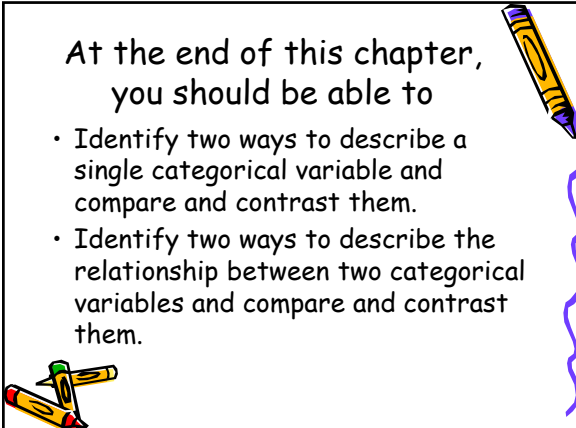


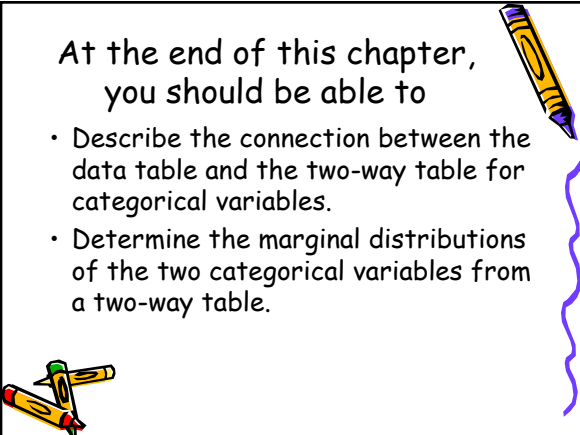
At the end of this chapter, you should be able to

- Identify two ways to describe a single categorical variable and compare and contrast them.
- Identify two ways to describe the relationship between two categorical variables and compare and contrast them.



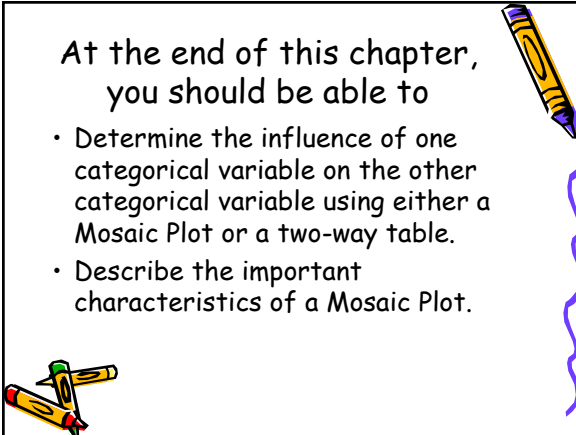
At the end of this chapter, you should be able to

- Describe the connection between the data table and the two-way table for categorical variables.
- Determine the marginal distributions of the two categorical variables from a two-way table.



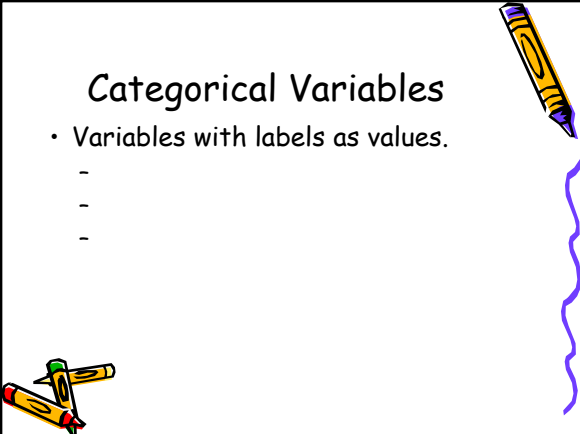
At the end of this chapter, you should be able to

- Determine the influence of one categorical variable on the other categorical variable using either a Mosaic Plot or a two-way table.
- Describe the important characteristics of a Mosaic Plot.



