

# Package ‘contingencytables’

March 14, 2024

**Title** Statistical Analysis of Contingency Tables

**Version** 3.0.0

**Description** Provides functions to perform statistical inference of data organized in contingency tables. This package is a companion to the “Statistical Analysis of Contingency Tables” book by Fagerland et al. <ISBN 9781466588172>.

**License** GPL-3

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<https://ocbe-uio.github.io/contingencytables/>

**BugReports** <https://github.com/ocbe-uio/contingencytables/issues>

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---

<code>.onAttach</code>	<i>Prints welcome message on package load</i>
------------------------	---

---

### Description

Prints package version number and welcome message on package load

### Usage

```
.onAttach(libname, pkgname)
```

### Arguments

<code>libname</code>	library location. See <code>?base::.onAttach</code> for details
<code>pkgname</code>	package name. See <code>?base::.onAttach</code> for details

---

Adjusted_inv_sinh_CI_OR_2x2	<i>The adjusted inverse hyperbolic sine confidence interval for the odds ratio</i>
-----------------------------	--

---

### Description

The adjusted inverse hyperbolic sine confidence interval for the odds ratio.

Described in Chapter 4 "The 2x2 Table"

### Usage

```
Adjusted_inv_sinh_CI_OR_2x2(n, psi1 = 0.45, psi2 = 0.25, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 2x2 matrix)
psi1	pseudo-frequency (should be > 0)
psi2	pseudo-frequency (should be > 0)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Adjusted_inv_sinh_CI_OR_2x2(lampasona_2013)
Adjusted_inv_sinh_CI_OR_2x2(ritland_2007)
```

---

Adjusted\_inv\_sinh\_CI\_ratio\_2x2

*The adjusted inverse hyperbolic sine confidence interval for the ratio of probabilities*

---

**Description**

The adjusted inverse hyperbolic sine confidence interval for the ratio of probabilities  
Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Adjusted_inv_sinh_CI_ratio_2x2(
  n,
  psi1 = 0,
  psi2 = 0,
  psi3 = 0,
  psi4 = 1,
  alpha = 0.05
)
```

**Arguments**

n	the observed counts (a 2x2 matrix)
psi1	pseudo-frequency
psi2	pseudo-frequency
psi3	pseudo-frequency
psi4	pseudo-frequency
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Adjusted_inv_sinh_CI_ratio_2x2(perondi_2004)
Adjusted_inv_sinh_CI_ratio_2x2(ritland_2007)
```

---

Adjusted\_log\_CI\_2x2    *The adjusted log confidence interval for the ratio of probabilities*

---

**Description**

The adjusted log confidence interval for the ratio of probabilities

Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Adjusted_log_CI_2x2(n, alpha = 0.05)
```

**Arguments**

<code>n</code>	the observed counts (a 2x2 matrix)
<code>alpha</code>	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Adjusted_log_CI_2x2(perondi_2004)
Adjusted_log_CI_2x2(ritland_2007)
```



---

AgrestiCaffo\_CI\_2x2    *The Agresti-Caffo confidence interval for the difference between probabilities*

---

**Description**

The Agresti-Caffo confidence interval for the difference between probabilities  
Described in Chapter 4 "The 2x2 Table"

**Usage**

```
AgrestiCaffo_CI_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
AgrestiCaffo_CI_2x2(perondi_2004)
AgrestiCaffo_CI_2x2(ritland_2007)
```

---

AgrestiCoull\_CI\_1x2    *The Agresti-Coull confidence interval for the binomial probability*

---

**Description**

Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
AgrestiCoull_CI_1x2(X, n, alpha = 0.05)
```

**Arguments**

X                    the number of successes  
n                    the total number of observations  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**References**

Agresti A, Coull BA (1998) Approximate is better than "exact" for interval estimation of binomial proportions. *The American Statistician*; 52:119-126

**See Also**

Wald\_CI\_1x2

**Examples**

```
AgrestiCoull_CI_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
AgrestiCoull_CI_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
AgrestiCoull_CI_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
with(singh_2010["4th", ], AgrestiCoull_CI_1x2(X, n)) # alternative syntax
AgrestiCoull_CI_1x2(ligarden_2010["X"], ligarden_2010["n"])
```

---

Arcsine\_CI\_1x2

*Arcsine confidence interval*

---

**Description**

The Arcsine confidence interval for the binomial probability (with Anscombe variance stabilizing transformation) Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
Arcsine_CI_1x2(X, n, alpha = 0.05)
```

