Assignment -2

Name: Moon, Md, Mamunur Rahman ID: 20-42439-1

(1) Measure of central tendency (For Age)

(i) Mean:

(a) Arithmatic mean:

$$AM = \bar{x} = \frac{\sum_{i=1}^{n} x_i}{n} = \frac{324}{16} = 20.25$$

(b) Geometric mean:

$$\bar{x}_G = \left(\prod_{i=1}^{n} x_i\right)^{\frac{1}{n}} = \left(1.03 \times 10^{20}\right)^{\frac{1}{16}} = 17.82$$

(c) Harmonic mean:

$$\bar{x}_H = \frac{n}{\sum_{i=1}^{n} \frac{1}{x_i}} = \frac{16}{0.69} = 23.19$$

(ii) Median:

20, 21, 22, 23

$$\therefore Me = \frac{21 + 22}{2} = 21.5$$

Mode:

From the table the most frequent age is 22

So, Mode = 22

(2) Measure of dispersion: (For Age)

(a) Mean Deviation:

$$MD = \frac{1}{n} \sum_{i=1}^{n} |x_i - \bar{x}|$$

$$= \frac{1}{16} |324 -$$

$$= \frac{1}{16} \times |23-20.25| + |22-20.25| + |21-20.25|$$

$$= \frac{|23-20.25| + |22-20.25| + |21-20.25| + |22-20.25|}{16}$$

$$+ \frac{|21-20.25| + |20-20.25| + |21-20.25| + |21-20.25|}{16}$$

$$\frac{|22-20.25| + |22-20.25| + |22-20.25| + |22-20.25|}{16}$$

$$\frac{|21-20.25| + |22-20.25| + |22-20.25|}{16}$$

$$= \frac{2.75 + 1.75 + 0.75 + 1.75 + 0.75 + 0.25 + 0.75 + 0.75}{16}$$

$$0.75 + 1.75 + 1.75 + 1.75 + 1.75 + 1.75 + 1.75$$

$$= \frac{20.75}{16}$$

$$= 1.29 \text{ (MD)}$$

(b) Variance:

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

$$= \frac{(20.75)^2}{16}$$

$$= 26.91$$

(c) Standard deviation:

$$\sqrt{\text{Variance}} = \sqrt{\sigma^2} = \sqrt{26.91} = 5.18$$

(d) Coefficient of variation:

$$CV = \frac{\sigma}{\bar{x}} \times 100\% = \frac{5.18}{20.25} \times 100\% = 0.25\%$$