



EXPLORING, DISPLAYING,
AND EXAMINING DATA

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Types of Data Analysis

- Exploratory data analysis
 - the data guide the choice of analysis--or a revision of the planned analysis
- Confirmatory data analysis
 - closer to classical statistical inference in its use of significance and confidence
 - may use information from a closely related data set or by validating findings through the gathering and analyzing of new data

Techniques to Display and Examine Distributions

- Frequency Table
- Visual Displays
 - Histograms
 - Stem-and-leaf display
 - Box-plot
- Crosstabulation of Variables

Techniques to Display and Examine Distributions

- Histograms
 - Display all intervals in a distribution, even without observed values
 - Examine the shape of the distribution for skewness, kurtosis, and the modal pattern

Techniques to Display and Examine Distributions (cont.)

- Box-plot (box and whisker-plot)
 - Rectangular plot encompasses 50% of the data values
 - Edges of the box (hinges)
 - Center line through the width of the box marks the median
 - Whiskers extend from the right and left hinges to the largest and smallest values

Techniques to Display and Examine Distributions (cont.)

- Transformation
 - To improve interpretation and compatibility with other data sets
 - To enhance symmetry and stabilize spread
 - To improve linear relationships between and among variables

Improvement & Control Analysis

- Statistical process control
 - Uses statistical tools to analyze, monitor, and improve process performance
 - Total Quality Management
 - Control chart
 - Displays sequential measurements of a process together with a center line and control limits
 - Upper control limit
 - Lower control limit

Types of Control Charts

- Variables data
(ratio or interval measurements)
 - X-bar
 - R-charts
 - s-charts
 - Pareto Diagrams
 - Bar chart whose percentages sum to 100 percent