



Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Updated version shown here http://dss.princeton.edu/training/Regression101.pdf

For older versions of outreg2, you may need to specify the option word or excel (after comma)

**OTR** 

#### Linear regression: showing variable labels instead of variable names

The command outreg2 gives you the type of presentation you see in academic papers. It is important to notice that outreg2 is not a Stata command, it is a user-written procedure, and you need to install it by typing (only the first time)

```
ssc install outreg2
                                                                                                                       (1)
                                                                                             VARIABLES
                                                                                                                        y
Follow this example (letters in italics you type)
                                                                                             Predictor x1
                                                                                                                   4.950e+08
                                                                                                                  (6.902e+08)
use "http://dss.princeton.edu/training/Panel101.dta", clear
                                                                                                                  1 524e+09**
                                                                                             Constant
req y x1, robust
                                                                                                                  (6.636e+08)
outreq2 using myreq.doc, replace ctitle(Model 1) label
                                                                                             Observations
                                                                                                                       70
     . outreg2 using myreq.doc, replace ctitle (Model 1)
                                                                                             R-squared
                                                                                                                      0.006
     myreg.doc 📢
                        Windows users click here to open the file myreg.doc in Word (you
                                                                                             Robust standard errors in parentheses
     dir : seeout
                        can replace this name with your own). Otherwise follow the Mac
                                                                                               *** p<0.01, ** p<0.05, * p<0.1
                        instructions.
    Mac users click here to go to the directory where myreq.doc is saved, open it with Word
    (you can replace this name with your own)
                                                                                                               (1)
                                                                                                                                (2)
                                                                                      VARIABLES
                                                                                                                y
                                                                                                                                v
You can add other model (using variable x2) by using the option append
                                                                                      Predictor x1
                                                                                                            4.950e+08
                                                                                                                            5.513e+08
(NOTE: make sure to close myreq.doc)
                                                                                                           (6.902e+08)
                                                                                                                           (6.869e+08)
                                                                                      Predictor x2
                                                                                                                            3.808e+07
                                                                                                                           (2.478e+08)
req y x1 x2, robust
                                                                                                                           1.483e+09**
                                                                                                           1.524e+09**
                                                                                      Constant
outreq2 using myreq.doc, append ctitle(Model 2) label
                                                                                                                           (6.595e+08)
                                                                                                           (6.636e+08)
     . outreg2 using myreg.doc, append ctitle(Model 2)
                                                                                      Observations
                                                                                                               70
                                                                                                                                70
     myreg.doc
                                                                                      R-squared
                                                                                                              0.006
                                                                                                                              0.006
     dir : seeout
                                                                                              Robust standard errors in parentheses
You also have the option to export to Excel, just use the extension *.xls.
                                                                                                 *** p<0.01, ** p<0.05, * p<0.1
For older versions of outreg2, you may need to specify the option word or excel (after comma)
```

NOTE: Other options for label: label (insert); label (proper); label (upper); label (lower)

Source: Updated version of http://dss.princeton.edu/training/Regression101.pdf

### **Fixed effects regression**

#### Letters in italics you type

use "http://dss.princeton.edu/training/Panel101.dta", clear xtreg y x1 x2 x3, fe robust outreg2 using myreg.doc, replace ctitle(Fixed Effects) addtext(Country FE, YES)

. outreg2 using myreg.doc, replace ctitle(Fixed Effects) addtext(Country FE, YES) <u>myreg.doc</u> <u>dir</u> : <u>seeout</u> Windows users click here to open the file myreg.doc in Word (you can replace this name with your own). Otherwise follow the Mac instructions.	VARIABLES	(1) Fixed Effects
Mac users click here to go to the directory where myreq.doc is saved, open it with Word (you can	x1	2.425e+09
replace this name with your own)		(1.458e+09)
	x2	1.823e+09*
		(9.109e+08)
	x3	3.097e+08
		(2.380e+08)
You also have the option to export to Excel, just use the extension *.xls.	Constant	-2.060e+08
For older versions of outreg2, you may need to specify the option word or excel (after comma)		(1.095e+09)
	Observations	70
	Number of country	7
	R-squared	0.101
	<ul> <li>Country FE</li> </ul>	YES
In fixed effects models you do not have to add the FE coefficients, you can just add a note indicating that the model includes fixed effects. This can be added from outreg2, see the option addtex() above.	Robust standard erro *** p<0.01, ** p	•

### **Fixed effects with time fixed effects**

#### Letters in italics you type

use "http://dss.princeton.edu/training/Panel101.dta", clear xtreg y x1 x2 x3 i.year, fe robust outreg2 using myreg.doc, replace ctitle(Fixed Effects) keep(x1 x2 x3) addtext(Country FE, YES, Year FE, YES)

