

Chapter 3 – Graphical and Tabular Displays of Data

Section 2 – Pie Charts and Two-Way Tables

Objectives

1. Construct and interpret pie charts.
2. Construct and interpret two-way tables.
3. Use a two-way table to compute proportions.

Vocabulary

1. pie chart
2. two-way table

Lesson/Activity

OBJECTIVE 1 – Construct and interpret pie charts.

The distribution of a categorical variable can be described by a **pie chart**, which is a disk where slices represent the categories. The proportion of the total area for one slice is equal to the relative frequency for the category represented by the slice. The relative frequencies are usually written as percentages.

1. Some Americans at least 12 years of age were surveyed about the medium they first use to find out about new music. The mediums and the percentages of respondents who first use them are shown in the following table.

<u>Medium</u>	<u>Percent</u>
Internet	44
Radio	32
Television	9
Newspaper	1
Other	14

Source: Edison Research

- a. Find the proportion of the observations that fall in the Internet category.
- b. Find the proportion of the observations that do NOT fall in the Internet category.
- c. Find the proportion of the observations that fall in the radio category OR fall in the television category.
- d. Use StatCrunch to construct a pie chart.
- e. Based on the pie chart, a student concludes that 44% of all Americans at least 12 years of age first use the Internet to find out about new music. What would you tell the student?

OBJECTIVE 2 – Construct and interpret two-way tables.

A **two-way table** is a table in which frequencies correspond to two categorical variables. The categories of one variable are listed vertically on the left side of the table, and the categories of the other variable are listed along the top.

2. In a survey of one of the author's statistics classes, 27 students recorded whether they have a Snapchat account. A few of the responses are shown in the following table.

<u>Gender</u>	<u>Have a Snapchat account?</u>
Female	No
Male	No
Female	Yes
Male	Yes
Male	Yes

Male	No
Female	Yes
Female	Yes

Source: J. Lehmann

Construct a two-way table by hand that compares the responses and grades of the individuals.

- Use StatCrunch to construct a two-way table that compares the responses and grades of the individuals.

OBJECTIVE 3 – Use a two-way table to compute proportions.

- The following table summarizes the responses from all 27 students who participated in the survey about whether they have a Snapchat account.

Gender	Do Not Have Account	Have Account	Total
Female	7	7	14
Male	5	8	13
Total	12	15	27

Source: J. Lehmann

- How many of the students have a Snapchat account?
 - What proportion of the students do NOT have a Snapchat account?
 - What proportion of the men have a Snapchat account?
 - What proportion of the students who have a Snapchat account are male?
- In 2012, a total of 1824 adults were asked the following question: “Do you favor or oppose the death penalty for persons convicted of murder?” The following table compares the adults’ responses with their ethnicities.

Favor or Oppose the Death Penalty	African American	Caucasian	Other	Total
Favor	128	953	108	1189
Oppose	140	414	81	635
Total	268	1367	189	1824

Source: General Social Survey

- Find the proportion of adults in the survey who oppose the death penalty OR are Caucasian.
- Find the proportion of adults in the survey who oppose the death penalty AND are Caucasian.
- Find the proportion of Caucasians who oppose the death penalty.
- Find the proportion of African Americans who oppose the death penalty.
- A student says that Caucasians in the study are more likely to oppose the death penalty than African Americans in the study because more of the Caucasians (414) oppose the death penalty than the African Americans (140). What would you tell the student?

Homework/Assessment

1, 3, 5, 9, 13, 15, 17, 19, 21, 23, 25, 30, 34