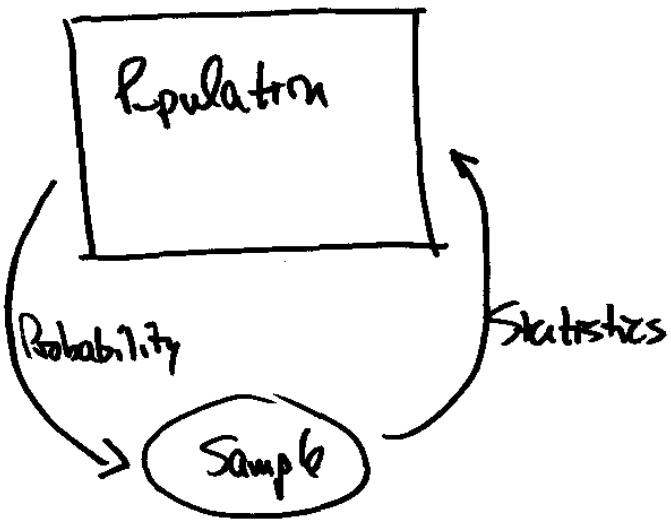
Stat 451
1-9-18
①



Descriptive statistics: observe the sample & summarize

②

Stem-and-leaf plot

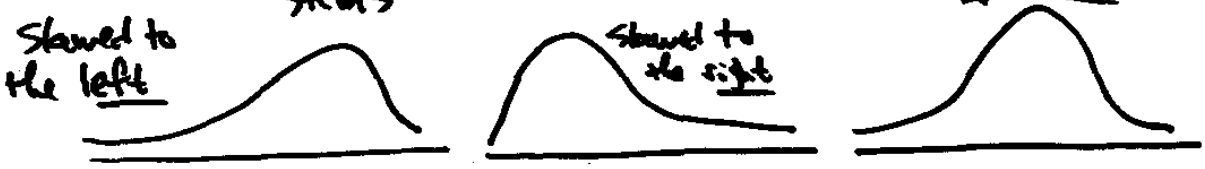
55
75
23
66
65
66
71
79
85

2	3
3	
4	
5	5
6	656
7	519
8	5

2	3
3	
4	
5	5
6	566
7	159
8	5

stems

leaves



Numerical summaries:

Minimum = smallest value = 23

Maximum = largest value = 85

Sample median = $\tilde{x}$ = { middle value if n is odd; average of 2 middle values if n is even }

Locate $\tilde{x}$ by computing $\frac{n+1}{2}$

In our example, $n=9 \Rightarrow \frac{n+1}{2} = 5$

$\tilde{x} = 66$

Sample mean = $\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$

$\bar{x} = 65$

Sample mode = most frequently occurring value

(there can be no modes, a single mode, or multiple modes)

Quartiles: medians of the upper & lower halves of the data

Q_1 = 1st quartile = 25th percentile

Q_3 = 3rd quartile = 75th percentile

Q_2 = 2nd quartile = 50th percentile = median

Measures of variability (dispersion, spread)

Sample range = maximum value minus minimum value
$= 85 - 23 = 62$

interquartile range $= Q_3 - Q_1 =$ IQR

Sample standard deviation $= s = \sqrt{\dfrac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}}$

Sample variance $= s^2$