

TOPIC: INTRO TO CONTINGENCY TABLES

Finding Probabilities from Contingency Tables

◆ A **Contingency Table** shows frequencies across _____ categorical variables.

EXAMPLE

The table below shows the results from a survey of 100 high school students. Use the table to find the probability that a randomly selected student...

New

Contingency Tables

		Drives a Car		
		Yes	No	Total
Grade	Senior	40	10	50
	Junior	20	30	50
	Total	60	40	100

Marginal Prob:

Prob. of an entire _____.

$$P(A) = \frac{\text{total}}{\text{Grand Total}}$$

Joint Prob:

Prob. of events A _____ B happening.

$$P(A \cap B) = \frac{\text{freq.}}{\text{Grand Total}}$$

Conditional Prob:

Prob. of event B , _____ event A happened.

$$P(B|A) = \frac{\text{cell freq.}}{\text{row or col. total}}$$

(A) Drives a car.

(B) Is a senior and drives a car.

(C) Drives a car, given they are a senior.

TOPIC: INTRO TO CONTINGENCY TABLES

PRACTICE

The table below shows the results from a drug trial for a new ADHD medication. Use the table to find the probability that...

		Group		
		Placebo	Non-Placebo	Total
Symptoms	Improved	10	30	40
	Not Improved	40	20	60
	Total	50	50	100

(A) ...a person's symptoms improved, given that they received the placebo and identify the type of probability found.

(B) ...a person's symptoms didn't improve and they received the non-placebo and identify the type of probability found.

(C) ...a person's symptoms improved and identify the type of probability found.

TOPIC: INTRO TO CONTINGENCY TABLES

EXAMPLE

Create a contingency table using the following information: 50 people were surveyed, 28% of people have blue eyes, 28% of people are blonde, 20% of people are both blonde and blue-eyed, no one has both black hair and hazel eyes, 40% of people have brown hair, 60% have brown eyes, 1 out of 7 blue-eyed people have black hair, and 50% of people with hazel eyes have blonde hair.

		Eye Color			
		Brown	Hazel	Blue	Total
Hair Color	Black				
	Brown				
	Blonde				
	Total				50

EXAMPLE

The table below shows the results from a survey of guests at a wedding for the catering menu. Find the conditional distribution for vegetarians and the marginal distribution of diet types.

		Diet			
		Vegetarian	Vegan	Neither	Total
Allergies	No	9	6	60	75
	Yes	4	1	5	10
	Total	13	7	65	85