

Studio Exercise #1 BME 698 Physiological Measurements
Supplement to Chapter 3 & 4 Lecture

This exercise will be collected at the end of class and graded as a homework assignment.

You are designing a new tonometer to measure intraocular pressure. Using your device, you record the following pressures on 1 patients with glaucoma and get the following results where all readings are in mmHg

20	25	32	36	43	22	36	34	41	23
19	30	24	35	40	31	43	47	22	19

You are comparing your instrument to the clinical gold standard, the Goldmann tonometer, where measuring the intraocular pressure on the same subjects under the same conditions you obtain the following readings where all readings are in mmHg:

24	22	23	22	21	24	22	20	21	23
24	20	24	20	22	21	23	22	22	22

Part A: Using MatLAB calculate the mean, standard deviation and variance of each instrument? Hint type in 'help mean', 'help std', and 'help var' to

Mean =

Standard Deviation =

Variance =

Part B: What are the equations for Mean, standard deviation and variance?

Part C: Discuss the accuracy and precision of your tonometer compared to the clinical gold standard.

Part D: Why are precision and accuracy important to the FDA? Must quote at least two internet citations of how precision and / or accuracy has an impact in healthy care and instrumentation design.

Hint: Do an internet search on FDA & precision and then FDA & accuracy.
