Answer on Question #55538 – Math – Statistics and Probability

Two-sample T for LeanBodyMass

Sex	N	Mean	StDev	SE Mean
Male	75	52.63	6.66	0.77
Female	75	43.42	6.05	0.70

Difference = μ (Male) - μ (Female)

Estimate for difference: 9.21

95% CI for difference: (-, -)

T-Test of difference = 0 (vs ≠): T-Value = - P-Value = - DF = -

Both use Pooled StDev = 6.3633

b. Calculate a 95% confidence interval to estimate the difference between the average lean body mass of adolescent males and the lean body mass of adolescent females

Solution

We have $75 + 75 - 2 = 148$ degrees of freedom.

$$T^* = t_{148,\frac{1-0.95}{2}} = t_{148,0.025} = 1.9761.$$

A 95% confidence interval to estimate the difference between the average lean body mass of adolescent males and the lean body mass of adolescent females is

$$CI = \left(9.21 - 1.9761 \cdot 6.3633\sqrt{\frac{1}{75}+\frac{1}{75}}; 9.21 + 1.9761 \cdot 6.3633\sqrt{\frac{1}{75}+\frac{1}{75}}\right) = (7.157; 11.263)$$

Answer: $(\mathbf{7.157}; \mathbf{11.263})$.

Two-sample T for MetRate

Sex	N	Mean	StDev	SE Mean
Male	75	1626	227	26
Female	75	1258	172	20

Difference = μ (Male) - μ (Female)

Estimate for difference: 367.9

95% CI for difference: (-, -)

T-Test of difference = 0 (vs ≠): T-Value = - P-Value = - DF = -

Both use Pooled StDev = 201.5088

Solution

We have $75 + 75 - 2 = 148$ degrees of freedom.

$$T^* = t_{148,\frac{1-0.95}{2}} = t_{148,0.025} = 1.9761.$$

A 95% confidence interval to estimate the difference between the average MetRate of males and females is

$$CI = \left(367.9 - 1.9761 \cdot 201.5088\sqrt{\frac{1}{75} + \frac{1}{75}}; 367.9 + 1.9761 \cdot 201.5088\sqrt{\frac{1}{75} + \frac{1}{75}}\right)$$
$$= (302.87; 432.93)$$

Answer: $(\mathbf{302.87}; \mathbf{432.93})$**.**