Bar Graphs

A **bar graph** uses bars of equal width to show frequencies of categories of *categorical* (or qualitative) data. The vertical scale represents frequencies or relative frequencies. The horizontal scale identifies the different categories of qualitative data. The bars may or may not be separated by small gaps. A **multiple bar graph** has two or more sets of bars and is used to compare two or more data sets.

Example 7 Multiple Bar Graph of Income by Gender

See Figure 2-11 for a multiple bar graph of the median incomes of males and females in different years. The data are from the U.S. Census Bureau, and the values for 2010 are projected. From this graph we see that males consistently have much higher median incomes than females, and that both males and females have steadily increasing incomes over time. Comparing the heights of the bars from left to right reveals that the ratios of incomes of males to incomes of females appear to be decreasing, which indicates that the gap between male and female median incomes is gradually becoming smaller.

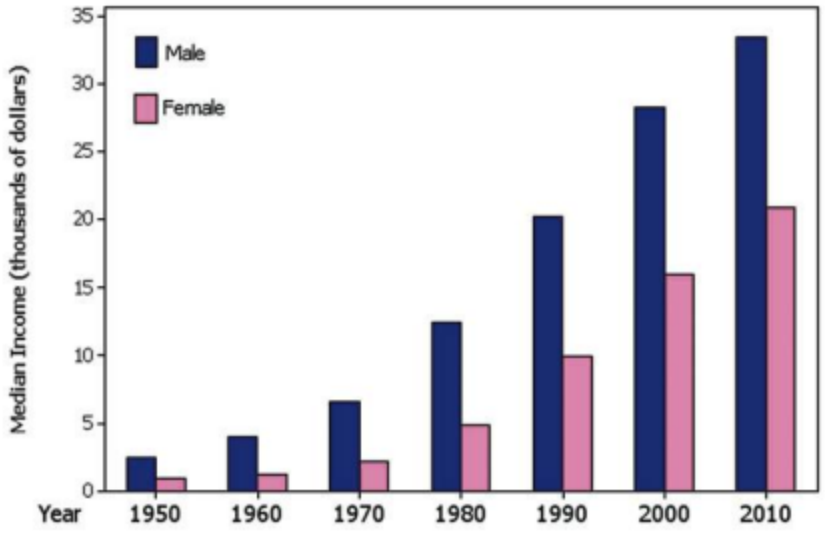

Figure 2-11 Multiple Bar Graph: Median Income by Gender

Pareto Charts

When we want a bar graph to draw attention to the more important categories, we can use a **Pareto chart**, which is a bar graph for categorical data, with the added stipulation that the bars are arranged in descending order according to frequencies. The vertical scale in a Pareto chart represents frequencies or relative frequencies. The horizontal scale identifies the different categories of qualitative data. The bars decrease in height from left to right.

Example 8 Pareto Chart: What Contributes Most to Happiness?

In a Coca-Cola survey of 12,500 people, respondents were asked what contributes most to their happiness. Figure 2-12 is a Pareto chart summarizing the results. We see that family or partner is by far the most frequently selected choice.