**Arguments**

X	the number of successes
n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**References**

Anscombe FJ (1948) The transformation of Poisson, binomial and negative binomial data. *Biometrika*; 35:246-254

### Examples

```
Arcsine_CI_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
Arcsine_CI_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
Arcsine_CI_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
with(singh_2010["4th", ], Arcsine_CI_1x2(X, n)) # alternative syntax
Arcsine_CI_1x2(ligarden_2010["X"], ligarden_2010["n"])
```

---

BaptistaPike\_exact\_conditional\_CI\_2x2

*The Baptista-Pike exact conditional confidence interval for the odds ratio*

---

### Description

The Baptista-Pike exact conditional confidence interval for the odds ratio

Described in Chapter 4 "The 2x2 Table"

### Usage

```
BaptistaPike_exact_conditional_CI_2x2(n, alpha = 0.05)
```

### Arguments

n	the observed table (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
BaptistaPike_exact_conditional_CI_2x2(tea)
BaptistaPike_exact_conditional_CI_2x2(perondi_2004)
BaptistaPike_exact_conditional_CI_2x2(lampasona_2013)
BaptistaPike_exact_conditional_CI_2x2(ritland_2007)
```

---

BaptistaPike\_midP\_CI\_2x2

*The Baptista-Pike mid-P confidence interval for the odds ratio*

---

### Description

The Baptista-Pike mid-P confidence interval for the odds ratio  
Described in Chapter 4 "The 2x2 Table"

### Usage

```
BaptistaPike_midP_CI_2x2(n, alpha = 0.05)
```

### Arguments

n	the observed table (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
BaptistaPike_midP_CI_2x2(tea)
BaptistaPike_midP_CI_2x2(perondi_2004)
BaptistaPike_midP_CI_2x2(lampasona_2013)
BaptistaPike_midP_CI_2x2(ritland_2007)
```

---

bentur\_2009

*Airway hyper-responsiveness before and after stem cell transplantation*

---

### Description

Airway hyper-responsiveness before and after stem cell transplantation

### Usage

```
bentur_2009
```

### Format

An object of class `matrix` (inherits from `array`) with 2 rows and 2 columns.

**References**

Bentur et al. (2009)

---

Bhapkar\_test\_paired\_cxc

*The Bhapkar test for marginal homogeneity*

---

**Description**

The Bhapkar test for marginal homogeneity

Described in Chapter 9 "The Paired cxc Table"

**Usage**

Bhapkar\_test\_paired\_cxc(n)

**Arguments**

n                    the observed table (a cxc matrix)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Bhapkar_test_paired_cxc(peterson_2007)
```

---

Blaker\_exact\_CI\_1x2    *The Blaker exact confidence interval*

---

**Description**

The Blaker exact confidence interval for the binomial probability Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
Blaker_exact_CI_1x2(X, n, alpha = 0.05)
```

**Arguments**

X                    the number of successes  
n                    the total number of observations  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**References**

Blaker H (2000) Confidence curves and improved exact confidence intervals for discrete distributions. *The Canadian Journal of Statistics*; 28:783-798

**Examples**

```
Blaker_exact_CI_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
Blaker_exact_CI_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
Blaker_exact_CI_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
with(singh_2010["4th", ], Blaker_exact_CI_1x2(X, n)) # alternative syntax
Blaker_exact_CI_1x2(ligarden_2010["X"], ligarden_2010["n"])
```

---

Blaker\_exact\_test\_1x2 *The Blaker exact test*

---

**Description**

The Blaker exact test for the binomial probability ( $\pi$ )  $H_0: \pi = \pi_0$  vs  $H_A: \pi \neq \pi_0$  (two-sided)  
Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
Blaker_exact_test_1x2(X, n, pi0)
```

**Arguments**

X	the number of successes
n	the total number of observations
pi0	a given probability

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**References**

Blaker H (2000) Confidence curves and improved exact confidence intervals for discrete distributions. *The Canadian Journal of Statistics*; 28:783-798

**Examples**

