	Exposure		
disease	yes	no	total
yes	a_i	b_i	N_{1i}
no	c_i	d_i	N_{2i}
total	M_{1i}	M_{2i}	T_i

Test of No Expaosure-Diseese Association

$$Z^2 = \frac{[X - E(X \mid H_0)]^2}{Var(X \mid H_0)} = \chi_1^2$$

H_0	X	$\hat{E}(X \mid H_0)$	$\hat{Var}(\hat{X} \mid H_0)$	
・Closed cohort				
$C_1 = C_0$	α	$\frac{N_1 M_1}{T}$	$\frac{M_1 M_0 N_1 N_0}{T^3}$	unstratified
$C_1 / C_0 = 1$				
$C_1 - C_0 = 0$	$\sum \alpha_i$	$\sum \frac{N_{1i} M_{1i}}{T_i}$	$\sum \frac{M_{1i} M_{0i} N_{1i} N_{0i}}{T_i^3}$	stratified
・Open cohort				
$I_1 = I_0$	α	$\frac{N_1 M_1}{T}$	$\frac{N_1 N_0 M_1}{T^2}$	unstratified
I_1 / I_0				
I_1 - I_0 (log)	$\sum \alpha_i$	$\sum \frac{N_{1i} M_{1i}}{T_i}$	$\sum \frac{N_{1i} N_{0i} M_{1i}}{T_i^2}$	stratified
・Case-control				
OR = 1	α	$\frac{N_1 M_1}{T}$	$\frac{M_1 M_0 N_1 N_0}{T^2 (T-1)}$	unstratified
$I_1 / I_0 = 1$	$\sum \alpha_i$	$\sum \frac{N_{1i} M_{1i}}{T_i}$	$\sum \frac{M_{1i} M_{0i} N_{1i} N_{0i}}{T_i^2 (T_i - 1)}$	stratified

Confidence Intervals for Ratio and Difference Measures

$$X \pm Z_{1-\alpha/2} \sqrt{\hat{Var}(X)}$$

X	W_i	$\hat{Var}(X)$
risk difference $\frac{a}{N_1} - \frac{b}{N_0}$	-	$\frac{ac}{N_1^3} + \frac{bd}{N_0^3}$
$\frac{\sum w_i \left[\frac{a_i}{N_{1i}} - \frac{b_i}{N_{0i}}\right]}{\sum w_i}$	$\frac{N_{1i}^3 N_{0i}^3}{N_{0i}^3 a_i c_i - N_{1i}^3 b_i d_i}$	$\frac{1}{\sum w_i}$
risk ratio(log) $\log\left\{\frac{a}{N_1} \Big/ \frac{b}{N_0}\right\}$	-	$\frac{c}{aN_1} + \frac{d}{bN_0}$
$\log\left\{\frac{\sum w_i \left[\frac{a_i}{N_{1i}} \Big/ \frac{b_i}{N_{0i}}\right]}{\sum w_i}\right\}$	$\frac{b_i N_{1i}}{T_i}$	$\frac{\sum_i (M_{1i} N_{1i} N_{0i} - a_i b_i T_i) / T_i^2}{\left[\sum_i \frac{a_i N_{0i}}{T_i}\right]\left[\sum_i \frac{b_i N_{1i}}{T_i}\right]}$
rate difference $\frac{a}{N_1} - \frac{b}{N_0}$	-	$\frac{a}{N_1^2} + \frac{b}{N_0^2}$
$\frac{\sum w_i \left[\frac{a_i}{N_{1i}} - \frac{b_i}{N_{0i}}\right]}{\sum w_i}$	$\frac{N_{1i}^2 N_{0i}^2}{a_i N_{0i}^2 + b_i N_{1i}^2}$	$\frac{1}{\sum w_i}$
rate ratio $\log\left\{\frac{a}{N_1} \Big/ \frac{b}{N_0}\right\}$	-	$\frac{1}{a} + \frac{1}{b}$
$\log\left\{\frac{\sum w_i \left(\frac{a}{N_1}\right) \Big/ \left(\frac{b}{N_0}\right)}{\sum w_i}\right\}$	$\frac{b_i N_{1i}}{T_i}$	$\frac{\sum M_{1i} N_{1i} N_{0i} / T_i^2}{\left[\sum \frac{a_i N_{0i}}{T_i}\right]\left[\sum \frac{b_i N_{1i}}{T_i}\right]}$
odds ratio $\log\left\{\frac{ad}{bc}\right\}$	-	$\frac{1}{a} + \frac{1}{b} + \frac{1}{c} + \frac{1}{d}$
$\log\left\{\frac{\sum w_i \frac{a_i d_i}{b_i c_i}}{\sum w_i}\right\}$	$\frac{b_i c_i}{T_i}$	