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Quiz 3 BUM2413, Applied Statistics, Sem II 2013/2014

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Section:

Question 1 (4 points)

The Boeing 777 is a family of long-range wide-body twin-engine jet airliners developed and manufactured by Boeing Commercial Airplanes. It is the first entirely computer-designed commercial aircraft with seating capacity of 451. It is known that thirty percent of the passengers carry excess baggage. In a study, 50 passengers are selected randomly and only 30 passengers are found to have excess baggage. Find the sampling distribution of proportion for passengers with excess baggage. 30%

$\mu_{\hat{p}} = \pi = 0.3$ $\quad \sigma^2 = \frac{\pi(1-\pi)}{n} = \frac{0.3(1-0.3)}{50} = 0.0042$

sample-n = 50
no. of success - x = 30

$P \sim N(0.3, 0.042)$ #

$P \sim N\left(\pi, \frac{\pi(1-\pi)}{n}\right)$

Question 2 (6 points)

The UMP publisher has published a new statistics module. Before the publisher decides on the price of the book, it collects prices of 35 ~~36~~ comparable books. It is found that the average price of the samples is RM 25 with standard deviation of RM 15. $\sigma = 15$

(a) Extract the relevant information and use the correct notation.

(b) Construct the 90% confidence level for the mean price of all such statistics modules.

(c) Interpret your answer.

$S = 15$

a) $\bar{x} = 25$ $\quad \sigma = 15$ $\quad n = 36$

b) 90% CL $\quad Z_{\alpha/2} = 0.1/2 = 0.05 = 1.6449$

b) σ^2 is unknown

$\left(\bar{x} \pm Z_{\alpha/2} \cdot \frac{S}{\sqrt{n}}\right)$

c) $\left(25 - 1.6449\left(\frac{15}{\sqrt{36}}\right), 25 + 1.6449\left(\frac{15}{\sqrt{36}}\right)\right)$ $= (20.8878, 29.1123)$

$= (20.8878, 29.1124)$ #

c) We are 90% confident that the population mean price of all such statistics module is between interval (20.8878, 29.1123)