

STP226 Review notes for Test #1, chapters 1-4

1. Know new vocabulary and symbolic notation.

For example:

frequency, relative frequency, mean, median, quartiles, mode, interquartile range, z-score or standard score, stem-and leaf diagram, box plot

Know what is a symbol for mean and standard deviation for sample and for population

Know how to distinguish different types of studies (descriptive, inferential).

Know the types of variables in the data (qualitative, quantitative, discrete, continuous)

Know how to obtain simple random sample (random numbers tables)

Know what it means that sample is representative and random.

2. Know how to graphically represent your data and how to read and interpret given graphs and tables.

Box plot

Histogram

Frequency and Relative Frequency Table

Stem- and leaf diagram

Scatter plot

Bar and pie charts

3. Know all measures of center (mean, mode, median) and dispersion (range, standard deviation, variance) for the sample.

Be able to tell what are units of each measure as compared to the units of your data.

Know how the units change if there is a linear change in the data ( for ex. if data points  $x$  are changed to  $y=x+5$  what is the mean and st. deviation of  $y$  as compared to mean and st. deviation of  $x$ )

Make sure to know how to interpret each measure, what each tells you about the data.

Be able to say what it means that measure is resistant (robust), for example sample mean is not resistant, but sample median is.

Be able to compare mean and median, decide their respective position in the sample based on the distribution shape (for ex. mean is larger than median if distribution is right skewed.)

Know how to check for outliers in the data by using IQR measure.

Be able to compute and interpret the z-scores in relation to the mean (for example if  $z = -1.5$ , the observation is 1.5 standard deviations below the mean).

Know Three Standard Deviations Rule. Know the differences between the population parameters and sample statistics.

Know how to describe the shape of the distribution (Symmetric, left skewed, slightly right skewed e.t.c.) by looking at the histogram, box plot or stem-and-leaf diagram.

#### 5. Chapter4

Know how to obtain the least squares regression line and a scatter plot. You may use a calculator.

Explain what is the Least squares criterion.

Interpret the meaning of the slope of your regression line.

Give the units of the slope of your regression line.

Know when it is appropriate to use the linear regression line (linear trend)

Compute and interpret  $r^2$  and  $r$  (coefficient of determination and correlation coefficient).

Know that correlation is not the same as causation.

Find predictions for given x values. Know about dangers of extrapolation.

Know what is an outlier and influential observation and how to check if observation is influential.