

Mantel-Haenszel Common Odds-Ratio Test

Mantel-Haenszel Common Odds-Ratio Test

Import and test-specific preparation

Dataset Name

Notes

Output Created		16-JUL-2026 14:42:31
Comments		
Input	Data	D:\DATA ANALYSIS\Chi Square and Categorical Data Tests\Mantel Haenszel Test\dataset.csv
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		DATASET NAME MantelHaenszelTestData.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Warnings

The active dataset will replace the existing dataset named MantelHaenszelTestData.

school into school_n

Old Value	New Value	Value Label
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GP	1	GP
MS	2	MS

reason into reason_n

Old Value	New Value	Value Label
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course	1	course
home	2	home
other	3	other
reputation	4	reputation

Mantel-Haenszel Common Odds-Ratio Test
Import and test-specific preparation

guardian into guardian_n

Old Value	New Value	Value Label
father	1	father
mother	2	mother
other	3	other

Mantel-Haenszel common-effect test

Mantel-Haenszel common-effect test
Sex by final pass, stratified by study time

Crosstabs

Notes

Output Created		16-JUL-2026 14:42:32
Comments		
Input	Data	D:\DATA ANALYSIS\Chi Square and Categorical Data Tests\Mantel Haenszel Test\dataset.csv
	Active Dataset	MantelHaenszelTestData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each table are based on all the cases with valid data in the specified range(s) for all variables in each table.
Syntax		CROSSTABS /TABLES=sex_bin BY pass3 BY studytime /FORMAT=AVALUE TABLES /STATISTICS=CMH CHISQ RISK /CELLS=COUNT ROW COLUMN EXPECTED /COUNT ROUND CELL.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.03
	Dimensions Requested	3
	Cells Available	449353

[MantelHaenszelTestData]

Mantel-Haenszel common-effect test
Sex by final pass, stratified by study time

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Sex: 0 female, 1 male * G3 pass status at 10 * studytime	649	100.0%	0	0.0%	649	100.0%

Sex: 0 female, 1 male * G3 pass status at 10 * studytime Crosstabulation

studytime				G3 pass status at 10		Total
				No / fail	Yes / pass	
1	Sex: 0 female, 1 male	Female	Count	18	71	89
			Expected Count	21.0	68.0	89.0
			% within Sex: 0 female, 1 male	20.2%	79.8%	100.0%
			% within G3 pass status at 10	36.0%	43.8%	42.0%
		Male	Count	32	91	123
			Expected Count	29.0	94.0	123.0
			% within Sex: 0 female, 1 male	26.0%	74.0%	100.0%
			% within G3 pass status at 10	64.0%	56.2%	58.0%
	Total		Count	50	162	212
			Expected Count	50.0	162.0	212.0
			% within Sex: 0 female, 1 male	23.6%	76.4%	100.0%
			% within G3 pass status at 10	100.0%	100.0%	100.0%
2	Sex: 0 female, 1 male	Female	Count	26	172	198
			Expected Count	26.6	171.4	198.0
			% within Sex: 0 female, 1 male	13.1%	86.9%	100.0%
			% within G3 pass status at 10	63.4%	65.2%	64.9%
		Male	Count	15	92	107
			Expected Count	14.4	92.6	107.0

