

Assignment #11 Solutions

due Friday, November 6th, 2020

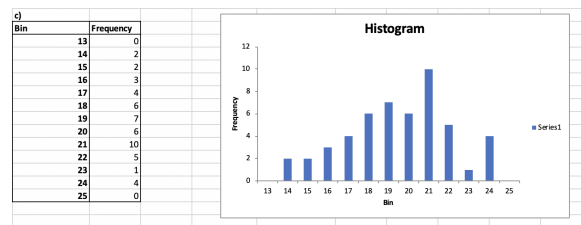
Problem 1

(a) (6 points)

Sample Mean 18.98
Median 19.30
Mode 21.20

(b) (4 points) Sample Variance = 6.2528

(c) (5 points) Below is the histogram



(d) (5 points) The sample mean and sample variance obtained in part (b) are slightly higher than results obtained in part (a). The results are different because in each bin not every data are located at the midpoint.

d)					
Midpoint	Frequency	Midpoint^2			
12.5	0	156.25			
13.5	2	182.25			
14.5	2	210.25			
15.5	3	240.25			
16.5	4	272.25			
17.5	6	306.25			
18.5	7	342.25			
19.5	6	380.25			
20.5	10	420.25			
21.5	5	462.25			
22.5	1	506.25			
23.5	4	552.25			
24.5	0	600.25			
			Sample Mean	18.98	
			Sample Variance	6.6629	

Problem 2 (20 points, 10 for each)

1	Data						
2	Ph.D Field	Private					
3	Computer Science	Noneducational	Government	University			
4	Engineering	82000	66000	53000		correlation	a)
5	Life Sciences	70000	65000	56300			b)
6	Math Sciences	61000	48000	42500			
7	Social Sciences	60500	55200	39500			
8	Physical Sciences	53000	52400	40000			
		64000	58000	39400			

Problem 3

(a) (5 points)

$$\frac{3 * 4}{52} = \frac{3}{13}$$

(b) (5 points)

$$\frac{4}{52} = \frac{1}{13}$$

(c) (5 points)

$$\frac{13}{52} = \frac{1}{4}$$

(d) (5 points)

$$\frac{1}{52}$$

Problem 4 (20 points) Let X be the number of machines that were broken down in a day.

$$P(X = 3) = \binom{10}{3} 0.1^3 (1 - 0.1)^{10-3} = 0.057$$

Problem 5 (20 points) Let X be number of trucks that have defective transmissions.

$$P(X \geq 3) = 1 - P(X \leq 2) = 1 - \binom{7}{0} 0.2^0 (1 - 0.2)^7 - \binom{7}{1} 0.2^1 (1 - 0.2)^6 - \binom{7}{2} 0.2^2 (1 - 0.2)^5 = 0.15$$