

2.1 Stem-and-Leaf Plots (Stemplots) and Bar Graphs

Learning Objectives:

In this section, you will:

- Display data by constructing bar graphs and stem-and-leaf plots

Stem-and-Leaf Graphs

A **stem-and-leaf graph** is a way to plot data and look at the distribution. In a stem-and-leaf plot, all data values are visible. The advantage in a stem-and-leaf plot is that all values are listed. To create the plot, divide each observation of data into a stem and a leaf. The leaf consists of a **final significant digit**. Write the stems in a vertical line from smallest to largest. Draw a vertical line to the right of the stems. Then write the leaves in increasing order next to their corresponding stem. An **outlier** is an observation that does not fit the rest of the data.

Example 1:

For Susan Dean's spring pre-calculus class, scores for the first exam were as follows: 33; 42; 49; 49; 53; 55; 55; 61; 63; 67; 68; 68; 69; 69; 72; 73; 74; 78; 80; 83; 88; 88; 88; 88; 90; 92; 94; 94; 94; 94; 96; 100.

Construct a stem and leaf plot for the data.

Example 2:

The data are the distances (in kilometers) from a home to local supermarkets. Create a stem and leaf plot using the data: 1.1; 1.5; 2.3; 2.5; 2.7; 3.2; 3.3; 3.3; 3.5; 3.8; 4.0; 4.2; 4.5; 4.5; 4.7; 4.8; 5.5; 5.6; 6.5; 6.7; 12.3.

Bar Graphs

Bar graphs consist of bars that are separated from each other. The bars are either horizontal or vertical to show comparisons among categories. One axis of the chart shows the specific categories being compared, and the other axis represents the frequency or proportion. Bar graphs are especially useful when categorical data is being used.

Example 3:

By the end of 2011, Facebook had over 146 million users in the United States. The following table outlines three age groups, the number of users in each age group, and the proportion (%) of users in each age group. Construct a bar graph using this data.

Age Group	Number of Facebook users	Proportion (%) of Facebook users
13-25	65,082,280	45%
26-44	53,300,200	36%
45-64	27,885,100	19%

For more information and examples see online textbook OpenStax Introductory Statistics pages 67-77.

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