

R Cars SRS

Required function: `srs.mean`

```
cars93=read.table("http://www.webpages.uidaho.edu/%7Erenaes/Data/cars93.txt",sep=',',header=T)
head(cars93) # or use View(cars93)
```

```
  MANUFAC  MODEL    TYPE MINPRICE MIDPRICE MAXPRICE MPGACITY MPGHIGH
1  Acura  Integra  Small    12.9    15.9    18.8     25     31
2  Acura  Legend  Midsize    29.2    33.9    38.7     18     25
3   Audi    90  Compact    25.9    29.1    32.3     20     26
4   Audi   100  Midsize    30.8    37.7    44.6     19     26
5   BMW   535i  Midsize    23.7    30.0    36.2     22     30
6  Buick  Century  Midsize    14.2    15.7    17.3     22     31
  AIRBAGS DRIVETR  CYLINDR  LITERS  HPOWER  RPMMAX  US  TYPECODE  ROW
1         0         1         4     1.8    140    6300  0         1    1
2         2         1         6     3.2    200    5500  0         3    2
3         1         1         6     2.8    172    5500  0         2    3
4         2         1         6     2.8    172    5500  0         3    4
5         1         0         4     3.5    208    5700  0         3    5
6         1         1         4     2.2    110    5200  1         3    6
```

```
summary(cars93)
```

```
  MANUFAC      MODEL      TYPE      MINPRICE      MIDPRICE
Chevrolet: 8   100      : 1   Compact:16   Min.      : 6.70   Min.      : 7.40
Ford       : 8   190E    : 1   Large   :11   1st Qu.:10.88  1st Qu.:12.40
Dodge     : 6   240     : 1   Midsize:22  Median :14.70  Median :17.95
Mazda    : 5   300E    : 1   Small  :20   Mean   :17.23  Mean   :19.59
Pontiac  : 5   323     : 1   Sporty :14   3rd Qu.:20.48  3rd Qu.:23.40
Buick    : 4   535i    : 1   Van    : 9   Max.   :45.40  Max.   :61.90
(Other)  :56   (Other):86

  MAXPRICE      MPGACITY      MPGHIGH      AIRBAGS
Min.      : 7.90   Min.      :15.00   Min.      :20.00   Min.      :0.0000
1st Qu.:14.57   1st Qu.:18.00   1st Qu.:26.00   1st Qu.:0.0000
Median :20.30   Median :21.00   Median :28.00   Median :1.0000
Mean   :21.96   Mean   :22.29   Mean   :29.04   Mean   :0.8152
3rd Qu.:25.55   3rd Qu.:24.25   3rd Qu.:31.00   3rd Qu.:1.0000
Max.   :80.00   Max.   :46.00   Max.   :50.00   Max.   :2.0000

  DRIVETR      CYLINDR      LITERS      HPOWER      RPMMAX
Min.      :0.0000   .: 1   Min.      :1.000   Min.      : 55.0   Min.      :3800
1st Qu.:1.0000   3: 3   1st Qu.:1.875   1st Qu.:104.5   1st Qu.:4800
Median :1.0000   4:48   Median :2.400   Median :140.0   Median :5200
Mean   :0.9348   5: 2   Mean   :2.680   Mean   :144.4   Mean   :5273
3rd Qu.:1.0000   6:31   3rd Qu.:3.300   3rd Qu.:170.0   3rd Qu.:5712
Max.   :2.0000   8: 7   Max.   :5.700   Max.   :300.0   Max.   :6500

  US      TYPECODE      ROW
Min.      :0.0000   Min.      :1.000   Min.      : 1.00
1st Qu.:0.0000   1st Qu.:2.000   1st Qu.:23.75
Median :1.0000   Median :3.000   Median :46.50
```

```

Mean   :0.5109   Mean   :3.109   Mean   :46.50
3rd Qu.:1.0000   3rd Qu.:4.250   3rd Qu.:69.25
Max.   :1.0000   Max.   :6.000   Max.   :92.00

```

Setting the seed will allow you to use the same value from R's rng to get same results.

The `sampling` package will draw the random sample for you. Do not re-install this package if you have already installed it, just load the package with `library()`.

```

set.seed(21934)
# install.packages("sampling")
library(sampling)
N=92; n=10

s=srswor(10,92) # srswor is SRS without replacement
srs=(1:N)[s==1]
cars93.srs=cars93[srs,]
cars93.srs # or use View(cars93.srs)

```

	MANUFAC	MODEL	TYPE	MINPRICE	MIDPRICE	MAXPRICE	MPGCITY	MPGHIGH
11	Cadillac	Seville	Midsize	37.5	40.1	42.7	16	25
12	Chevrolet	Cavalier	Compact	8.5	13.4	18.3	25	36
21	Chrysler	LeBaron	Compact	14.5	15.8	17.1	23	28
23	Dodge	Colt	Small	7.9	9.2	10.6	29	33
25	Dodge	Spirit	Compact	11.9	13.3	14.7	22	27
32	Ford	Tempo	Compact	10.4	11.3	12.2	22	27
34	Ford	Probe	Sporty	12.8	14.0	15.2	24	30
79	Subaru	Justy	Small	7.3	8.4	9.5	33	37
85	Toyota	Camry	Midsize	15.2	18.2	21.2	22	29
87	Volkswagen	Fox	Small	8.7	9.1	9.5	25	33

	AIRBAGS	DRIVETR	CYLINDR	LITERS	HPOWER	RPMMAX	US	TYPECODE	ROW
11	2	1	8	4.6	295	6000	1	3	11
12	0	1	4	2.2	110	5200	1	2	12
21	2	1	4	3.0	141	5000	1	2	21
23	0	1	4	1.5	92	6000	1	1	23
25	1	1	4	2.5	100	4800	1	2	25
32	0	1	4	2.3	96	4200	1	2	32
34	1	1	4	2.0	115	5500	1	5	34
79	0	2	3	1.2	73	5600	0	1	79
85	1	1	4	2.2	130	5400	0	3	85
87	0	1	4	1.8	81	5500	0	1	87

```
srs.mean('cars93.srs', cars93.srs$MAXPRICE, 10, 92)
```

```
Results from SRS: Data = cars93.srs  
N = 92 n = 10  
FPC = 0.8913043  
Muhat = 17.1  
Vhat muhat = 8.564049  
Bound = 5.85  
Lower Bound = 11.25 Upper Bound = 22.95
```