ASSIGNMENT 6

CCS226-18

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2BSCS-1

THE MEAN HEIGHTS OF 50 SAILORS IS 171.45 CM WITH A STANDARD DEVIATION OF 7.11 CM WHILE THE MEAN HEIGHTS OF 50 SOLDIERS IS 173.2 CM WITH A STANDARD DEVIATION OF 6.35 CM. TEST THE HYPOTHESIS THAT SAILORS ARE SHORTER THAN SOLDIERS USING A LEVEL OF SIGNIFICANCE OF 0.05.

$H_0: \mu_1 > \mu_2$

$H_1: \mu_1 < \mu_2$

Given:

$n_1 = 50$ sailors $\quad n_2 = 50$ soldiers

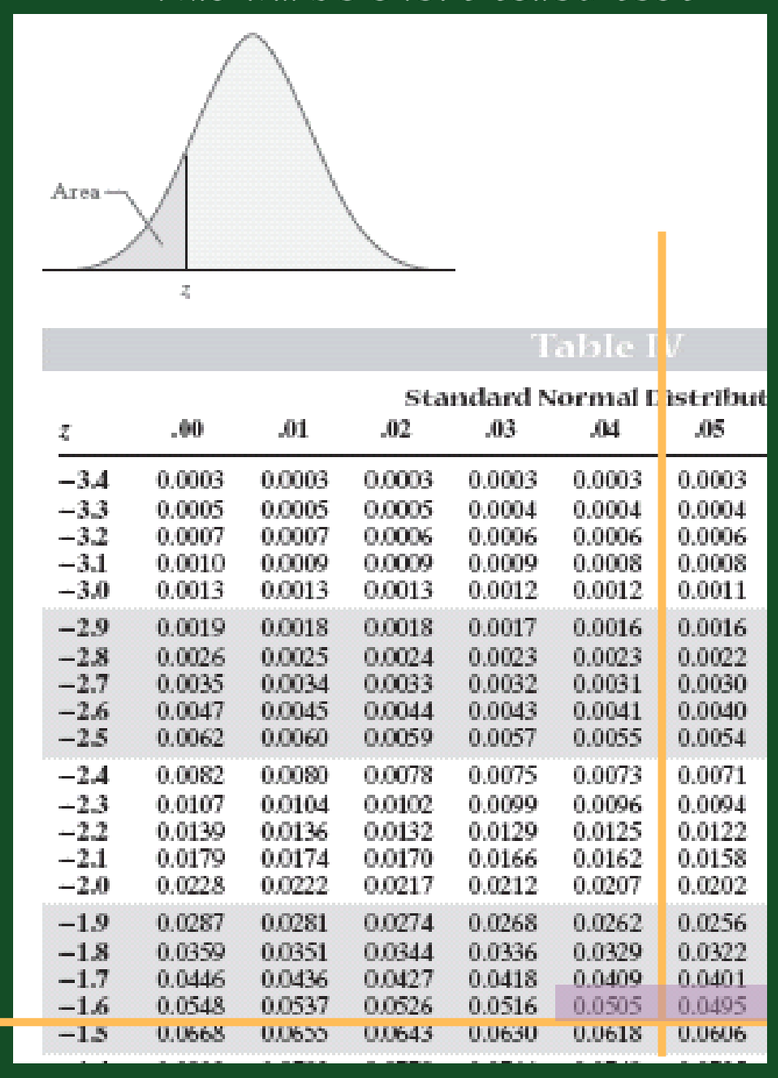
$\mu_1 = 171.45$ cm $\quad \mu_2 = 173.2$ cm

$\sigma_1 = 7.11$ cm $\quad \sigma_2 = 6.35$ cm

$\alpha = 0.05$

$Z\alpha = -1.645$

*This will be a left tailed test



Formulas:

$SE = \sqrt{(\sigma_1^2 / n_1) + (\sigma_2^2 / n_2)}$

$Z = (\mu_1 - \mu_2) / SE$

Solution:

$SE = \sqrt{(7.11^2/50) + (6.35^2/50)}$

$= 1.1153$

$Z = (171.45 - 173.2) / 1.1153$

$= -1.569$

Decision Rule: Accept null Hypothesis if $z > -1.645$; otherwise reject null hypothesis

*Since $z = -1.569$, z is greater than -1.645, meaning that the **null hypothesis was not rejected**

There was not enough evidence to proove the claim that the sailors are shorter than the soldiers. Hence, the researchers failed to reject the null hypothesis