

## Assignment-6

1. A study compared the education program for preschool children that implemented the Montessori method with other schools. The test-results of 5 year old that had been enrolled in preschool programs from the age of 3 in Milwaukee Wisconsin were compared. The students were assigned into Montessori school at age 3 by a random lottery.

Source: Evaluating Montessori Education by A. Lillard and N. Else-Quest, Science 313, 1893 (2006).

(A) At age 3, 54 children were assigned to the Montessori school and 112 to the other school. At the age of 5, 39 of the children from the Montessori school and 31 from the other school consented to participate in the study. Explain why this information provides a source to bias in the test result.

(B) One of the test administered was testing the students ability to Social problem solving. Here are the results:

School	sample size	mean	standard deviation
Montessori	30	3.90	3.14
Control	25	1.60	2.08

Construct a 95% confidence interval for the difference in the mean of the test score of the Montessori group and the control group. What is your conclusion?

2. If the fracture strength measurements of glass have a standard deviation of 0.4 thousands of pounds per square inch, how many glass fracture strength measurements should be taken if the sample mean is to be within 0.2 thousands of pounds per square inch with a probability of approximately 0.95?

Source: Introduction to probability and its application by R.L. Scheaffer and L.Y. Young.