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Assignment-2

Q1.

(a). Population mean = 72 bpm

Sample mean = 69 bpm

(b). **Null hypothesis** :- New relaxation app does not reduces the average resting heart rate of its regular users.

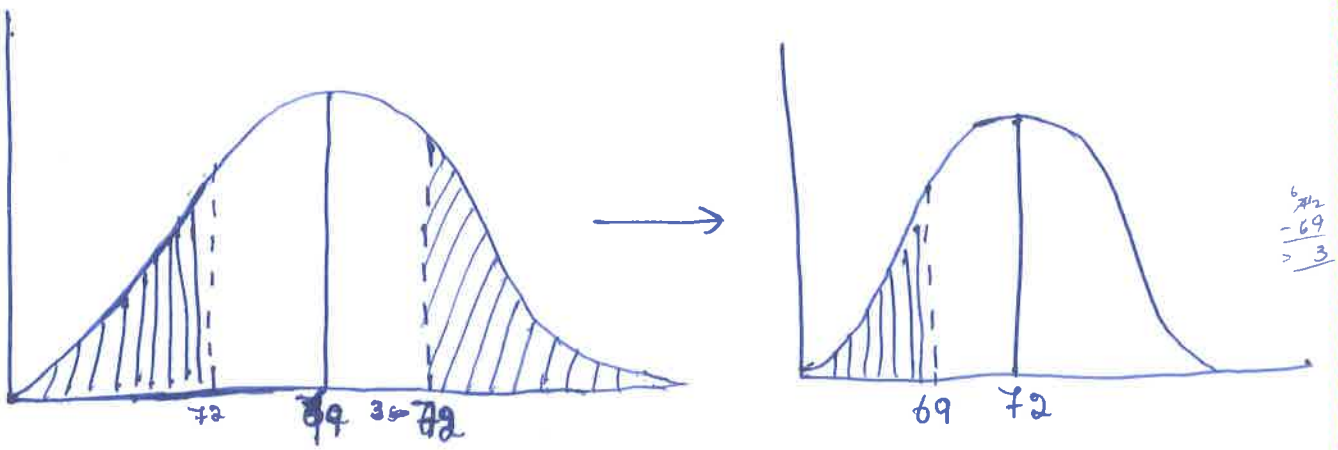
- **Alternative hypothesis** :- New relaxation app reduces the average resting heart rate of its regular users.

(c). $Se = \frac{\sigma}{\sqrt{n}}$ [as $\{Se = \frac{\sigma}{\sqrt{n}}\}$] $Se = \frac{72}{\sqrt{64}} = \frac{72}{8} = 9$ $\left[Se = \frac{10}{\sqrt{64}} = \frac{10}{8} = \frac{5}{4}\right]$

- Se is the distance between the mean and the sample mean. Se is also the unit.

(d). $z = \frac{72-69}{10} = \frac{+3}{10} = +0.3$

(e).



Q2)

a). Prior probability = P(A).

P(A) = 20% or 0.2.

b). Posterior probability = P(A/B)

Posterior probability is the probability to find the new event given the old event.

c). $P(B) = P(B/A)P(A) + P(B/A^c) \cdot P(A^c)$.

$P(B/A) = 0.9$ or 90%

$P(A^c) = 1 - 0.2$

$= 0.8$ or 80%

$P(B/A^c) = 0.05$ or 5%

$P(A) = 0.2$ or 20%

d). In the ~~at~~ given example Posterior will be higher than the prior.

As the prior has low probability of 0.2 but after calculating the the total probability ~~and~~ and solving the problem posterior value increases.