n = SAMPLE SIZE

f = FREQUENCY

$\hat{p}$ = PROPORTION = $\frac{f}{n}$

PERCENTAGE = $p \cdot 100$

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

$r = \text{max Val} - \text{min Val}$

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

s^2

$IQR = Q_3 - Q_1$ 1,5

$$r = \frac{\sum_{i=1}^{n} (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n} (x_i - \bar{x})^2 \sum_{i=1}^{n} (y_i - \bar{y})^2}}$$

$\hat{y}_i = a + b x_i$

$$b = r \frac{s_y}{s_x} = \frac{\sum_{i=1}^{n} (x_i - \bar{x})(y_i - \bar{y})}{\sum_{i=1}^{n} (x_i - \bar{x})^2}$$

$a = \bar{y} - b\bar{x}$

RESIDUAL = $y_i - \hat{y}_i = e_i$

r^2

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

IND if $P(A \cap B) = P(A) \cdot P(B)$

$$E(x) = \sum_{i=1}^{n} x_i \cdot P(x_i)$$

$$\sigma^2(x) = \sum_{i=1}^{n} (x_i - E(x))^2 \cdot P(x_i)$$

$$z_i = \frac{x_i - \mu}{\sigma}$$

BINOMIAL DISTRIBUTION

$$P(x) = \frac{n!}{x! \cdot (n-x)!} \cdot p^x \cdot (1-p)^{n-x}$$

$E(x) = np$

$\sigma^2(x) = np \cdot (1-p)$

DIRECT PROBLEM
SAMPLING DISTRIBUTION

$E(\hat{p}) = p$

$$\sigma(\hat{p}) = \sqrt{\frac{p(1-p)}{n}}$$

$E(\bar{x}) = \mu$

$$\sigma(\bar{x}) = \frac{\sigma}{\sqrt{n}}$$

INFERENCE PROBLEM
POPULATION PARAMETERS

$\hat{p} \pm m \cdot se(\hat{p})$

$$se(\hat{p}) = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

$\bar{x} \pm m \cdot se(\bar{x})$

$$se(\bar{x}) = \frac{s}{\sqrt{n}}$$

m IS $z \vee t_{n-1}$

$n\hat{p} \geq 15 \wedge n(1-\hat{p}) \geq 15$

$n \geq 30$

TEST STATISTIC

$$z_{OBS} = \frac{\hat{p} - p_0}{\sqrt{p_0(1-p_0)}} \cdot \sqrt{n}$$

$$t_{OBS} = \frac{\bar{x} - \mu}{s} \cdot \sqrt{n}$$

$E(y_i) = \beta_0 + \beta_1 \cdot x_i$

$y_i = \beta_0 + \beta_1 \cdot x_i + \epsilon$

$SSE = \sum_{i=1}^{n} (y_i - \hat{y}_i)^2$ $n-2$

$$s^2(\epsilon) = MSE = \frac{SSE}{n-2}$$

$s(\epsilon) = \sqrt{MSE}$

y $SST = \sum_{i=1}^{n} (y_i - \bar{y})^2$ $n-1$

$$r^2 = \frac{SST - SSE}{SST}$$

x $SSR = \sum_{i=1}^{n} (\hat{y}_i - \bar{y})^2$ 1

$SST = SSE + SSR$

$$MSR = \frac{SSR}{1}$$

$$F = \frac{MSR}{MSE}$$

$$t_{OBS} = \frac{b - \beta}{se(b)}$$

$b \pm t_{\alpha/2}(n-2) \cdot se(b)$

$\hat{y}_i \pm t_{\alpha/2}(n-2) \cdot se(\hat{y}_i)$

$\hat{y}_i \pm t_{\alpha/2}(n-2) \sqrt{se^2(\hat{y}_i) + MSE}$