Statistical Measures

Measures of Central Tendency

- Mean
- Median
- Mode

- Data is spread out, want an average
- Data contains outliers
- Data is tightly clustered around one or two values

Measures of Variation

- Measure how spread out or scattered a data set is.
- Variance- σ^2

1) Find the mean.
2) Find the difference between each value in the set of data and the mean.
3) Square each difference.
4) Find the mean of the squares.

The standard deviation is the square root of the variance.

Standard Deviation

For a data set of n values with mean $\bar{x}$

$$\sigma = \sqrt{\frac{(x_1-\bar{x})^2+(x_2-\bar{x})^2+\ldots+(x_n-\bar{x})^2}{n}}$$

Example: The frequency table of the monthly salaries of 20 people is shown below.

a) Calculate the mean of the salaries of the 20 people.

$3955

b) Calculcate the standard deviation of the salaries of the 20 people.

Stat → edit → input data into list, Stat → calc → 1-Var. Stat

$\sigma = 281.9$

salary(in $)	frequency
3500	5
4000	8
4200	5
4300	2

Example: Find the variance and standard deviation of the set of data to the nearest tenth.

400, 300, 325, 275, 425, 375, 350

Variance : 2500

$\sigma = 50$

$(50)^2 + (-50)^2 + (-25)^2 + (-75)^2 + (75)^2 + (25)^2 + (0^2)$

$(400-350)^2 + (300-350)^2 + (325-350)^2 + (275-350)^2 + (425-350)^2 + (375-350)^2 + (350-350)^2 / 7$