$$\frac{\bar{x}_1 - \bar{x}_2 - (\mu_1 - \mu_2)}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}} \qquad s_p^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}$$

$$df = \frac{(s_1^2/n_1 + s_2^2/n_2)^2}{\frac{(s_1^2/n_1)^2}{n_1 - 1} + \frac{(s_2^2/n_2)^2}{n_2 - 1}}$$

$$\frac{\hat{p_1} - \hat{p_2} - (p_1 - p_2)}{\sqrt{\frac{p_1(1-p_1)}{n_1} + \frac{p_2(1-p_2)}{n_2}}} \qquad \hat{p} = \frac{n_1\hat{p}_1 + n_2\hat{p}_2}{n_1 + n_2}$$

$$SST = \sum_{i=1}^{p}\sum_{j=1}^{n_i}(\bar{y}_i - \bar{y})^2 \qquad SSE = \sum_{i=1}^{p}\sum_{j=1}^{n_i}(y_{ij} - \bar{y}_i)^2 \qquad TSS = \sum_{i=1}^{p}\sum_{j=1}^{n_i}(y_{ij} - \bar{y})^2$$

$$SS_{xx} = \sum_{i=1}^{n}(x_i - \bar{x})^2 \qquad SS_{yy} = \sum_{i=1}^{n}(y_i - \bar{y})^2 \qquad SS_{xy} = \sum_{i=1}^{n}[(x_i - \bar{x})(y_i - \bar{y})]$$

$$\hat{\beta}_1 = \frac{SS_{xy}}{SS_{xx}} \qquad \hat{\beta}_0 = \bar{y} - \hat{\beta}_1\bar{x}$$

$$SSE = \sum_{i=1}^{n}(y_i - (\hat{\beta}_0 + \hat{\beta}_1 x_i))^2 \qquad TSS = \sum_{i=1}^{n}(y_i - \bar{y})^2$$

$$\hat{\beta}_1 \pm t_{\alpha/2, df=n-2}\frac{\sqrt{MSE}}{\sqrt{SS_{xx}}}$$

$$r = \frac{SS_{xy}}{\sqrt{SS_{xx}SS_{yy}}} \qquad r = \hat{\beta}_1\frac{s_x}{s_y}$$

$$r^2 = \frac{SSR}{TSS} \qquad F = \frac{(n-2)r^2}{1 - r^2}$$