

Loop functions in Stata

using foreach loop with levels

Example 1: cross-tabulation

Using foreach loop is a convenient way to compare multiple estimations e.g. cross-tab or regression. In the following example the var sex has two levels 'male' and 'female', and we are making a two-way table of race and health rating for each sex group.

```
foreach l of local levels {  
  tab rhlthend hhrace if sex == `l'  
}
```

```
  r health |  
  rating |   white   black amer indi asiatic,   other, mi |  
Total  
-----+-----  
-----  
  excellent |   184    27    0    8    16 |  
235  
    good |   257    45    2    5    25 |  
334  
    fair |    72    11    1    2    2 |  
88
```



```

Source |      SS      df      MS      Number of obs      =
1,089
-----+-----
5.23
Model | 121.716233      4 30.4290583  Prob > F      =
0.0004
Residual | 6304.97982 1,084 5.81640205  R-squared      =
0.0189
-----+-----
0.0153
Total | 6426.69605 1,088 5.90688975  Root MSE      =
2.4117

```

```

-----
-----
income |      Coef.   Std. Err.      t    P>|t|    [95% Conf.
Interval]
-----+-----
hrace |
black |      -0.83    0.21    -4.03   0.000    -1.24
-0.43
amer indian |      -2.08    0.92    -2.27   0.024    -3.87
-0.28
asiatic, oriental |      0.06    0.52     0.11   0.909    -0.96
1.08
other, mixed |      -0.11    0.27    -0.41   0.683    -0.65
0.42
|
_cons |      11.08    0.08   130.63   0.000    10.91
11.24

```

```

-----
-----
Source |      SS      df      MS      Number of obs      =
1,334
-----+-----
9.53
Model | 196.108588      4 49.027147 Prob > F      =
0.0000
Residual | 6840.60206    1,329 5.14717988 R-squared      =
0.0279
-----+-----
0.0249
Total | 7036.71064    1,333 5.2788527 Root MSE      =
2.2687

```

```

-----
-----
income |      Coef.   Std. Err.      t    P>|t|      [95% Conf.
Interval]
-----+-----
hrace |
black |      -0.74    0.16    -4.54    0.000      -1.06
-0.42
amer indian |      -2.63    0.61    -4.31    0.000      -3.83
-1.43
asiatic, oriental |      -0.03    0.50    -0.07    0.945      -1.02
0.95
other, mixed |      -0.39    0.24    -1.67    0.096      -0.85
0.07
|

```

```

      _cons |      11.13      0.07   151.52   0.000      10.99
11.27
-----
-----

```

Using foreach with specified levels

Example 1

In this example the variable 'country' has about 200 values, and we are using only a selected ones to run an analysis:

```

foreach i in 1 8 11 15 {
  reg income i.hhrace if country == `i', cformat(%9.2f)
}

```

```

      Source |      SS      df      MS      Number of obs      =
221
-----+-----
0.91
      Model |  14.861221      2  7.43061048  Prob > F      =
0.4054
      Residual | 1786.60484     218  8.19543506  R-squared      =
0.0082
-----+-----
-0.0008
      Total | 1801.46606     220  8.18848211  Adj R-squared  =
2.8628
      Root MSE

```


income	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----+-----					

hrace					
black	-2.16	0.73	-2.97	0.003	-3.60
-0.73					
asiatic, oriental	-0.30	1.89	-0.16	0.872	-4.03
3.42					
other, mixed	0.70	1.10	0.63	0.526	-1.47
2.86					
_cons	11.30	0.15	75.51	0.000	11.01
11.60					

Source	SS	df	MS	Number of obs	=
266					
-----+-----				F(3, 262)	=
0.39					
Model	3.3889383	3	1.1296461	Prob > F	=
0.7599					
Residual	757.68249	262	2.8919179	R-squared	=
0.0045					
-----+-----				Adj R-squared	=
-0.0069					
Total	761.071429	265	2.87196765	Root MSE	=
1.7006					

income	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
other, mixed	-0.56	0.77	-0.72	0.472	-2.09 0.97
_cons	11.06	0.23	48.11	0.000	10.60 11.51

Example 2

The same can be done using 'num' which has the advantage of defining a range

```
foreach i of num 6/8{
  reg income i.hhrace if country == `i', cformat(%9.2f)
}
```

Source	SS	df	MS	Number of obs	=
Model	.173611111	1	.173611111	Prob > F	=
				F(1, 16)	=
				0.29	
				0.5949	


```

-----
-----
      income |      Coef.   Std. Err.      t    P>|t|      [95% Conf.
Interval]
-----+-----
-----

```

```

      hhrace |
other, mixed |      0.14      0.40      0.35   0.736      -0.85
1.13
      _cons |      11.86      0.14     83.00   0.000      11.51
12.21
-----
-----

```

```

      Source |      SS          df    MS       Number of obs   =
169
-----+-----
3.12
      Model |  33.1807569         3   11.0602523   Prob > F       =
0.0275
      Residual |  584.274864       165   3.54105978   R-squared      =
0.0537
-----+-----
0.0365
      Total |  617.455621       168   3.67533108   Root MSE      =
1.8818
-----
-----

