Statistics on further studies of students in IIT H

MA4240 Applied Statistics

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Outline

Introduction

This is the introduction slide.

Data visualization

Hypothesis Testing

Case 4: Hypothesized proportion testing if there is enough evidence that the proportions of people opting for masters,MBA,Phd are not all equal

Sample data :

Masters	MBA	PhD	Total
50	24	13	87

Let P_{Ms}, P_{MBA}, P_{PhD} denote proportions of students willing to pursue Masters, MBA, PhD for higher studies

$H_0 : P_{Ms} = P_{MBA} = P_{PhD} = \frac{1}{3}$ $\quad H_a :$ atleast one $P \neq \frac{1}{3}$ $\quad \alpha = 0.05$

Also,

$$E = \frac{1}{3} x 87 = 29 \tag{1}$$

and,

$$\chi^2 = \sum \frac{(O - E)^2}{E} \tag{2}$$

Case 4: Case 4 continued

$$\begin{aligned}\chi^2 &= \frac{(50-29)^2}{29} + \frac{(24-29)^2}{29} + \frac{(13-29)^2}{29} \\ &= 15.2 + 0.862 + 8.827 \\ &= 24.889\end{aligned} \tag{3}$$

At $df = 3 - 1 = 2$, p value $= 0.0001$
p value $< \alpha = 0.05$
Hence there is enough evidence that population proportions are not all equal.