```
Blaker_exact_test_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"], pi0 = 0.513)
Blaker_exact_test_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"], pi0 = 0.513)
Blaker_exact_test_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"], pi0 = 0.513)
Blaker_exact_test_1x2(singh_2010["4th", "X"], singh_2010["4th", "n"], pi0 = 0.513)
Blaker_exact_test_1x2(ligarden_2010["X"], ligarden_2010["n"], pi0 = 0.5)
```

---

Blaker\_midP\_CI\_1x2      *The Blaker mid-P confidence interval for the binomial probability*

---

**Description**

The Blaker mid-P confidence interval for the binomial probability Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
Blaker_midP_CI_1x2(X, n, alpha = 0.05)
```

**Arguments**

X	the number of successes
n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**References**

Blaker H (2000) Confidence curves and improved exact confidence intervals for discrete distributions. *The Canadian Journal of Statistics*; 28:783-798

**Examples**

```
Blaker_midP_CI_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
Blaker_midP_CI_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
Blaker_midP_CI_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
with(singh_2010["4th", ], Blaker_midP_CI_1x2(X, n)) # alternative syntax
Blaker_midP_CI_1x2(ligarden_2010["X"], ligarden_2010["n"])
```

---

Blaker\_midP\_test\_1x2 *The Blaker mid-P test*

---

### Description

The Blaker mid-P test for the binomial probability ( $\pi$ )  $H_0: \pi = \pi_0$  vs  $H_A: \pi \neq \pi_0$  (two-sided)  
Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

### Usage

```
Blaker_midP_test_1x2(X, n, pi0)
```

### Arguments

X	the number of successes
n	the total number of observations
pi0	a given probability

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### References

Blaker H (2000) Confidence curves and improved exact confidence intervals for discrete distributions. *The Canadian Journal of Statistics*; 28:783-798

### Examples

```
Blaker_midP_test_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"], pi0 = 0.513)
Blaker_midP_test_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"], pi0 = 0.513)
Blaker_midP_test_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"], pi0 = 0.513)
Blaker_midP_test_1x2(singh_2010["4th", "X"], singh_2010["4th", "n"], pi0 = 0.513)
Blaker_midP_test_1x2(ligarden_2010["X"], ligarden_2010["n"], pi0 = 0.5)
```

---

BonettPrice\_hybrid\_Wilson\_score\_CI\_CC\_paired\_2x2

*The Bonett-Price hybrid Wilson score confidence interval for the ratio of paired probabilities*

---

### Description

The Bonett-Price hybrid Wilson score confidence interval for the ratio of paired probabilities with continuity correction

Described in Chapter 8 "The Paired 2x2 Table"



**Usage**

```
BonettPrice_hybrid_Wilson_score_CI_CC_paired_2x2(n, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
BonettPrice_hybrid_Wilson_score_CI_CC_paired_2x2(bentur_2009)
BonettPrice_hybrid_Wilson_score_CI_CC_paired_2x2(cavo_2012)
```

---

BonettPrice\_hybrid\_Wilson\_score\_CI\_paired\_2x2

*The Bonett-Price hybrid Wilson score confidence interval for the ratio of paired probabilities*

---

**Description**

The Bonett-Price hybrid Wilson score confidence interval for the ratio of paired probabilities  
Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
BonettPrice_hybrid_Wilson_score_CI_paired_2x2(n, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
BonettPrice_hybrid_Wilson_score_CI_paired_2x2(bentur_2009)
BonettPrice_hybrid_Wilson_score_CI_paired_2x2(cavo_2012)
```

---

Bonferroni\_type\_CIs\_paired\_cxc

*Bonferroni-type confidence intervals for differences of marginal probabilities*

---

### Description

Bonferroni-type confidence intervals for differences of marginal probabilities  
Described in Chapter 9 "The Paired kxk Table"

### Usage

Bonferroni\_type\_CIs\_paired\_cxc(n, alpha = 0.05)

### Arguments

n                    the observed table (a cxc matrix)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

Bonferroni\_type\_CIs\_paired\_cxc(peterson\_2007)

---

Bonferroni\_type\_CIs\_rxc

*The Bonferroni-type simultaneous confidence intervals for the differences  $\pi_{1li} - \pi_{1lj}$*

---

### Description

The Bonferroni-type simultaneous confidence intervals for the differences  $\pi_{1li} - \pi_{1lj}$   
Described in Chapter 7 "The rxc Table"

### Usage

Bonferroni\_type\_CIs\_rxc(n, alpha = 0.05)

### Arguments

n                    the observed counts (an rx2 vector)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Bonferroni_type_CIs_rxc(table_7.3)
```

---

Brant_test_2xc	<i>The Brant test for the proportional odds assumption</i>
----------------	--

