

pop of monthly income: Sing:

$X_1, \dots, X_n$   $n = 100$

$\mu$  = mean of monthly income of pop.

$\bar{X} = 7.5 \text{ k}$

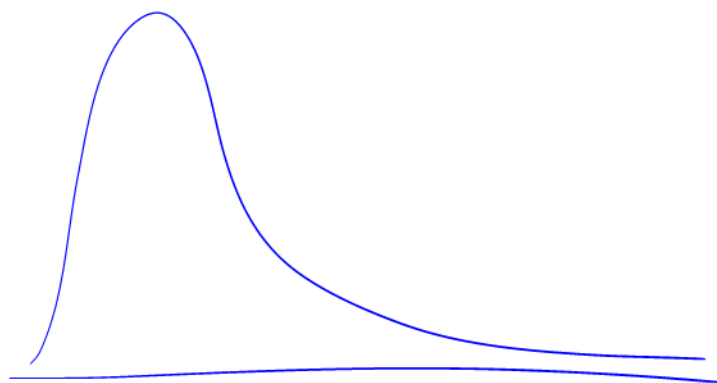
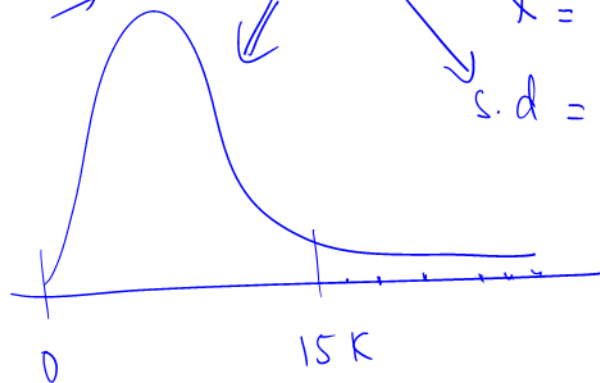
s.d = S

95%

$$\bar{X} \pm t \cdot \frac{S}{\sqrt{n}}$$

$$7.5 \pm t_{0.975, 99} \cdot \frac{S}{\sqrt{100}}$$

$$\mu \in (5.2, 8.5)$$



data/pop is skewed / sym  
we use median / mean to describe location.

pop is normal  $N(\mu; \sigma^2)$   $\sigma$  is unknown.

→ can estimate  $\sigma$  by  $\frac{IQR}{1.35}$  where IQR is the sample IQR.

{property: if  $X \sim N(\mu; \sigma^2)$  then  $X = \mu + \sigma \cdot Z$ ;  $Z \sim N(0,1)$   
if  $X \sim N(\mu; \sigma^2)$  then  $IQR(X) = \sigma \cdot \frac{IQR(Z)}{1}$

$$Q_3(Z) - Q_1(Z)$$

A sample of  $X \Rightarrow$  sample IQR  $\rightarrow$

$$\frac{IQR(X)}{1.35} = \sigma \cdot 1.35$$

$$\frac{IQR(X)}{1.35} \approx \sigma$$