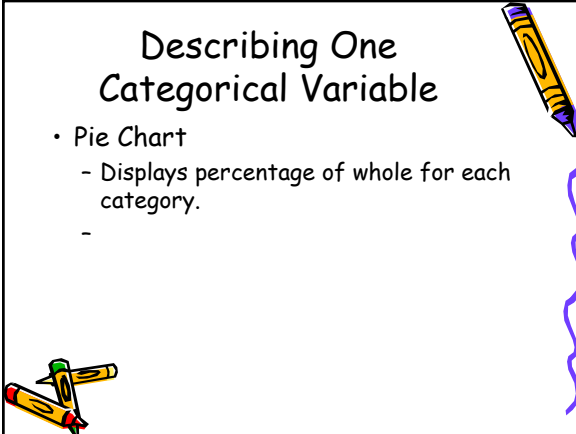
Categorical Variables

- Variables with labels as values.
-
-
-



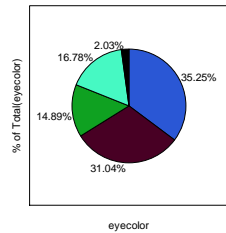
Describing One Categorical Variable

- Pie Chart
 - Displays percentage of whole for each category.
 -



Example of Pie Chart

- Eye Colors of Stat 101 students
 - Blue
 - Brown
 - Green
 - Hazel
 - Other

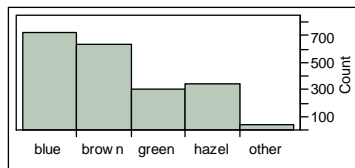


Describing One Categorical Variable

- Bar Charts
 - Displays either number or percentage for each category.

Example of a Bar Chart

- Stat 101 Eye Colors
 - Blue
 - Brown
 - Green
 - Hazel
 - Other



Comparison between Pie and Bar Graphs

- How are these graphs similar?
- How are these graphs different?

Describing the Relationship between Two Categorical Variables

- Two-Way Table
 - Rows =
 - Columns =
 - Table entries =


Two-Way Table

Eye Color and Gender reported by over 2000 Stat 101 students in beginning of semester survey.

	Eye Colors					
Gender	Blue	Brown	Green	Hazel	Other	Total
Female	370	352	198	187	18	1125
Male	359	290	110	160	24	943
Total	729	642	308	347	42	2068


Marginal Distributions

- Looks at percentages for each variable separately (ignoring the other variable)
- Gender
 - Female: out of 2068 = %
 - Male: out of 2068 = %




Marginal Distributions

- Eye Color
 - Blue: out of 2068 = %
 - Brown: out of 2068 = %
 - Green: out of 2068 = %
 - Hazel: out of 2068 = %
 - Other: out of 2068 = %




Conditional Distributions

- What percentage of females have blue eyes? Green eyes?, etc.
- What percentage of males have blue eyes? Green eyes?, etc.




Eye Color conditioned on Gender

	Eye Colors					
Gender	Blue	Brown	Green	Hazel	Other	Total
Female	370 (32.89)	352 (31.29)	198 (17.60)	187 (16.62)	18 (1.60)	1125
Male	359 (38.07)	290 (30.75)	110 (11.66)	160 (16.97)	24 (2.55)	943
Total	729 (35.25)	642 (31.04)	308 (14.89)	347 (16.78)	42 (2.03)	2068




Conditional Distributions

- What percentage of people with blue eyes are Male? What percentage of people with green eyes are Female?



Gender conditioned on Eye Color

	Eye Colors					
Gender	Blue	Brown	Green	Hazel	Other	Total
Female	370 (50.75)	352 (54.83)	198 (64.29)	187 (53.89)	18 (42.86)	1125 (54.40)
Male	359 (49.25)	290 (45.17)	110 (35.71)	160 (46.11)	24 (57.14)	943 (45.60)
Total	729	642	308	347	42	2068

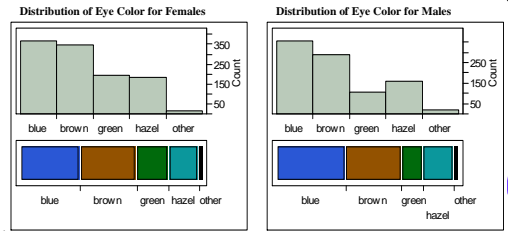


Visualizing Conditional Distributions

- Bar Charts and Segmented Bar Charts



Eye Color conditioned on Gender

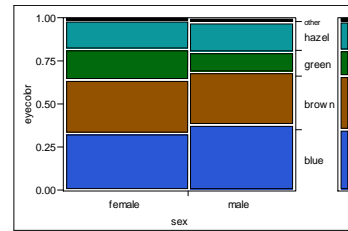


Mosaic Plot

- Visual summary of one of the conditional distributions in contingency table.
- Similar to segmented bar charts



Eye Color conditioned on Gender



Questions for Further Study?

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-
-