---

**Description**

The Brant test for the proportional odds assumption  
Described in Chapter 6 "The Ordered 2xc Table"

**Usage**

```
Brant_test_2xc(n)
```

**Arguments**

n                    the observed table (a 2xc matrix)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Brant_test_2xc(fontanella_2008)  
Brant_test_2xc(lydersen_2012a)
```

---

```
BreslowDay_homogeneity_test_stratified_2x2
```

*The Breslow-Day test of homogeneity of odds ratios over strata*

---

### Description

The Breslow-Day test of homogeneity of odds ratios over strata with Tarone correction  
Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

### Usage

```
BreslowDay_homogeneity_test_stratified_2x2(n)
```

### Arguments

n                    the observed table (a 2x2xk matrix, where k is the number of strata)

### Value

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
BreslowDay_homogeneity_test_stratified_2x2(doll_hill_1950)
BreslowDay_homogeneity_test_stratified_2x2(hine_1989)
```

---

```
calculate_limit_lower    Calculate the lower limit of a confidence interval
```

---

### Description

Calculate the lower limit of a confidence interval

### Usage

```
calculate_limit_lower(...)
```

### Arguments

...                    arguments passed to methods

### Note

This function has little use to the user, it is exported so that it can be used by `stats::uniroot()`.

---

calculate\_limit\_upper *Calculate the upper limit of a confidence interval*

---

**Description**

Calculate the upper limit of a confidence interval

**Usage**

```
calculate_limit_upper(...)
```

**Arguments**

... arguments passed to methods

**Note**

This function has little use to the user, it is exported so that it can be used by `stats::uniroot()`.

---

cavo\_2012 *Complete response before and after consolidation therapy*

---

**Description**

Complete response before and after consolidation therapy

**Usage**

```
cavo_2012
```

**Format**

An object of class `matrix` (inherits from `array`) with 2 rows and 2 columns.

**References**

Cavo et al. (2012)

---

Chacko_test_1xc	<i>The Chacko test for order-restriction</i>
-----------------	--

---

**Description**

Described in Chapter 3, "The 1xc Table and the Multinomial Distribution", Chacko (1966) derived a test based on the Pearson chi-square statistic to test the hypothesis that the categories of a multinomial variable with  $c$  possible outcomes have a natural ordering. The test statistic is asymptotically chi-squared distributed.

**Usage**

```
Chacko_test_1xc(n)
```

**Arguments**

`n` the observed counts (a 1xc vector, where  $c$  is the number of categories)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**References**

Chacko, V. J. (1966). Modified chi-square test for ordered alternatives. *Sankhyā: The Indian Journal of Statistics, Series B*, 185-190.

Fagerland MW, Lydersen S, Laake P (2017) *Statistical Analysis of Contingency Tables*. Chapman & Hall/CRC, Boca Raton, FL.

**Examples**

```
Chacko_test_1xc(hypothetical)
```

---

chap1	<i>Chapter 1: Introduction</i>
-------	--------------------------------

---

**Description**

There are no functions for Chapter 1 (Introduction), only from Chapters 2 to 10.

**References**

- Fagerland MW, Lydersen S, Laake P (2017) *Statistical Analysis of Contingency Tables*. Chapman & Hall/CRC, Boca Raton, FL
- <https://contingencytables.com/>
- <https://www.routledge.com/Statistical-Analysis-of-Contingency-Tables/Fagerland-Lydersen-Laake/p/book/978146658>

**Description**

These are the functions related to chapter 10:

1. BreslowDay\_homogeneity\_test\_stratified\_2x2
2. CochranMantelHaenszel\_test\_stratified\_2x2
3. Cochran\_Q\_test\_stratified\_2x2
4. InverseVariance\_estimate\_stratified\_2x2
5. ML\_estimates\_and\_CIs\_stratified\_2x2
6. MantelHaenszel\_estimate\_stratified\_2x2
7. Pearson\_LR\_homogeneity\_test\_stratified\_2x2
8. Pearson\_LR\_test\_common\_effect\_stratified\_2x2
9. Peto\_homogeneity\_test\_stratified\_2x2
10. Peto\_OR\_estimate\_stratified\_2x2
11. RBG\_test\_and\_CI\_stratified\_2x2
12. Wald\_test\_and\_CI\_common\_diff\_stratified\_2x2
13. Wald\_test\_and\_CI\_common\_ratio\_stratified\_2x2
14. Woolf\_test\_and\_CI\_stratified\_2x2
15. stratified\_2x2\_tables

**Note**

You can also print the list above with `list_functions(10)`.

