Example of Mantel-Haenzel strata test - YOURNAME
The data as SAS sees it:
(Four scratch variables f1 f2 m1 m2 were dropped.)

Obs	Drug	Sex	Outcome	Count
1	New	Female	Improved	80
2	New	Female	NotImproved	20
3	New	Male	Improved	120
4	New	Male	NotImproved	180
5	Standard	Female	Improved	210
6	Standard	Female	NotImproved	90
7	Standard	Male	Improved	30
8	Standard	Male	NotImproved	70

Chi-square tests for two 2x2 tables:
Percentages were suppressed in the tables
to keep them uncluttered.
Note the signs of the two phi values.

The FREQ Procedure

Frequency

Table 1 of Drug by Outcome			
Controlling for Sex=Female			
	Outcome		
Drug	Improved	NotImproved	Total
New	80	20	100
Standard	210	90	300
Total	290	110	400

Statistics for Table 1 of Drug by Outcome
Controlling for Sex=Female

Statistic	DF	Value	Prob
Chi-Square	1	3.7618	0.0524
Likelihood Ratio Chi-Square	1	3.9360	0.0473
Continuity Adj. Chi-Square	1	3.2769	0.0703
Mantel-Haenszel Chi-Square	1	3.7524	0.0527
Phi Coefficient		0.0970	
Contingency Coefficient		0.0965	
Cramer's V		0.0970	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	80
Left-sided Pr <= F	0.9825
Right-sided Pr >= F	0.0331
Table Probability (P)	0.0156
Two-sided Pr <= P	0.0536

Sample Size = 400

Chi-square tests for two 2x2 tables:
Percentages were suppressed in the tables
to keep them uncluttered.
Note the signs of the two phi values.

The FREQ Procedure

Frequency

Table 2 of Drug by Outcome			
Controlling for Sex=Male			
	Outcome		
Drug	Improved	NotImproved	Total
New	120	180	300
Standard	30	70	100
Total	150	250	400

Statistics for Table 2 of Drug by Outcome
Controlling for Sex=Male

Statistic	DF	Value	Prob
Chi-Square	1	3.2000	0.0736
Likelihood Ratio Chi-Square	1	3.2707	0.0705
Continuity Adj. Chi-Square	1	2.7876	0.0950
Mantel-Haenszel Chi-Square	1	3.1920	0.0740
Phi Coefficient		0.0894	
Contingency Coefficient		0.0891	
Cramer's V		0.0894	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	120
Left-sided Pr <= F	0.9729
Right-sided Pr >= F	0.0464
Table Probability (P)	0.0193
Two-sided Pr <= P	0.0753

Sample Size = 400

THE COMBINED TABLE - Chi-square test
Note the difference in sign in the phi value.
THIS SHOWS SIMPSON'S PARADOX

The FREQ Procedure

Frequency

Table of Drug by Outcome			
	Outcome		
Drug	Improved	NotImproved	Total
New	200	200	400
Standard	240	160	400
Total	440	360	800

Statistics for Table of Drug by Outcome

Statistic	DF	Value	Prob
Chi-Square	1	8.0808	0.0045
Likelihood Ratio Chi-Square	1	8.0950	0.0044
Continuity Adj. Chi-Square	1	7.6818	0.0056
Mantel-Haenszel Chi-Square	1	8.0707	0.0045
Phi Coefficient		-0.1005	
Contingency Coefficient		0.1000	
Cramer's V		-0.1005	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	200
Left-sided Pr <= F	0.0028
Right-sided Pr >= F	0.9982
Table Probability (P)	9.997E-04
Two-sided Pr <= P	0.0055

Sample Size = 800

(Cochran-)Mantel-Haenszel test for 2 tables
Note the estimate of average odds-ratio in the output
The BRESLOW-DAY procedure tests for the homogeneity of the odds ratio. The test is not significant in this case.
If all table entries are multiplied by 10, the B.D. test is still not significant, perhaps because it does not have much power. Still, it tests for homogeneity of the odds ratio, not vulnerability to Simpson's Paradox.