Mantel-Haenszel common-effect test
Sex by final pass, stratified by study time

Sex: 0 female, 1 male * G3 pass status at 10 * studytime Crosstabulation

studytime				G3 pass status at 10		Total	
				No / fail	Yes / pass		
Total				% within Sex: 0 female, 1 male	14.0%	86.0%	100.0%
				% within G3 pass status at 10	36.6%	34.8%	35.1%
				Count	41	264	305
				Expected Count	41.0	264.0	305.0
				% within Sex: 0 female, 1 male	13.4%	86.6%	100.0%
				% within G3 pass status at 10	100.0%	100.0%	100.0%
3	Sex: 0 female, 1 male	Female	Count	6	69	75	
			Expected Count	5.4	69.6	75.0	
			% within Sex: 0 female, 1 male	8.0%	92.0%	100.0%	
			% within G3 pass status at 10	85.7%	76.7%	77.3%	
		Male	Count	1	21	22	
			Expected Count	1.6	20.4	22.0	
			% within Sex: 0 female, 1 male	4.5%	95.5%	100.0%	
			% within G3 pass status at 10	14.3%	23.3%	22.7%	
	Total	Count	7	90	97		
		Expected Count	7.0	90.0	97.0		
		% within Sex: 0 female, 1 male	7.2%	92.8%	100.0%		
		% within G3 pass status at 10	100.0%	100.0%	100.0%		
4	Sex: 0 female, 1 male	Female	Count	0	21	21	
			Expected Count	1.2	19.8	21.0	
			% within Sex: 0 female, 1 male	0.0%	100.0%	100.0%	
			% within G3 pass status at 10	0.0%	63.6%	60.0%	

Mantel-Haenszel common-effect test
Sex by final pass, stratified by study time

Sex: 0 female, 1 male * G3 pass status at 10 * studytime Crosstabulation

studytime				G3 pass status at 10		Total
				No / fail	Yes / pass	
	Male	Count		2	12	14
		Expected Count		.8	13.2	14.0
		% within Sex: 0 female, 1 male		14.3%	85.7%	100.0%
		% within G3 pass status at 10		100.0%	36.4%	40.0%
	Total	Count		2	33	35
		Expected Count		2.0	33.0	35.0
		% within Sex: 0 female, 1 male		5.7%	94.3%	100.0%
		% within G3 pass status at 10		100.0%	100.0%	100.0%
Total	Sex: 0 female, 1 male	Female	Count	50	333	383
			Expected Count	59.0	324.0	383.0
			% within Sex: 0 female, 1 male	13.1%	86.9%	100.0%
			% within G3 pass status at 10	50.0%	60.7%	59.0%
		Male	Count	50	216	266
			Expected Count	41.0	225.0	266.0
			% within Sex: 0 female, 1 male	18.8%	81.2%	100.0%
			% within G3 pass status at 10	50.0%	39.3%	41.0%
	Total		Count	100	549	649
			Expected Count	100.0	549.0	649.0
			% within Sex: 0 female, 1 male	15.4%	84.6%	100.0%
			% within G3 pass status at 10	100.0%	100.0%	100.0%

Mantel-Haenszel common-effect test
Sex by final pass, stratified by study time

Chi-Square Tests

studytime		Value	df	Asymptotic Significance (2- sided)	Exact Sig. (2- sided)
1	Pearson Chi-Square	.961 ^c	1	.327	
	Continuity Correction ^b	.667	1	.414	
	Likelihood Ratio	.972	1	.324	
	Fisher's Exact Test				.413
	Linear-by-Linear Association	.956	1	.328	
	N of Valid Cases	212			
2	Pearson Chi-Square	.047 ^d	1	.828	
	Continuity Correction ^b	.002	1	.967	
	Likelihood Ratio	.047	1	.829	
	Fisher's Exact Test				.861
	Linear-by-Linear Association	.047	1	.829	
	N of Valid Cases	305			
3	Pearson Chi-Square	.303 ^e	1	.582	
	Continuity Correction ^b	.007	1	.935	
	Likelihood Ratio	.334	1	.563	
	Fisher's Exact Test				1.000
	Linear-by-Linear Association	.300	1	.584	
	N of Valid Cases	97			
4	Pearson Chi-Square	3.182 ^f	1	.074	
	Continuity Correction ^b	1.083	1	.298	
	Likelihood Ratio	3.849	1	.050	
	Fisher's Exact Test				.153
	Linear-by-Linear Association	3.091	1	.079	
	N of Valid Cases	35			
Total	Pearson Chi-Square	3.971 ^a	1	.046	
	Continuity Correction ^b	3.543	1	.060	
	Likelihood Ratio	3.918	1	.048	

