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The research question is: Does the data provide strong evidence that the mean blood pressure for those who exercise regularly is less than 75 *mm Hg*?

a) State the hypotheses (H_o and H_a) to be tested.

b) Define the population parameter in (a)

c) Find the p-value for these data and state a conclusion at the $\alpha = .02$ level.

1) Find the RR in terms of z-scores and test H_o at the $\alpha = .02$ level.

2) Write the RR for H_o in terms of $\overline{X}$

3) Find the probability of a Type II error if the true mean is 69 *mm Hg*.

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(a) $H_o: \mu = 75$
$H_A: \mu < 75$

(b) μ represents the true mean bp for women who exercise regularly

(c) p-value $= P(\bar{X} \le 70.7 \mid \mu = 75) = P\left(\frac{\bar{X}-\mu}{\sigma/\sqrt{n}} \le \frac{70.7-75}{10/\sqrt{25}}\right)$

$= P(Z \le -2.15) = .0158$

(1) Reject H_o if $Z_s < -2.05$

(2) Reject H_o if $\frac{\bar{X}-75}{10/\sqrt{25}} < -2.05 \Rightarrow \bar{X} < 70.9$

(3) $\beta(69) = P(\text{Accept } H_o \mid \mu = 69)$

$= P(\bar{X} \geq 70.9 \mid \mu = 69)$

$= P\left(\frac{\bar{X}-\mu}{\sigma/\sqrt{n}} \geq \frac{70.9-69}{10/\sqrt{25}}\right)$

$= P(Z \geq .95) = 1 - .8289 = .1711$