

# **Graphical Displays For Distributions**

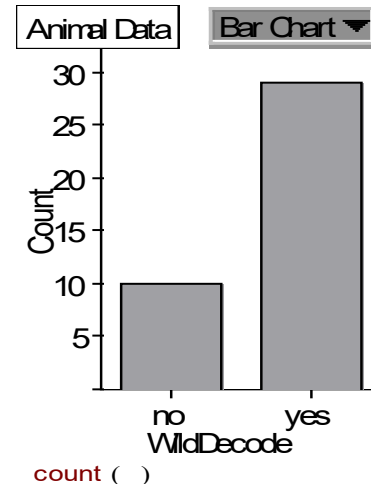
- Qualitative Variables**

# Bar Graphs

- For displaying categorical data
  - Category on the horizontal (usually) axis
  - Frequency Bar Graph - Frequency (Count) on the vertical axis
  - Relative Frequency Bar Graph - Relative Frequency on the vertical axis

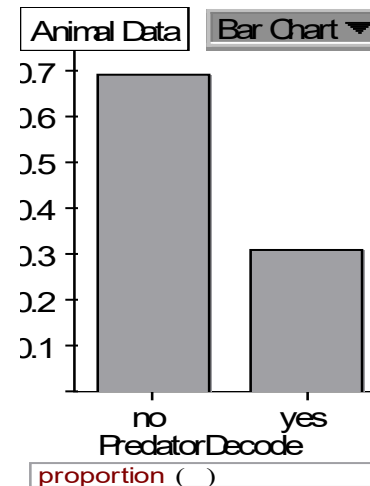
# Frequency Bar Graph

- Category on the horizontal axis
  - Label each bar below the bar
  - Label the horizontal axis with the name of the variable
- Frequency on the vertical axis



# Relative Frequency Bar Graph

- Category on the horizontal axis
  - Label each bar below the bar
  - Label the horizontal axis with the name of the variable
- Relative Frequency on the vertical axis



# Bar Graph

- Category on the horizontal axis
  - Label each bar below the bar
  - Label the horizontal axis with the name of the variable
- Bars
  - Space between the first bar and the vertical axis
  - Space between the bars - same amount
  - All bars have same width

# Bar Graph

- **Vertical Axis**
  - Frequency Bar Graph - Frequency on the vertical axis
  - Relative Frequency Bar Graph - Relative Frequency on the vertical axis
- **Scale**
  - Tick marks with numerical labels
    - ◉ Reasonably equally spread
    - ◉ Common measure - for example, by 2's, by 5's, by 10%, ... whatever is most appropriate

# Pie Chart

- Sectors of circle represent the Relative Frequency of the values of the variable
  - Label each sector with the Relative Frequency, in percent

# Pie Chart

- Sectors of circle represent the Relative Frequency of the values of the variable
  - How do we determine the size of the sectors???

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- Sectors of circle represent the Relative Frequency of the values of the variable
  - How do we determine the size of the sectors???
  - ◉ Multiply the relative frequency by 360 degrees to determine the degree measure for each sector

# Pie Chart

- Sectors of circle represent the Relative Frequency of the values of the variable
  - Label each sector with the Relative Frequency, in percent
    - ◉ Multiply the relative frequency by 360 degrees to determine the degree measure for each sector

# Graphical Displays

- Helpful for “viewing” data
- Overall “picture” of the data
- Relationship between
  - frequencies
  - relative frequencies

# Bar Graph

- Two types: *Frequency Bar Graph* and *Relative Frequency Bar Graph*
- Two Axes
  - Horizontal Axis: the variable you are examining
    - ◉ Label the axis with the name of the variable
  - Vertical Axis: Frequency or Relative Frequency
    - ◉ Need scale: equally spaced tick marks with corresponding values
    - ◉ Label axis as "Frequency" or "Relative Frequency, in percent"

# Bar Graph

- Two types: *Frequency Bar Graph* and *Relative Frequency Bar Graph*
- Bars
  - Equal width
  - Space between the vertical axis and the first bar
  - Equal spacing between the bars
  - Label each bar with the corresponding variable value below the bar
  - Do NOT label the bars with the corresponding frequency or relative frequency

# Pie Chart

- No Axes
- Full Face of a Circle - no side views/angles
- Sectors of circle represent the Relative Frequency of the values of the variable
  - Multiply relative frequency by 360 degrees to determine the degree measure for the sector
- Size of the sectors of the circle correspond to the relative frequencies of the corresponding variable values
  - Label each sector with the value of the variable
  - Label each sector with the corresponding Relative Frequency, in percent