

Part 1

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Basics Concepts of Measures of Variation

Why is it important to understand variation?

- A measure of the center by itself can be misleading

- Example:

Two nations with the same median family income are very different if one has extremes of wealth and poverty and the other has little variation among families (see the following table).

Range (cont.)

Ignoring the outlier of 6 in the previous data set gives data from

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27 28 25 27 30 26

$$\text{Range} = 30 - 25 = 5$$

This shows that the range is very sensitive to extreme values; therefore not as useful as other measures of variation.

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Data Table (25 data values)

Data Value (x)	Data Value Squared (x^2)
2	4
1	1
1	1
1	1
1	1
1	1
1	1
4	16
1	1
2	4
2	4
1	1
2	4
3	9
3	9
2	4
3	9
1	1
3	9
1	1
3	9
1	1
3	9
2	4
2	4

TOTALS: 47 109

Calculator Example

• To compute standard deviation:

1) Enter the list of data values

2) Select **2nd STAT (LIST)** and arrow right to **MATH** option 7:**stdDev**(

3) Input the data by choosing the desired list

Previous example:

$s = 15.0$ *millibecquerels*