

Matta Matters (excerpt)

From W. Gould (2007). Mata Matters: Subscripting. *The Stata Journal*, 7(1):106-116. <https://www.stata-journal.com/article.html?article=pr0028>.

This is a case of something difficult to program in Stata being trivial in Mata. The following example is well worth understanding.

```
: X
      1   2   3
1   4   7   9
2   2  12   3
3   8   8   7
4   3   4   1
5   1   7   9

: uniformseed(39483)
: o = ceil(5*uniform(5,1))
: o
      1
1   2
2   1
3   5
4   5
5   2

: Z = X[o,]
: Z
      1   2   3
1   2  12   3
2   4   7   9
3   1   7   9
4   1   7   9
5   2  12   3
```

Below I use these ideas to perform a bootstrap of the regression of mpg on weight and foreign, using the automobile data:

```
. sysuse auto, clear
(1978 automobile data)
. mata:
----- mata (type end to exit) -----
:   st_view(datay=., ., "mpg")
:   st_view(dataX=., ., tokens("weight foreign"))
:   n = rows(datay)
:   dataX = dataX, J(n, 1, 1)
:   N = 10000 // number of replications
:   uniformseed(47686)
:   b = J(N, 3, .)
:   for (i = 1; i <= N; i++) {
>       o = ceil(n*uniform(n,1))
```

```

>     y = datay[o,]
>     X = dataX[o,]
>     b[i,] = (invsym(X'X)*X'y)'
>   }
:     variance(b)
[symmetric]
           1           2           3
1      3.10765e-07
2      .000172885      1.29395868
3     -.0010054771     -.645488234      3.355736044
: end

```

These results are similar to those that would be produced in Stata by typing `estat vce after bootstrap, reps(10000): regress mpg weight foreign.`