. outreg2 using myreg.doc, replace ctitle(Fixed Effects) addtext(Country FE, YES) <u>myreg.doc</u> dir : seeout Windows users click here to open the file myreg.doc in Word (you	VARIABLES	(1) Fixed Effects
<ul> <li>can replace this name with your own). Otherwise follow the Mac instructions.</li> <li>Mac users click here to go to the directory where myreq.doc is saved, open it with Word (you can</li> </ul>	x1	1.632e+09
replace this name with your own)	x2	(1.492e+09) 1.263e+09 (1.275e+09)
	x3	5.396e+08*** (1.343e+08)
You also have the option to export to Excel, just use the extension *.xls. For older versions of outreg2, you may need to specify the option word or excel (after comma)	Constant	-9.256e+08 (1.068e+09)
	Observations Number of country R-squared Country FE Year FE	70 7 0.268 YES YES
In fixed effects models you do not have to add the FE coefficients, you can just add a note indicating that the model includes fixed effects. This can be added from outreg2, see the option addtex() above.	Robust standard error *** p<0.01, ** p<	rs in parentheses

## **Comparing different linear models**

#### Letters in italics you type

use "http://dss.princeton.edu/training/Panel101.dta", clear xtset country year reg y x1 x2 x3, robust outreg2 using myreg.doc, replace ctitle(OLS) xtreg y x1 x2 x3, fe robust outreg2 using myreg.doc, append ctitle(Fixed Effects) addtext(Country FE, YES) xtreg y x1 x2 x3 i.year, fe robust outreg2 using myreg.doc, append ctitle(Fixed Effects) keep(x1 x2 x3) addtext(Country FE, YES, Year FE, YES)

. outreg2 using myreg.doc, append ctitle(Fixed Effects) keep(x1 x2 x3) addtext(Country FE, Y > ES, Year FE, YES)

myreg.doc dir : seeout

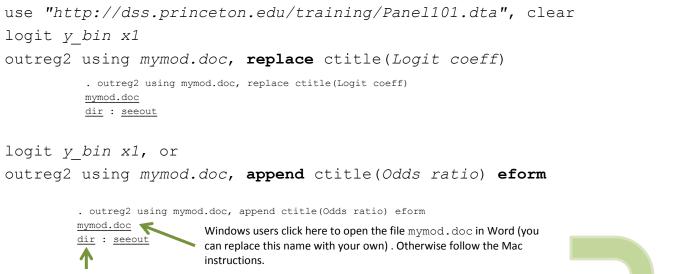
Windows users click here to open the file

myreg.doc in Word (you can replace this				
name with your own) . Otherwise follow the		(1)	(2)	(3)
Mac instructions.	VARIABLES	OLS	Fixed Effects	Fixed Effects
Mac users click here to go to the directory where myreg.doc	x1	5.591e+08	2.425e+09	1.632e+09
is saved, open it with Word (you can replace this name with		(6.933e+08)	(1.458e+09)	(1.492e+09)
your own)	x2	8.745e+07	1.823e+09*	1.263e+09
		(3.007e+08)	(9.109e+08)	(1.275e+09)
	x3	9.262e+07	3.097e+08	5.396e+08***
		(2.096e+08)	(2.380e+08)	(1.343e+08)
	Constant	1.401e+09*	-2.060e+08	-9.256e+08
		(7.556e+08)	(1.095e+09)	(1.068e+09)
	Observations	70	70	70
	R-squared	0.008	0.101	0.268
	Number of country		7	7
	Country FE		YES	YES
	Year FE			YES

Robust standard errors in parentheses

## Regression: publishing logit/probit output (outreg2)

You can use outreg2 for almost any regression output (linear or no linear). In the case of logit models with odds ratios, you need to add the option eform, see below



Mac users click here to go to the directory where mymod.doc is saved, open it with Word (you can replace this name with your own)

EQUATION	VARIABLES	(1) Logit coeff	(2) Odds ratio
y_bin	x1	0.493	1.637
		(0.645)	(1.055)
	Constant	1.082**	2.952**
		(0.482)	(1.422)
	Observations	70	70

For more details/options and examples type help outreg2

## Regression: publishing regression output (outreg2)

For predicted probabilities and marginal effects, see the following document

http://dss.princeton.edu/training/Margins.pdf

### Using outreg2 for summary statistics: all variables in dataset

## sysuse auto, clear outreg2 using x.doc, replace sum(log)

. outreg2 using x.doc, replace sum(log)

Variable	Obs	Mean	Std. Dev.	Min	Max
price	74	6165.257	2949.496	3291	15906
mpg	74	21.2973	5.785503	12	41
rep78	69	3.405797	.9899323	1	5
headroom	74	2.993243	.8459948	1.5	5
trunk	74	13.75676	4.277404	5	23
weight	74	3019.459	777.1936	1760	4840
length	74	187.9324	22.26634	142	233
turn	74	39.64865	4.399354	31	51
displacement	74	197.2973	91.83722	79	425
gear_ratio	74	3.014865	.4562871	2.19	3.89
foreign	74	.2972973	.4601885	0	1

Following variable is string, not included:

make <u>x.doc</u> <u>dir</u> : <u>seeout</u> Windows users click here to open the file x.doc in Word (you can replace this name with your own). Otherwise follow the Mac instructions.

