

Assignment #11 – due Friday, April 24th, 2020

1. The following is a sample of prices, rounded to the nearest cent, charged per gallon of standard unleaded gasoline in the San Francisco Bay area in June 1997.

137, 139, 141, 137, 144, 141, 139, 137, 144, 141, 143, 143, 141

Represent these data in a frequency table.

2. Choose a book or article and count the number of words in each of the first 100 sentences. Present the data in a histogram. Now choose another book or article, by a different author, and do the same. Do the two histograms look similar? Do you think this could be a viable method for telling whether different articles were written by different authors?
3. An experiment measuring the percent shrinkage on drying of 50 clay specimens produced the following data:

18.2	21.2	23.1	18.5	15.6
20.8	19.4	15.4	21.2	13.4
16.4	18.7	18.2	19.6	14.3
16.6	24.0	17.6	17.8	20.2
17.4	23.6	17.5	20.3	16.6
19.3	18.5	19.3	21.2	13.9
20.5	19.0	17.6	22.3	18.4
21.2	20.4	21.4	20.3	20.1
19.6	20.6	14.8	19.7	20.5
18.0	20.8	15.8	23.1	17.0

- (a) Compute the sample mean, median, and mode.
 - (b) Compute the sample variance.
 - (c) Group the data into class intervals of size 1 percent starting with the value 13.0; and draw the resulting histogram.
 - (d) For the grouped data acting as if each of the data points in an interval was actually located at the midpoint of that interval, compute the sample mean and sample variance and compare this with the results obtained in parts (a) and (b). Why do they differ?
4. Use the table to find the sample correlation coefficients between salaries in
 - (a) government and universities (tenure-track at four-year institution)
 - (b) private firms (private noneducational) and universities (tenure-track at four-year institution).

Median salaries for recent U.S. doctorate recipients (1-3 years after degree), by sector of employment: 1999

Ph.D field	Total	Private noneducational	Government	Tenure-track at four-year institution	Postdoc	Other educational
Total	48,400	68,000	55,000	43,400	30,000	33,000
Computer sciences	75,000	82,000	66,000	53,000	—	60,000
Engineering	66,700	70,000	65,000	56,300	38,000	55,000
Life sciences	35,000	61,000	48,000	42,500	28,000	36,000
Math sciences	45,000	60,500	55,200	39,500	40,000	38,000
Social sciences	45,000	53,000	52,400	40,000	30,500	35,000
Physical sciences	52,000	64,000	58,000	39,400	32,700	39,000

— = Fewer than 50 cases.

Source: National Science Foundation Division of Science Resources Statistics (NSD/SRS). Survey of Doctorate Recipients, 1999.