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AU25UG058
Year -1

Q1).

a) Population mean = 72

Sample mean = 64

b. H_0 : New relaxation app does'nt reduce the average heart rate. of its regular users.

$$\mu_{rapp} = \mu_{avg\ rate}$$

H_1 : New relaxation app reduces the average heart rate of its regular users.
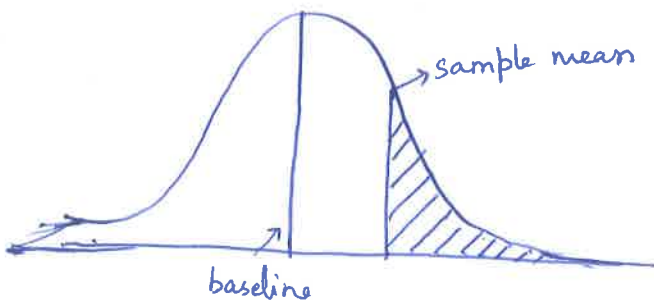
$$\mu_{r-app} \neq \mu_{avg\ rate}$$

c).

$$s.e = \frac{\sigma}{\sqrt{n}} = \frac{10}{\sqrt{64}} = \frac{10}{8} \quad \frac{5}{4} \approx 1.2$$

Standard deviation of the sample mean is known as standard error.

d) $$z = \frac{x - \mu}{se}$$

$$= \frac{72 - 69}{1.2} = \frac{3}{1.2} \approx \frac{3}{1} = \underline{3}.$$

e)

sample mean

baseline

Q2). Data :

$P(A) = 0.20$

$P(B|A) = 0.9$

$P(B|\sim A) = 0.05$

$P(\sim A) = 0.80$

a). Prior probability is the probability representing ~~before~~ the event which has already happened without knowing the eviden~~-ce~~
The value of prior probability is $20\% \rightarrow 0.20$.

b). Posterior probability - the probability represents, event happening after we know the evidence.
The value for posterior probability is 0.9.

c).
$$P(A|B) = \frac{P(B|A)\, P(A)}{P(B)}$$

$$P(B) = P(B|A)\cdot P(A) + P(B|\sim A)\cdot P(\sim A)$$

$$= 0.9 \times 0.20 + 0.05 \times 0.80$$

$$= 0.18 + 0.40$$

$$= \boxed{0.58}$$

$$P(A|B) = \frac{P(B|A)\cdot P(A)}{P(B)}$$

$$= \frac{0.9 \times 0.20}{0.58} = \frac{0.18}{0.58} = \boxed{0.31 \approx 31\%}$$

The values used are

$P(A) = 0.20$

$P(B|A) = 0.9$

$P(B|\sim A) = 0.05$

$P(\sim A) = 0.80$

d). The posterior probability is higher than the prior probability.
As prior is 20% and posterior is 31%.