

# ISyE 6739 Video Assignment 1

January 9, 2018

1. What is the definition of the median? How to find the median if a sample size is even?

*Answer:* Median is a value such that 50% of the data are at (above) this value. If the sample size is even then the median is an average of the  $n/2^{th}$  and  $(n/2 + 1)^{th}$  numbers of the sorted data.

2. Write a formula for the sample standard deviation.

*Answer:*

$$s = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}}$$

where  $\bar{x}$  is the sample mean.

3. In what case it is better to use the median over the sample mean?

*Answer:* When there are outliers in the sample.

4. What are quartiles  $Q_1$ ,  $Q_2$  and  $Q_3$  in terms of percentiles?

*Answer:*  $P_{25}$ ,  $P_{50}$  and  $P_{75}$  respectively.

5. Suppose the following inequality holds for some data:

$$Q_2 - Q_1 > Q_3 - Q_2$$

What can we say about a distribution?

*Answer:* The distribution is left-skewed.