Assignment - 6

Q) In the US the ages of individual in a small town were found to be the following

<18	18-35	>35
20%	30%	50%

In 2020 of n=500 individuals were Sampled. Below are the results

<18	18-35	>35
121	288	91

using $\alpha = 0.05$, would you conclude that the Population distribution of ages has changed in the last 10 years?

So)

n=500

	<18	18-35	>35
observed	121	288	91
expected	100	150	250

① H_0: The Data meets the expected Distribution
H_1: The Data doesnot meet the expected Distribution

$\alpha = 0.05$ CI = 95%   n = 500

② Degree of freedom = K-1 = 3-1 = 2

③ using chi-square table $\Rightarrow$ 5.991

④

$$x^2 = \sum \frac{(fo - fe)^2}{fe}$$

$$= \frac{(121 - 100)^2}{100} + \frac{(288 - 150)^2}{150} + \frac{(91 - 250)^2}{250}$$

$$= 232 \cdot 49$$

$x^2 > 5 \cdot 991$ { Regret Ho }.

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Assignment

Q) what is the value of 99 percentile

2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 8, 8, 9, 9, 10, 11, 17, 12

$$\text{Percentile} = \frac{\text{Value below } M}{n} \times 100$$

$$\text{Value} = \frac{\text{Percentile}}{100} \times n$$

$$= \frac{99}{100} \times 20 = 0.99 \times 20$$
$$= 19 \cdot 8$$
$$\hookrightarrow \text{Index}$$

$$\text{Value} = \frac{19^{th}_{index} + 20^{th}_{index}}{2} = \frac{11 + 12}{2} = \frac{23}{2} = 11.5 /$$