# GLAB 330.2.2 - Standard Deviation

# 

**Introduction:**

**Standard Deviation** **(*σ*)** in statistics, typically denoted by **σ**, is a measure of how much a data set varies (dispersion) between values in a set of data. The lower the standard deviation, the closer the data points tend to be to the mean (or expected value), **μ**. In this lab, we will demonstrate how to calculate the standard deviation.

## Learning Objective:

By the end of this lab learners will be able to calculate the standard deviation.

**Given Dataset**

Imagine that we have the following data set representing the number of people visited a store in a week:

| **Days** | **Number of People (X)** |
| --- | --- |
| Sunday | 10 |
| Monday | 5 |
| Tuesday | 4 |
| Wednesday | 8 |
| Thursday | 4 |
| Friday | 12 |
| Saturday | 20 |

**Instructions:**

Here are the steps to calculate the standard deviation:

* **Calculate the mean (average) of the data set:**

X=10+5+4+8+4+12+20 / 7 = 63/7 =  **9**

* **Calculate the squared differences from the mean for each data point:**
* (10-9)2 = (1)2 = 1
* (5- 9)2=(-4)2= 16
* (4- 9)2=(-5)2= 25
* (8- 9)2=(-1)2= 1
* (4- 9)2=(-5)2= 25
* (12-9)2 = (3)2 = 9
* (7- 9)2=(-2)2= 4

**Calculate the average of these squared differences (variance)**

Variance =1 + 16+ 25 + 1 + 25 + 9 + 4 / 7 = 81/7 = 11.6

**Take the square root of the variance to get the standard deviation:**

## 𝛔 = √11.6 = 3.4

Mean= 9

Median= 8

Mode= 4

The standard deviation of the number of people visited the store is **3.4**. This means that on average, the number of people visited each day deviates from the mean by **3.4** people.

**Canvas Submission Instructions:**

* Upload your project to your GitHub account without setting it to private.
* Utilize the `README` file for any necessary additional instructions.
* Incorporate suitable comments throughout your project.
* Share the GitHub link on Canvas by clicking on the "Start Assignment" button located in the top-right corner of the Assignment page