Mantel-Haenszel common-effect test
Sex by final pass, stratified by study time

Chi-Square Tests

studytime		Exact Sig. (1-sided)
1	Pearson Chi-Square	
	Continuity Correction ^b	
	Likelihood Ratio	
	Fisher's Exact Test	.208
	Linear-by-Linear Association	
	N of Valid Cases	
2	Pearson Chi-Square	
	Continuity Correction ^b	
	Likelihood Ratio	
	Fisher's Exact Test	.479
	Linear-by-Linear Association	
	N of Valid Cases	
3	Pearson Chi-Square	
	Continuity Correction ^b	
	Likelihood Ratio	
	Fisher's Exact Test	.499
	Linear-by-Linear Association	
	N of Valid Cases	
4	Pearson Chi-Square	
	Continuity Correction ^b	
	Likelihood Ratio	
	Fisher's Exact Test	.153
	Linear-by-Linear Association	
	N of Valid Cases	
Total	Pearson Chi-Square	
	Continuity Correction ^b	
	Likelihood Ratio	

Mantel-Haenszel common-effect test
Sex by final pass, stratified by study time

Chi-Square Tests

studytime	Value	df	Asymptotic Significance (2- sided)	Exact Sig. (2- sided)
Fisher's Exact Test				.060
Linear-by-Linear Association	3.965	1	.046	
N of Valid Cases	649			

Chi-Square Tests

studytime	Exact Sig. (1- sided)
Fisher's Exact Test	.030
Linear-by-Linear Association	
N of Valid Cases	

- a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 40.99.
- b. Computed only for a 2x2 table
- c. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 20.99.
- d. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.38.
- e. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 1.59.
- f. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .80.

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Sex by final pass, stratified by study time

Risk Estimate

studytime		Value	95% Confidence Interval	
			Lower	Upper
1	Odds Ratio for Sex: 0 female, 1 male (Female / Male)	.721	.374	1.389
	For cohort G3 pass status at 10 = No / fail	.777	.467	1.293
	For cohort G3 pass status at 10 = Yes / pass	1.078	.930	1.250
	N of Valid Cases	212		
2	Odds Ratio for Sex: 0 female, 1 male (Female / Male)	.927	.468	1.837
	For cohort G3 pass status at 10 = No / fail	.937	.519	1.690
	For cohort G3 pass status at 10 = Yes / pass	1.010	.920	1.110
	N of Valid Cases	305		
3	Odds Ratio for Sex: 0 female, 1 male (Female / Male)	1.826	.208	16.035
	For cohort G3 pass status at 10 = No / fail	1.760	.224	13.850
	For cohort G3 pass status at 10 = Yes / pass	.964	.861	1.079
	N of Valid Cases	97		
4	For cohort G3 pass status at 10 = Yes / pass	1.167	.942	1.445
	N of Valid Cases	35		
Total	Odds Ratio for Sex: 0 female, 1 male (Female / Male)	.649	.423	.995
	For cohort G3 pass status at 10 = No / fail	.695	.485	.995
	For cohort G3 pass status at 10 = Yes / pass	1.071	.999	1.148
	N of Valid Cases	649		

Mantel-Haenszel common-effect test
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Tests of Homogeneity of the Odds Ratio

	Chi-Squared	df	Asymptotic Significance (2- sided)
Breslow-Day	3.442	3	.328
Tarone's	3.442	3	.328

Tests of Conditional Independence

	Chi-Squared	df	Asymptotic Significance (2- sided)
Cochran's	.938	1	.333
Mantel-Haenszel	.725	1	.394

Under the conditional independence assumption, Cochran's statistic is asymptotically distributed as a 1 df chi-squared distribution, only if the number of strata is fixed, while the Mantel-Haenszel statistic is always asymptotically distributed as a 1 df chi-squared distribution. Note that the continuity correction is removed from the Mantel-Haenszel statistic when the sum of the differences between the observed and the expected is 0.

