

Graphs That Enlighten and Graphs That Deceive

Colby Community College

Definition

A **dotplot** consists of a graph of quantitative data in which each data value is plotted as a point above a horizontal scale of values. Dots representing equal values are stacked.

Definition

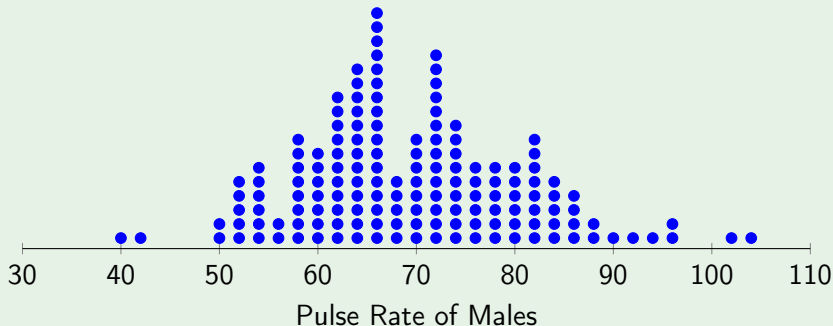
A **dotplot** consists of a graph of quantitative data in which each data value is plotted as a point above a horizontal scale of values. Dots representing equal values are stacked.

Features

- Displays the shape of the distribution of data.
- It is usually possible to recreate the original list of data values.

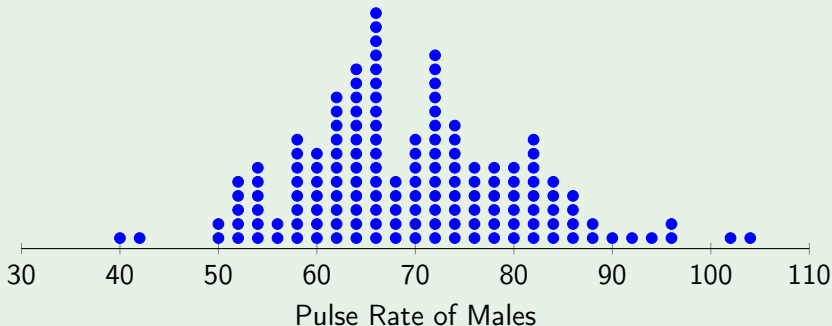
Example 1

The dotplot shows the pulse rates (beats per minute) of males.
(Data Set 1 in Appendix B.)



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Note

A Histogram counts how many data values fall within an interval.
A Dotplot counts individual data points.

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The Stem: Usually the leftmost digit.

The Leaf: Usually the rightmost digits.

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Features

- Shows the shape and distribution of the data.
- Retains the original data values.
- The sample data are sorted.

Example 2

The stemplot shows the pulse rates (beats per minute) of males.
(Data Set 1 in Appendix B.)

4	02
5	00222224444446688888888
6	00000002222222222224444444444446666666666666666688888
7	000000002222222222222224444444444666666888888
8	0000002222222244444666688
9	02466
10	24

The left is the rightmost digits, the stem is all the remaining leftmost digits. The stems are listed in increasing order, not the order in which they occur in the dataset.

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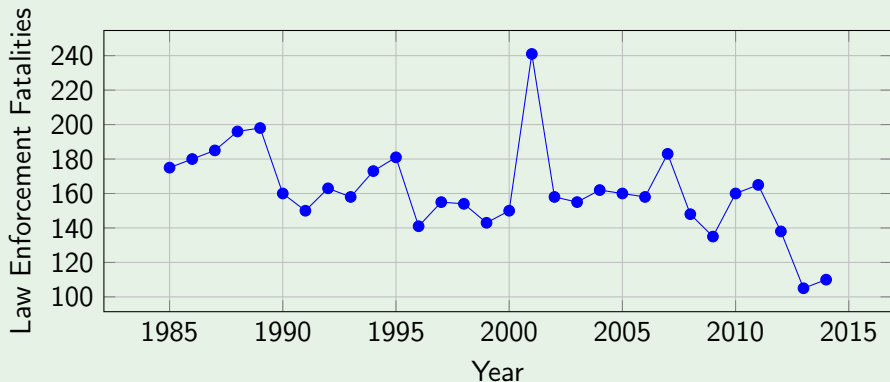
, A **time series graph** is a graph of quantitative data that have been collected at different points in time.

