

RELATIVE STANDARD DEVIATION

PURPOSE

Compute the relative standard deviation of a variable.

DESCRIPTION

The relative standard deviation is:

$$\text{relsd} = 100 * (\text{standard deviation} / |\text{mean}|)$$

Some analysts prefer to call this the percent relative standard deviation and to call the relative standard deviation the value that is obtained without multiplying by 100. If this is your preference, simply use the LET command to divide by 100.

Note that this statistic differs in a minor way from the commonly used coefficient of variation. The coefficient of variation divides by the mean rather than the absolute value of the mean. If the mean is negative, the coefficient of variation will be negative while the relative standard deviation (as defined here) will always be positive. In addition, some sources define the coefficient of variation as a fraction rather than a percent. To calculate the traditional coefficient of variation, use the COEFFICIENT OF VARIATION LET subcommand.

SYNTAX

LET <par> = RELATIVE STANDARD DEVIATION <y> <SUBSET/EXCEPT/FOR qualification>

where <y> is a response variable;

<par> is a parameter where the relative standard deviation value is stored;

and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

```
LET RSD = RELATIVE STANDARD DEVIATION Y1
```

```
LET RSD = RELATIVE STANDARD DEVIATION Y1 SUBSET TAG > 2
```

```
LET PERRSD = RELATIVE STANDARD DEVIATION Y1
```

```
LET RSD = PERRSD/100
```

NOTE

Versions prior to 94/2 divide by the mean rather than the absolute value of the mean. The 94/12 version implements the COEFFICIENT OF VARIATION command as a distinct command. The COEFFICIENT OF VARIATION command divides by the mean rather than the absolute value of the mean.

DEFAULT

None

SYNONYMS

RELATIVE SD

RELATED COMMANDS

COEFFICIENT OF VARIATION	=	Compute the coefficient of variation of a variable.
MEAN	=	Compute the mean of a variable.
STANDARD DEVIATION	=	Compute the standard deviation of a variable.
RELATIVE VARIANCE	=	Compute the relative variance of a variable.
RELATIVE STAND DEVI PLOT	=	Generate a relative standard deviation versus subset plot.

REFERENCE

“Statistical Methods,” Sixth Edition, Snedecor and Cochran, The Iowa State University Press, 1967 (pp. 62-64).

APPLICATIONS

Exploratory Data Analysis

IMPLEMENTATION DATE

Pre-1987 (definition changed 94/2)

PROGRAM

```
SKIP 25  
READ GEAR.DAT DIAMETER  
LET A = RELATIVE STANDARD DEVIATION DIAMETER
```

The computed relative standard deviation is 0.63.