Mantel-Haenszel Common Odds Ratio Estimate

Estimate			.800
ln(Estimate)			-.223
Standard Error of ln(Estimate)			.229
Asymptotic Significance (2-sided)			.331
Asymptotic 95% Confidence Interval	Common Odds Ratio	Lower Bound	.510
		Upper Bound	1.254
	ln(Common Odds Ratio)	Lower Bound	-.673
		Upper Bound	.226

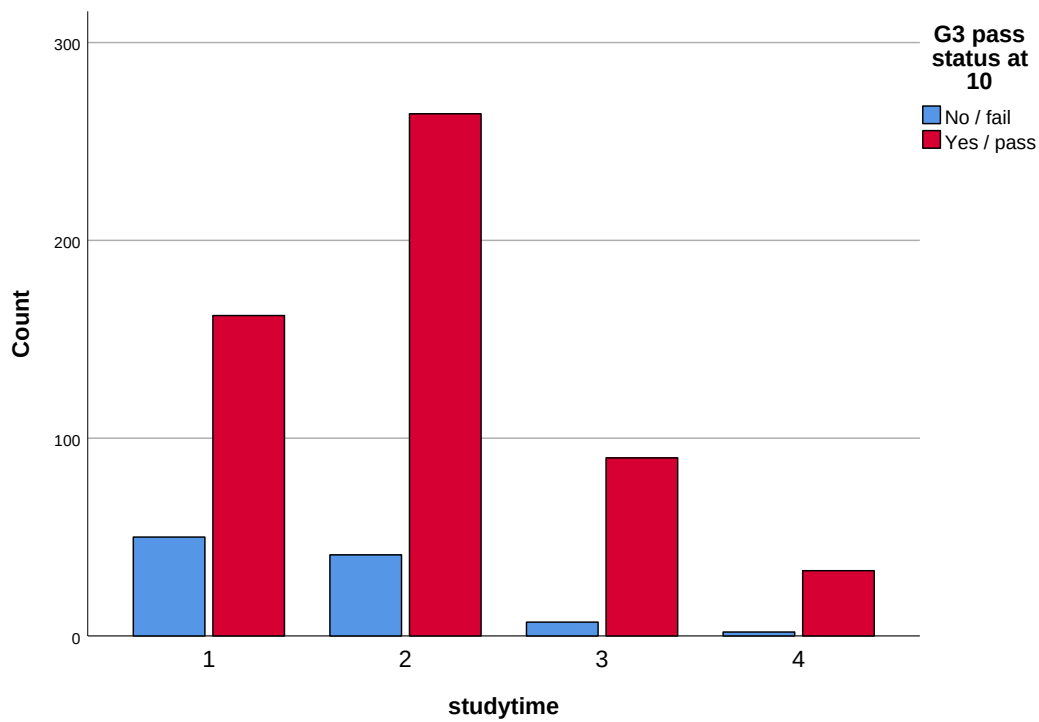
The Mantel-Haenszel common odds ratio estimate is asymptotically normally distributed under the common odds ratio of 1.000 assumption. So is the natural log of the estimate.

Graph

Mantel-Haenszel common-effect test
Sex by final pass, stratified by study time

Notes

Output Created		16-JUL-2026 14:42:32
Comments		
Input	Data	D:\DATA ANALYSIS\ Chi Square and Categorical Data Tests\Mantel Haenszel Test\dataset.csv
	Active Dataset	MantelHaenszelTestData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /BAR(GROUPED) =COUNT BY studytime BY pass3.
Resources	Processor Time	00:00:00.41
	Elapsed Time	00:00:00.44



Mantel-Haenszel common-effect test
Sex by final pass, stratified by study time

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MANTEL-HAENSZEL COMMON ODDS-RATIO TEST
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Formula:  $X^2_{MH} = [\sum_h(a_h - E_h)]^2 / \sum_h \text{Var}(a_h)$ ;  $OR_{MH} = \sum(a_{hd_h}/n_h) / \sum(b_{hc_h}/n_h)$ 
Variables: sex, G3 >= 10, studytime
ci_high = 1.254189408682497
ci_low = 0.5101770460213892
common_odds_ratio = 0.7999116499170076
degrees_of_freedom = 1
mantel_haenszel_statistic = 0.9332564901051987
p_value = 0.33401815539707624
Cross-check status: pass
=====
=====
```