Mac users click here to go to the directory where  $x \cdot doc$  is saved, open it with Word (you can replace this name with your own)

(4) (5)		(2)	(1)		
min max	n	mean	N	VARIABLES	
min         max           9         3,291         15,906           6         12         41           0         1         5           5         1.500         5           7         5         23           2         1,760         4,840           7         142         233	5 0 6 3 6 9	mean 6,165 21.30 3.406 2.993 13.76 3,019 187.9	N 74 74 69 74 74 74 74 74	VARIABLES price mpg rep78 headroom trunk weight length	
9 31 51 4 79 425	-	39.65 197.3	74 74	tum displacement	
6 2.190 3.890 0 0 1	-	3.015 0.297	74 74	gear_ratio foreign	
5 2.190 3.8	5	3.015	74	gear_ratio	

#### Using outreg2 for summary statistics: selected variables

#### sysuse *auto*, clear

outreg2 using x.doc, replace sum(log) keep(price mpg turn)

. outreg2 using x.doc, replace sum(log) keep(price mpg turn)

Variable	Obs	Mean	Std. Dev.	Min	Max
price	74	6165.257	2949.496	3291	15906
mpg	74	21.2973	5.785503	12	41
rep78	69	3.405797	.9899323	1	5
headroom	74	2.993243	.8459948	1.5	5
trunk	74	13.75676	4.277404	5	23
weight	74	3019.459	777.1936	1760	4840
length	74	187.9324	22.26634	142	233
turn	74	39.64865	4.399354	31	51
displacement	74	197.2973	91.83722	79	425
gear_ratio	74	3.014865	.4562871	2.19	3.89
foreign	74	.2972973	.4601885	0	1

Following variable is string, not included:

make <u>x.doc</u> <u>dir</u> : <u>seeout</u>

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Windows users click here to open the file x. doc in Word (you can replace this name with your own). Otherwise follow the Mac instructions.

Mac users click here to go to the directory where  $x \cdot doc$  is saved, open it with Word (you can replace this name with your own)

VARIA	(1)	(2)	(3)	(4)	(5)
BLES	N	mean	sd	min	max
price	74	6,165	2,949	3,291	15,906
mpg	74	21.30	5.786	12	41
turn	74	39.65	4.399	31	51

## Using outreg2 for summary statistics: selected variables in dataset and selected statistics

#### sysuse *auto*, clear

outreg2 using x.doc, replace sum(log) keep(price mpg turn) eqkeep(N mean)

Variable	Obs	Mean	Std. Dev.	Min	Max
price	74	6165.257	2949.496	3291	15906
mpg	74	21.2973	5.785503	12	41
rep78	69	3.405797	.9899323	1	5
headroom	74	2.993243	.8459948	1.5	5
trunk	74	13.75676	4.277404	5	23
weight	74	3019.459	777.1936	1760	4840
length	74	187.9324	22.26634	142	233
turn	74	39.64865	4.399354	31	51
displacement	74	197.2973	91.83722	79	425
gear_ratio	74	3.014865	.4562871	2.19	3.89
foreign	74	.2972973	.4601885	0	1

. outreg2 using x.doc, replace sum(log) keep(price mpg turn) eqkeep(N mean)

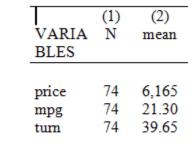
#### Following variable is string, not included:

make	Э	
x.do	bc	-
dir	:	seeout

Windows users click here to open the file  $\pm . \verb"doc"$  in Word (you can replace this name with your own) . Otherwise follow the Mac instructions.

1

Mac users click here to go to the directory where  $x\,.\,doc$  is saved, open it with Word (you can replace this name with your own)



# Using outreg2 for summary statistics: selected variables in dataset and detail statistics

\*NOTE: The option "sum(detail)" will give all the summary statistics shown below for the selected variables but it will show in the output window results for all the variables in the dataset. This is similar to typing "summarize, detail"

sysuse auto, clear

set more off

outreg2 using x.doc, replace sum(detail) keep(price mpg turn)

Following variable is string, not included:

make

x.doc dir : seeout Windows users click here to open the file  $x \cdot doc$  in Word (you can replace this name with your own). Otherwise follow the Mac instructions.

