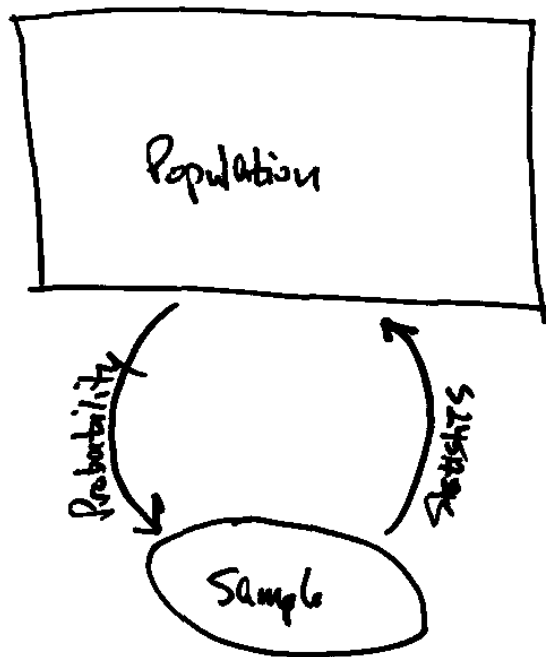


Stat 451
9-27-16

①



②

123
248
263
345
387
428
509

1	23
2	48, 63
3	45, 87
4	28
5	09

Numerical Summaries

- Location: mean, median, mode, percentiles
- Dispersion: standard deviation, range, variance

(3)

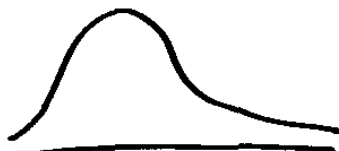
55
75
23
66
65
66
71
79
85

Stem-and-leaf plot

2	3	2	3
3		3	
4		4	
5	5	5	5
6	656	6	566
7	519	7	159
8	5	8	5



Skewed to the left



Skewed to the right



Symmetric

(4)

Sample mean = $\bar{x}$ = "x bar"

$$= \frac{\sum_{i=1}^n x_i}{n} = 65 \text{ in our first example}$$

Sample median = $\tilde{x}$ = $\begin{cases} \text{middle value if } n \text{ is odd} \\ \text{average of the 2 middle values if } n \text{ is even} \end{cases}$

= 66 in the example

Sample mode = most frequently occurring value

= 66 in the example

sample

(5)

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

(if n was odd, the median is included in both halves)

$Q_1 = 25^{\text{th}}$ percentile = lower quartile
= 65 in our example

$Q_3 = 75^{\text{th}}$ percentile = upper quartile
= 75 in our example

(6)

Simple range: largest value minus smallest

In our example, range = $85 - 23 = 62$

interquartile range = $IQR = Q_3 - Q_1$
= $75 - 65 = 10$ in our example

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

Sample variance = s^2