The FREQ Procedure

Summary Statistics for Drug by Outcome
Controlling for Sex

Cochran-Mantel-Haenszel Statistics (Based on Table Scores)				
Statistic	**Alternative Hypothesis**	**DF**	**Value**	**Prob**
1	**Nonzero Correlation**	1	6.8991	0.0086
2	**Row Mean Scores Differ**	1	6.8991	0.0086
3	**General Association**	1	6.8991	0.0086

Estimates of the Common Relative Risk (Row1/Row2)				
Type of Study	**Method**	**Value**	**95% Confidence Limits**	
Case-Control	Mantel-Haenszel	1.6250	1.1297	2.3376
(Odds Ratio)	Logit	1.6235	1.1283	2.3359
Cohort	Mantel-Haenszel	1.2000	1.0496	1.3719
(Col1 Risk)	Logit	1.1645	1.0379	1.3066
Cohort	Mantel-Haenszel	0.8000	0.6790	0.9426
(Col2 Risk)	Logit	0.8317	0.7170	0.9647

Breslow-Day Test for Homogeneity of the Odds Ratios	
Chi-Square	0.0675
DF	1
Pr > ChiSq	0.7950

Total Sample Size = 800

A SECOND EXAMPLE WITH 3 2x2 TABLES:
The data as SAS sees it
(9 scratch variables were dropped):

Obs	Row	Age	col	num
1	Treated	Young	Sick	99
2	Treated	Young	Well	190
3	Treated	Middle	Sick	41
4	Treated	Middle	Well	159
5	Treated	Old	Sick	40
6	Treated	Old	Well	42
7	Control	Young	Sick	306
8	Control	Young	Well	381
9	Control	Middle	Sick	193
10	Control	Middle	Well	618
11	Control	Old	Sick	108
12	Control	Old	Well	107

A SECOND EXAMPLE WITH 3 2x2 TABLES:
Within-strata tests for 3 tables
and the (Cochran-)Mantel Haenszel test

The FREQ Procedure

Frequency

Table 1 of Row by col			
Controlling for Age=Young			
Row	col		Total
	Sick	Well	
Treated	99	190	289
Control	306	381	687
Total	405	571	976

Statistics for Table 1 of Row by col
Controlling for Age=Young

Statistic	DF	Value	Prob
Chi-Square	1	8.8646	0.0029
Likelihood Ratio Chi-Square	1	8.9801	0.0027
Continuity Adj. Chi-Square	1	8.4460	0.0037
Mantel-Haenszel Chi-Square	1	8.8555	0.0029
Phi Coefficient		-0.0953	
Contingency Coefficient		0.0949	
Cramer's V		-0.0953	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	99
Left-sided Pr <= F	0.0017
Right-sided Pr >= F	0.9989
Table Probability (P)	6.549E-04
Two-sided Pr <= P	0.0035

Sample Size = 976

A SECOND EXAMPLE WITH 3 2x2 TABLES:
Within-strata tests for 3 tables
and the (Cochran-)Mantel Haenszel test

The FREQ Procedure

Frequency	Table 2 of Row by col		
	Controlling for Age=Middle		
	col		
Row	Sick	Well	Total
Treated	41	159	200
Control	193	618	811
Total	234	777	1011

Statistics for Table 2 of Row by col
Controlling for Age=Middle

Statistic	DF	Value	Prob
Chi-Square	1	0.9809	0.3220
Likelihood Ratio Chi-Square	1	1.0020	0.3168
Continuity Adj. Chi-Square	1	0.8042	0.3698
Mantel-Haenszel Chi-Square	1	0.9799	0.3222
Phi Coefficient		-0.0311	
Contingency Coefficient		0.0311	
Cramer's V		-0.0311	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	41
Left-sided Pr <= F	0.1854
Right-sided Pr >= F	0.8613
Table Probability (P)	0.0467
Two-sided Pr <= P	0.3500