Mac users click here to go to the directory where  $x\,.\,doc$  is saved, open it with Word (you can replace this name with your own)



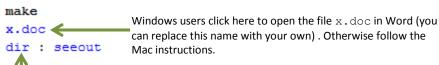
VARIABLES	(l)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	N	mean	sd	min	max	<u>sum_w</u>	Var	skewness	kurtosis	sum	pl	p5	p10	p25	p50	p75	p90	p95	p99
price mpg turn	74	6,165 21.30 39.65	5.786	3,291 12 31	15,906 41 51	74 74 74	8.700e+06 33.47 19.35	1.653 0.949 0.124	4.819 3.975 2.229	456,229 1,576 2,934	3,291 12 31	3,748 14 33	3,895 14 34	4,195 18 36	5,007 20 40	6,342 25 43	11,385 29 45	13,466 34 46	15,906 41 51

# Using outreg2 for summary statistics: selected variables in dataset and selected detail statistics

\*NOTE: The option "sum(detail)" will give all the summary statistics shown below for the selected variables but it will show in the output window results for all the variables in the dataset. This is similar to typing "summarize, detail" \* The option "p50" gives the median

sysuse auto, clear
set more off
outreg2 using x.doc, replace sum(detail) keep(price mpg turn) eqkeep(N mean p50)

#### Following variable is string, not included:



Mac users click here to go to the directory where x.doc is saved, open it with Word (you can replace this name with your own)



VARIA	(1)	(2)	(3)
BLES	N	mean	p50
price	74	6,165	5,007
mpg	74	21.30	20
turn	74	39.65	40

## Using outreg2 for summary statistics: by group, selected variables in dataset and detail statistics

\*NOTE: You need to specify either keeping statistics (eqkeep) and droping variables (drop) or viceversa. You can't specify eqkeep() and keep() at the same time

sysuse auto, clear

set more off

bysort foreign: outreg2 using x.doc, replace sum(log) eqkeep(N mean) drop(make rep78 headroom trunk weight length displacement gear\_ratio)

#### Following variable is string, not included:

make

x.doc 🧹

dir : seeout

Windows users click here to open the file x.doc in Word (you can replace this name with your own). Otherwise follow the Mac instructions.

Mac users click here to go to the directory where x.doc is saved, open it with Word (you can replace this name with your own)

Τ	(1)	(2)	(3)	(4)
	foreign 0		foreign 1	
VARIA BLES	Ν	mean	Ν	mean
price	52	6,072	22	6,385
mpg	52	19.83	22	24.77
tum	52	41.44	22	35.41

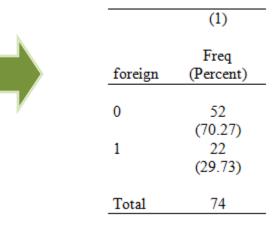
## Using outreg2 for frequencies

sysuse auto, clear

outreg2 foreign using x.doc, replace cross

outreg2 mileage foreign using x.doc, replace cross
 x.doc
 Windows users click here to open the file x.doc in Word (you can replace this name with your own). Otherwise follow the Mac instructions.

Mac users click here to go to the directory where  $x \cdot doc$  is saved, open it with Word (you can replace this name with your own)



For more details on what are frequencies and how to interpret the table see: <u>http://dss.princeton.edu/training/StataTutorial.pdf</u>

### Using outreg2 for crosstabs

(1)

foreign 0

(2) foreign 1

\*Taken from outreg2's help file. It can report only column percents.

sysuse auto, clear
egen mileage=cut(mpg), group(10)
outreg2 mileage foreign using x.doc, replace cross

. outreg2 mileage foreign using x.doc, replace cross	mileage	Freq (Percent)	Freq (Percent)
x.doc	0	2	
dir : secout can replace this name with your own). Otherwise follow the Mac instructions.	1	(3.846) 11	1
Mac users click here to go to the directory where $x \cdot doc$ is saved, open it	2	(21.15) 2	(4.545) 2
with Word (you can replace this name with your own)		(3.846) 7	(9.091) 2
	4	(13.46) 8	(9.091)
NOTE: If you add the option side (after cross) it will put all values in columns.	5	(15.38) 6	2
	6	(11.54)	(9.091)
	7	(9.615)	(13.64)
For more details on what are crosstabs and how to interpret the table	, 0	(5.769)	(4.545)
see: <u>http://dss.princeton.edu/training/StataTutorial.pdf</u>	9	(9.615)	(27.27)
	9	5.769)	(22.73)
For more details (options and examples, type help, out reg?	Total	52	22

For more details/options and examples type help outreg2