

# Standardize Variables

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**STANDARDIZE VARIABLES** command transforms variables using selected normalization method. The command can be used to make variables comparable to each other.

## How To

- ✓ Run: **DATA -> STANDARDIZE VARIABLES...**
- ✓ Select variables. Each variable is scaled separately.
- ✓ Select a standardization (normalization) method.
  - **SUBTRACT THE MEAN AND DIVIDE BY THE STANDARD DEVIATION** – computes standard or z-scores for a variable. Standard score is a scaled variable that has a mean of zero and a standard deviation of one.  
$$X = \frac{x - \mu}{\sigma}$$
, where  $\mu$  is a sample mean and  $\sigma$  is a standard deviation.
  - **SUBTRACT THE MEAN** – computes a scaled variable that has a mean of zero.  
$$X = x - \mu$$
  - **DIVIDE BY THE STANDARD DEVIATION** – computes a scaled variable that has a standard deviation of one.  
$$X = \frac{x}{\sigma}$$
  - **SUBTRACT A AND DIVIDE BY B** – computes a scaled variable  $X = (x - A)/B$ . **B must not be equal to zero.**
  - **RANGE FROM A TO B** – brings all variable values into the range [A,B] (performs simplest feature scaling). **B must be greater than A.**  
$$X = A + \frac{(B - A)(x - \min[x])}{\max[x] - \min[x]}$$