

**Statistics 1:
Introduction to
Probability and Statistics**

Session #3

Chapter 2

- **Describing data**
- **Exploring data**
- **Comparing data**

Describe or Infer?

- **Descriptive statistics**
- **Inferential statistics**

Inferential Statistics

- **Based on a sample or samples, make an inference (judgement) about the population(s) that provided the sample(s).**
- **Chapters 6 through 11**

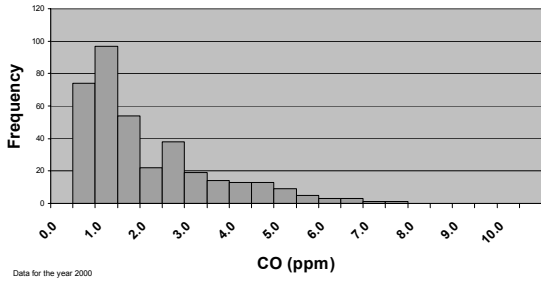
Descriptive Statistics

- **Distribution**
- **Center**
- **Variation**
- **Position**

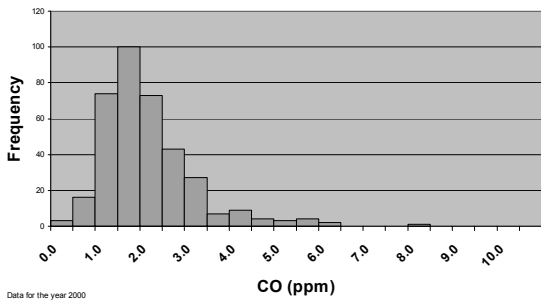
Distribution

- **How are the data spread out?**
- **Where are data plentiful?**
- **Where are data rarely found?**

Daily Carbon Monoxide
Site Number 2045 : Hawthorne



Daily Carbon Monoxide
Site Number 2160 : Pasadena



Distribution

- Frequency tables
- Pictures

Frequency Tables

- Identify categories for the data
 - Nominal categories or
 - Interval categories
- Count the number of observations in each category

Frequency Tables Interval Categories

- Class Limits
- Class Midpoints
- Class Boundaries

Lower Class Limit	Upper Class Limit	Freq.	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency	Class Boundaries	Class midpoints
10	20	3	0.38	3	0.38	25	15
30	40	3	0.38	6	0.75	45	35
50	60	2	0.25	8	1.00		55
		8					
18	24	17	50	41			
32	50	25					

Class Limits

- **Convenient values representing the range of values in a class**
- **Lower class limit**
- **Upper class limit**

Class Midpoints

- **Values that are midway between the lower and upper class limits of each class**
- **To compute, average the two class limits**

Class Boundaries

- **Values that truly separate one class from the next**
- **To compute: average the upper class boundary and the following lower class boundary**

Frequency Tables

- **Frequency**
- **Relative frequency**
- **Cumulative frequency**
- **Cumulative relative frequency**

Frequency

- **Count of the observations that belong to each class**

Relative Frequency

- **Frequency divided by the total number of observations**

Cumulative Frequency

- **Sum of the frequencies in the first class through the current class**

Cumulative Relative Frequency

- **Sum of the relative frequencies in the first class through the current class**

Distribution

- **Frequency tables**
- **Pictures**

Pictures

- **Histograms and Bar Charts**
- **Pareto Charts**
- **Pie Charts**
