Marwadi University
Faculty of Technology
Department of Information and Communication Technology

Academic year 22-23
Subject: Probability and Statistics (01CT1401)
Tutorial 2 as a part of Term work assessment

Problem Statement:

The Student News Service at Marwadi University (MU) has decided to gather data about the undergraduate students that attend MU. MU creates and distributes a survey of 14 questions and receives responses from 62 undergraduates (stored in the Survey data set).

2.1. For this data, construct the following contingency tables (Keep Gender as row variable)

2.1.1. Gender and Major

2.1.2. Gender and Grad Intention

2.1.3. Gender and Employment

2.1.4. Gender and Computer

2.2. Assume that the sample is representative of the population of MU. Based on the data, answer the following question:

2.2.1. What is the probability that a randomly selected MU student will be male?

2.2.2. What is the probability that a randomly selected MU student will be female?

2.3. Assume that the sample is representative of the population of MU. Based on the data, answer the following question:

2.3.1. Find the conditional probability of different majors among the male students in MU.

2.3.2 Find the conditional probability of different majors among the female students of MU.

2.4. Assume that the sample is a representative of the population of MU. Based on the data, answer the following question:

2.4.1. Find the probability That a randomly chosen student is a male and intends to graduate.

2.4.2 Find the probability that a randomly selected student is a female and does NOT have a laptop.

2.5. Assume that the sample is representative of the population of MU. Based on the data, answer the following question:

2.5.1. Find the probability that a randomly chosen student is either a male or has full-time employment?

2.5.2. Find the conditional probability that given a female student is randomly chosen, she is majoring in international business or management.

2.6. Construct a contingency table of Gender and Intent to Graduate at 2 levels (Yes/No). The Undecided students are not considered now and the table is a 2x2 table. Do you think the graduate intention and being female are independent events?

2.7. Note that there are four numerical (continuous) variables in the data set, GPA, Salary, Spending, and Text Messages.

Answer the following questions based on the data

2.6.1. If a student is chosen randomly, what is the probability that his/her GPA is less than 3?

2.6.2. Find the conditional probability that a randomly selected male earns 50 or more. Find the conditional probability that a randomly selected female earns 50 or more.

2.8. Note that there are four numerical (continuous) variables in the data set, GPA, Salary, Spending, and Text Messages. For each of them comment whether they follow a normal distribution. Write a note summarizing your conclusions.

Data sheet is attached in separate CSV/Excel file