

Woolf Test for Homogeneity of Odds Ratio

The solution in stata v 10 utilizes the command **CC** which stands for “case-control”
In this illustration, data are entered in tabular format.

Data

The data are from PubHlth 640 Topic 4 (Categorical Data Analysis) page 30
The 2x2 tables themselves are shown on pp 33-34

Setting:

In a stratified analysis of rates, the goal is to understand an exposure disease relationship while taking into account confounding or effect modification. In this example, the goal is an analysis of the association of exposure to video display terminals and spontaneous abortion (SAB). The stratification variable is month of gestation. Suppose the following are observed.

Month of Gestation	<u>Unexposed</u> # SAB / # Pregnancies	<u>Exposed</u> #SAB / # Pregnancies
1	10/512 = 2.0%	1/366 = 0.3%
2	38/502 = 7.5%	30/365 = 8.2%
3	15/462 = 3.2%	12/335 = 3.6%
4	7/449 = 1.6%	5/323 = 1.5%
5	2/442 = 0.5%	4/318 = 1.3%
6	4/440 = 0.9%	1/314 = 0.3%
7	2/436 = 0.5%	1/313 = 0.3%

Here are the same data in 2x2 tabular layout.

MONTH OF GESTATION	NOTATION			OBSERVED			
1	a	b	M₁	10	502	512	OR₁ = 7.2709
	c	d	M₀	1	365	366	
	N₁	N₀	T	11	867	878	
2	a	b	M₁	38	464	502	OR₂ = 0.9145
	c	d	M₀	30	335	365	
	N₁	N₀	T	68	799	867	
3	a	b	M₁	15	447	462	OR₃ = 0.9032
	c	d	M₀	12	323	335	
	N₁	N₀	T	27	770	797	
4	a	b	M₁	7	442	449	OR₄ = 1.0072
	c	d	M₀	5	318	323	
	N₁	N₀	T	12	760	772	
5	a	b	M₁	2	440	442	OR₅ = 0.3568
	c	d	M₀	4	314	318	
	N₁	N₀	T	6	754	760	

6

a	b
c	d

M₁
M₀
T

4	436
1	313

440
314
754

OR₆ = 2.8716

N₁ N₀ T

7

a	b
c	d

M₁
M₀
T

2	434
1	312

436
313
749

OR₇ = 1.4378

N₁ N₀ T

Layout of data in stata data editor

	mgest	vdt	sab	tally
1	1	1	1	10
2	2	1	1	38
3	3	1	1	15
4	4	1	1	7
5	5	1	1	2
6	6	1	1	4
7	7	1	1	2
8	1	0	0	365
9	1	0	1	1
10	1	1	0	502
11	2	1	0	464
12	2	0	1	30
13	2	0	0	335
14	3	1	0	447
15	3	0	0	323
16	3	0	1	12
17	4	0	0	318
18	4	1	0	442
19	4	0	1	5
20	5	0	1	4
21	5	0	0	314
22	5	1	0	440
23	6	1	0	436
24	6	0	0	313
25	6	0	1	1
26	7	1	0	434
27	7	0	1	1
28	7	0	0	312

Stata commands for obtaining Woolf Test

```
. cc sab vdt [freq=tally], by(mgest) woolf
```

Key

.cc	Tells stata that this is “case-control”
sab	SAB is the event variable coded 1=event 0=non-event
vd	VDT is the exposure variable coded 1=exposed 0=non-exposed
[freq =]	Tells stata that data are being entered as 2x2 tables. Take care to use square brackets here, not parentheses
tally	TALLY is the name of the variable that contains the counts
, by ()	Tells stata that this is a stratified analysis of 2x2 tables
mgest	MGEST is the name of the stratifying variable
woolf	Tells stata to do a woolf test for homogeneity of odds ratios

You should see the following

MGEST: Month of	OR	[95% Conf. Interval]		M-H Weight
1	7.270916	.9266663	57.0499	.571754 (Woolf)
2	.9145115	.5552984	1.506093	16.05536 (Woolf)
3	.9032438	.4171831	1.955615	6.730238 (Woolf)
4	1.00724	.3168148	3.202287	2.862694 (Woolf)
5	.3568182	.0649543	1.960136	2.315789 (Woolf)
6	2.87156	.3194174	25.8153	.5782493 (Woolf)
7	1.437788	.1298008	15.92621	.5794393 (Woolf)
Crude	1.040548	.7324398	1.478264	(Woolf)
M-H combined	1.048119	.7340744	1.496516	

Test of homogeneity (M-H)	chi2(6) =	6.24	Pr>chi2 =	0.3966
Test that combined OR = 1:				
	Mantel-Haenszel	chi2(1) =	0.07	
		Pr>chi2 =	0.7961	

Woolf test for homogeneity of OR with 6 df = 6.24

p-value = 0.3966