```

```

-----
-----
      income |      Coef.   Std. Err.      t    P>|t|      [95% Conf.
Interval]
-----+-----
-----

```

```

-----+-----
-----
      hhrace |
      black |      -2.16      0.73      -2.97      0.003      -3.60
-0.73
asiatic, oriental |      -0.30      1.89      -0.16      0.872      -4.03
3.42
other, mixed |      0.70      1.10      0.63      0.526      -1.47
2.86
      |
      _cons |      11.30      0.15      75.51      0.000      11.01
11.60
-----+-----
-----

```

Example 4: an alternative approach using 'forvalues'

```

forval i = 1/3 {
  reg income i.hhrace if country == `i', cformat(%9.2f)
}

```

```

Source |      SS      df      MS      Number of obs =
221
-----+-----+-----+-----+-----+-----+-----
0.91
Model |  14.861221      2  7.43061048  Prob > F      =
0.4054
Residual | 1786.60484    218  8.19543506  R-squared     =
0.0082
-----+-----+-----+-----+-----+-----
Adj. R-squared

```

```

-----+-----
-0.0008
Total | 1801.46606      220  8.18848211  Root MSE      =
2.8628

```

```

-----
-----
income |      Coef.   Std. Err.      t    P>|t|      [95% Conf.
Interval]
-----+-----

```

```

hrace |
black |      0.74     0.89     0.83   0.407     -1.01
2.48
other, mixed |      1.64     1.22     1.34   0.181     -0.77
4.04
      |
_cons |      9.55     0.86    11.06   0.000      7.84
11.25
-----

```

note: 1.hrace omitted because of collinearity

```

Source |      SS      df      MS      Number of obs      =
3
-----+-----
F(0, 2)      =
0.00
Model |      0      0      .      Prob > F      =
.
Residual | .66666667      2      .333333333  R-squared      =
0.0000
-----+-----
Adj R-squared      =
0.0000
Total | .66666667      2      .333333333  Root MSE      =

```

total | .000000007 | 2 | .333333333 | root mse | =
 .57735

income	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
--------	-------	-----------	---	------	----------------------

-----+-----

hhrace					
white	0.00	(omitted)			
_cons	11.67	0.33	35.00	0.001	10.23 13.10

note: 1.hhrace omitted because of collinearity

Source	SS	df	MS	Number of obs	=
--------	----	----	----	---------------	---

20					
-----+-----				F(0, 19)	=
0.00					

Model	0	0	.	Prob > F	=
-------	---	---	---	----------	---

Residual	1.8	19	.094736842	R-squared	=
0.0000					

-----+-----				Adj R-squared	=
0.0000					

Total	1.8	19	.094736842	Root MSE	=
.30779					

income	Coef	Std. Err.	t	P> t	[95% Conf
--------	------	-----------	---	------	-----------

```

      income |      Coef.   Std. Err.   < 0.001   [95% Conf.
Interval]
-----+-----
      |
      |   hhrace |
      |   white |         0.00 (omitted)
      |   _cons |        11.90         0.07   172.90   0.000         11.76
12.04
-----+-----
      |
      |

```

Using forvalues with local function

```

foreach l of local levels {
  reg income i.hhrace if sex == `l', cformat(%9.2f)
}

```

```

      Source |      SS          df    MS       Number of obs   =
1,089
-----+-----
      |                                     F(4, 1084)       =
5.23
      Model |  121.716233         4   30.4290583   Prob > F         =
0.0004
      Residual |  6304.97982       1,084   5.81640205   R-squared        =
0.0189
-----+-----
      |                                     Adj R-squared    =
0.0153
      Total |  6426.69605       1,088   5.90688975   Root MSE        =

```

TOTAL | 0.120.0000 | 1,000 | 0.00000000 | ROOT MSE | =
 2.4117

	income	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	hhrace					
	black	-0.83	0.21	-4.03	0.000	-1.24 -0.43
	amer indian	-2.08	0.92	-2.27	0.024	-3.87 -0.28
	asiatic, oriental	0.06	0.52	0.11	0.909	-0.96 1.08
	other, mixed	-0.11	0.27	-0.41	0.683	-0.65 0.42
	_cons	11.08	0.08	130.63	0.000	10.91 11.24

Source	SS	df	MS	Number of obs =
				1,334
				F(4, 1329) =
				9.53
Model	196.108588	4	49.027147	Prob > F =
				0.0000
Residual	6840.60206	1,329	5.14717988	R-squared =
				0.0279
				Adj R-squared =

0.0249

Total | 7036.71064 1,333 5.2788527 Root MSE =
2.2687

income | Coef. Std. Err. t P>|t| [95% Conf.
Interval]

-----+-----

hrace |
black | -0.74 0.16 -4.54 0.000 -1.06
-0.42
amer indian | -2.63 0.61 -4.31 0.000 -3.83
-1.43
asiatic, oriental | -0.03 0.50 -0.07 0.945 -1.02
0.95
other, mixed | -0.39 0.24 -1.67 0.096 -0.85
0.07
|
_cons | 11.13 0.07 151.52 0.000 10.99
11.27