Sample Size = 1011

A SECOND EXAMPLE WITH 3 2x2 TABLES:
Within-strata tests for 3 tables
and the (Cochran-)Mantel Haenszel test

The FREQ Procedure

Frequency

Table 3 of Row by col			
Controlling for Age=Old			
Row	col		Total
	Sick	Well	
Treated	40	42	82
Control	108	107	215
Total	148	149	297

Statistics for Table 3 of Row by col
Controlling for Age=Old

Statistic	DF	Value	Prob
Chi-Square	1	0.0501	0.8229
Likelihood Ratio Chi-Square	1	0.0501	0.8229
Continuity Adj. Chi-Square	1	0.0088	0.9251
Mantel-Haenszel Chi-Square	1	0.0499	0.8232
Phi Coefficient		-0.0130	
Contingency Coefficient		0.0130	
Cramer's V		-0.0130	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	40
Left-sided Pr <= F	0.4626
Right-sided Pr >= F	0.6381
Table Probability (P)	0.1007
Two-sided Pr <= P	0.8969

Sample Size = 297

A SECOND EXAMPLE WITH 3 2x2 TABLES:
Within-strata tests for 3 tables
and the (Cochran-)Mantel Haenszel test

The FREQ Procedure

Summary Statistics for Row by col
Controlling for Age

Cochran-Mantel-Haenszel Statistics (Based on Table Scores)				
Statistic	**Alternative Hypothesis**	**DF**	**Value**	**Prob**
1	**Nonzero Correlation**	1	7.8919	0.0050
2	**Row Mean Scores Differ**	1	7.8919	0.0050
3	**General Association**	1	7.8919	0.0050

Estimates of the Common Relative Risk (Row1/Row2)				
Type of Study	**Method**	**Value**	**95% Confidence Limits**	
Case-Control	Mantel-Haenszel	0.7426	0.6030	0.9145
(Odds Ratio)	Logit	0.7428	0.6032	0.9148
Cohort	Mantel-Haenszel	0.8293	0.7252	0.9483
(Col1 Risk)	Logit	0.8361	0.7323	0.9546
Cohort	Mantel-Haenszel	1.1023	1.0327	1.1767
(Col2 Risk)	Logit	1.0884	1.0229	1.1582

Breslow-Day Test for Homogeneity of the Odds Ratios	
Chi-Square	2.0120
DF	2
Pr > ChiSq	0.3657

Total Sample Size = 2284

A SECOND EXAMPLE WITH 3 2x2 TABLES:
The INCORRECT combined table.

The FREQ Procedure

Frequency

Table of Row by col			
	col		
Row	Sick	Well	Total
Treated	180	391	571
Control	607	1106	1713
Total	787	1497	2284

Statistics for Table of Row by col

Statistic	DF	Value	Prob
Chi-Square	1	2.9009	0.0885
Likelihood Ratio Chi-Square	1	2.9290	0.0870
Continuity Adj. Chi-Square	1	2.7303	0.0985
Mantel-Haenszel Chi-Square	1	2.8996	0.0886
Phi Coefficient		-0.0356	
Contingency Coefficient		0.0356	
Cramer's V		-0.0356	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	180
Left-sided Pr <= F	0.0487
Right-sided Pr >= F	0.9608
Table Probability (P)	0.0095
Two-sided Pr <= P	0.0934

Sample Size = 2284

A SECOND EXAMPLE WITH 3 2x2 TABLES:
USING SAS ARRAYS in the data step:
The data as SAS sees it
This should be exactly the same as before.

Obs	row	age	col	num
1	Treated	Young	Sick	99
2	Treated	Young	Well	190
3	Treated	Middle	Sick	41
4	Treated	Middle	Well	159
5	Treated	Old	Sick	40
6	Treated	Old	Well	42
7	Control	Young	Sick	306
8	Control	Young	Well	381
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