Features

- Reveals information about trends over time.

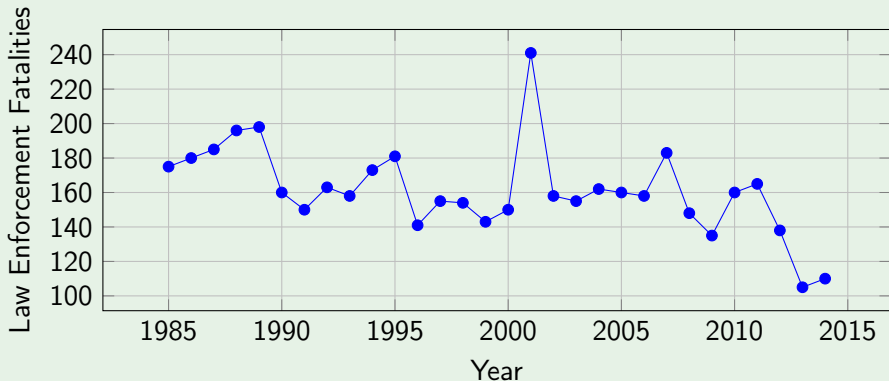
Example 3

The time-series graph depicts the yearly number of fatalities of law enforcement officers in the United States.



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Notice that there is a large spike in 2001, most of these fatalities would have been during the terrorist attacks on September 11, 2001. If we exclude the spike, there appears to be a slight downward trend.

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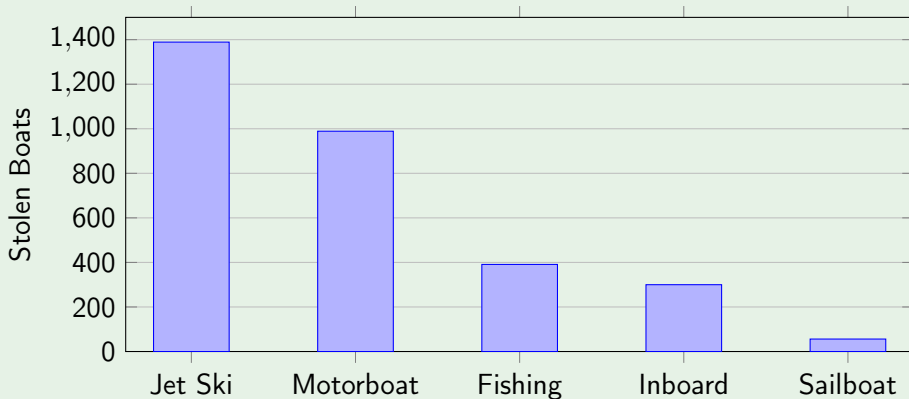
A **Pareto chart** is a bar graph for categorical data, with the added stipulation that the bars are arranged in descending order according to the frequencies, so the bars decrease in height from left to right.

Features

- Shows the relative distribution of categorical data so that it is easier to compare the different categories.
- Draws attention to the more important categories.

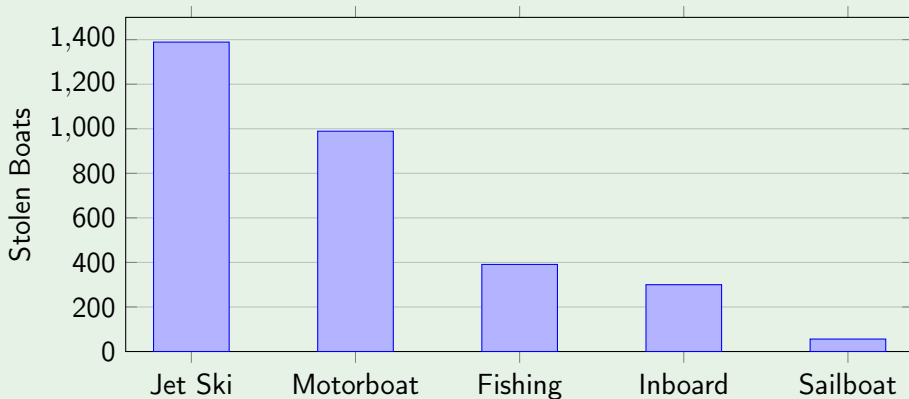
Example 4

For the boats stolen in a recent year, the bar graph shows the types most often stolen.



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Notice that for boat thefts, jet skis are the worst problem.