

Announcements

• HW 1 Due Today
11:59 PM

• Quiz 1 Today
Last 20 mins

Question 1)

You are curious about the average weight of poodles so you decide to weigh 100 poodles at a vet office.

(a) What is the population and sample?



(b) Given $\sum x_i = 3,000$ what is \bar{x} (sample mean)?

Population = "large" group

of interest = all poodles

Sample = "Subset" of population

that we have data for

= 100 Poodles at vet

$$(5) \quad \bar{x} = \frac{1}{n} \sum x_i$$

$$\therefore \bar{x} = \frac{1}{100} (3,000)$$

$$= 30$$

Question 2) Joe and his friends have a rock-skipping contest, with the following number of skips,

$$\{7, 4, 3, 28, 2, 8\}$$

- (a) What Excel function would you use to calculate the sample variance?
- (b) What is the median?
- (c) What is the sample mean?
- (d) What direction is the data skewed?

(a) VAR.S()

SQRT(VAR.S())

STDEV.S()

(b) $\{7, 4, 3, 28, 2, 8\}$

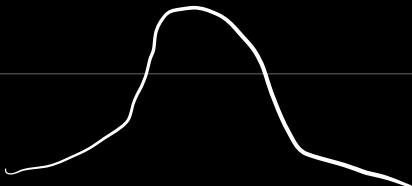
$\{3, 4, 7, 8\} \cup \{28\}$

$$\frac{4+7}{2} = \frac{11}{2} = \text{median}$$

(c) $\bar{x} = \frac{1}{n} \sum x_i$

$$= \frac{1}{6}(52) \approx 8.5$$

(d) Right-skewed



$$\text{Median} = 5.5$$

$$\text{Mean} \approx 8.5$$

Mean > Median for right-skew

Question 3) You wonder

What the average age
of a US Senator is

So you randomly ask
10 of them and find mean.

(a) What is N ?

(b) What is n ?

(c) What is the population
and sample?

(d) What is the
Parameter and statistic?

(a) $N = 100$ = population size

(b) $n = 10$ = sample size

(c) Population = entire group of interest = All US Senators

Sample = subset of Population which we have Data for = 10 Senators asked

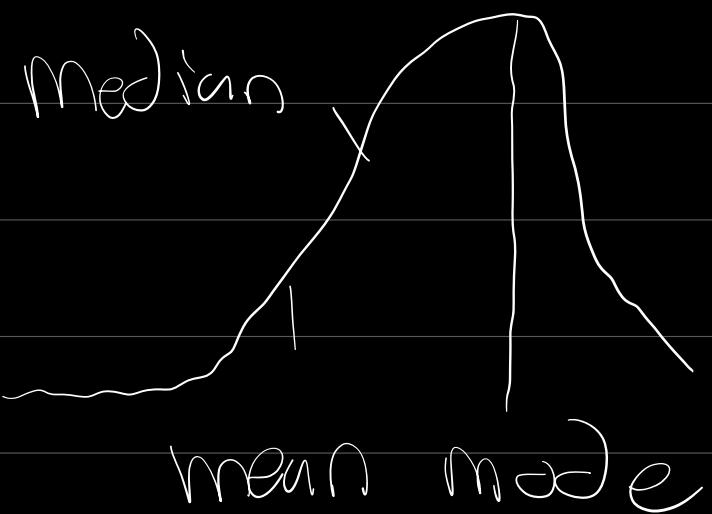
(d) Parameter = function of the population

Average age of all Senators

Statistic = function of the sample approximating the parameter = Sample Mean of age from 10 asked Senators

$$\bar{x} = \frac{1}{n} \sum x_i$$

$$\Rightarrow \frac{1}{10} \sum x_i$$



Question 4)

Given the data

$$\{2, 2, 8, 4\}$$

(a) What is Sample Standard Deviation?

(Leave as $\sqrt{s^2}$)

(b) What is the mode?

(c) What is the median?

$$(a) s = \sqrt{s^2}$$

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

$$\bar{x} = \frac{1}{n} \sum x_i = \frac{1}{4}(10) = 4$$

$$= \frac{1}{3} ((2-4)^2 + (2-4)^2$$

$$+ (4-4)^2 + (8-4)^2)$$

$$= \frac{1}{3} (4 + 4 + 0 + 16)$$

$= 8 =$ Sample variance

$$STDEN = \sqrt{8}$$

$$\{ \cancel{2}, 2, \cancel{8}, 4 \}$$

Mode = 2

$$\text{Median} = \frac{2+4}{2} = 3$$

Question 5)

Jane's class grade is composed of 3 midterms out of 100 and 1 final out of 200. On the 3 midterms she scores

$$\{80, 75, 95\}$$

What does she need on the final to end at 90%?