**References**

- Fagerland MW, Lydersen S, Laake P (2017) Statistical Analysis of Contingency Tables. Chapman & Hall/CRC, Boca Raton, FL
- <https://contingencytables.com/>
- <https://www.routledge.com/Statistical-Analysis-of-Contingency-Tables/Fagerland-Lydersen-Laake/p/book/978146658>

**Description**

These are the functions related to chapter 2:

1. AgrestiCoull\_CI\_1x2
2. Arcsine\_CI\_1x2
3. Wald\_CI\_1x2
4. Blaker\_exact\_CI\_1x2
5. Blaker\_exact\_test\_1x2
6. Blaker\_midP\_CI\_1x2
7. Blaker\_midP\_test\_1x2
8. ClopperPearson\_exact\_CI\_1x2
9. ClopperPearson\_midP\_CI\_1x2
10. Exact\_binomial\_test\_1x2
11. Jeffreys\_CI\_1x2
12. LR\_CI\_1x2
13. LR\_test\_1x2
14. MidP\_binomial\_test\_1x2
15. Score\_test\_1x2
16. Score\_test\_CC\_1x2
17. Wald\_CI\_CC\_1x2
18. Wilson\_score\_CI\_1x2
19. Wilson\_score\_CI\_CC\_1x2
20. the\_1x2\_table\_CIs
21. Wald\_test\_1x2
22. Wald\_test\_CC\_1x2
23. the\_1x2\_table\_tests

**Note**

You can also print the list above with `list_functions(2)`.

**References**

- Fagerland MW, Lydersen S, Laake P (2017) Statistical Analysis of Contingency Tables. Chapman & Hall/CRC, Boca Raton, FL
- <https://contingencytables.com/>
- <https://www.routledge.com/Statistical-Analysis-of-Contingency-Tables/Fagerland-Lydersen-Laake/p/book/978146658>



**Description**

These are the functions related to chapter 3:

1. Chacko\_test\_1xc
2. Exact\_multinomial\_test\_1xc
3. Gold\_Wald\_CIs\_1xc
4. Goodman\_Wald\_CIs\_1xc
5. Goodman\_Wald\_CIs\_for\_diffs\_1xc
6. Goodman\_Wilson\_score\_CIs\_1xc
7. LR\_test\_1xc
8. MidP\_multinomial\_test\_1xc
9. Pearson\_chi\_squared\_test\_1xc
10. QuesenberryHurst\_Wilson\_score\_CIs\_1xc
11. the\_1xc\_table\_CIs
12. the\_1xc\_table\_tests

**Note**

You can also print the list above with `list_functions(3)`.

**References**

- Fagerland MW, Lydersen S, Laake P (2017) Statistical Analysis of Contingency Tables. Chapman & Hall/CRC, Boca Raton, FL
- <https://contingencytables.com/>
- <https://www.routledge.com/Statistical-Analysis-of-Contingency-Tables/Fagerland-Lydersen-Laake/p/book/978146658>

**Description**

These are the functions related to chapter 4:

1. Adjusted\_inv\_sinh\_CI\_OR\_2x2
2. Adjusted\_inv\_sinh\_CI\_ratio\_2x2
3. Adjusted\_log\_CI\_2x2
4. AgrestiCaffo\_CI\_2x2
5. Wald\_CI\_2x2
6. BaptistaPike\_exact\_conditional\_CI\_2x2
7. BaptistaPike\_midP\_CI\_2x2
8. Cornfield\_exact\_conditional\_CI\_2x2
9. Cornfield\_midP\_CI\_2x2
10. Fisher\_exact\_test\_2x2
11. Exact\_unconditional\_test\_2x2
12. Fisher\_midP\_test\_2x2
13. Gart\_adjusted\_logit\_CI\_2x2
14. Independence\_smoothed\_logit\_CI\_2x2
15. Inv\_sinh\_CI\_OR\_2x2
16. Inv\_sinh\_CI\_ratio\_2x2
17. Katz\_log\_CI\_2x2
18. Koopman\_asymptotic\_score\_CI\_2x2
19. LR\_test\_2x2
20. Mee\_asymptotic\_score\_CI\_2x2
21. MiettinenNurminen\_asymptotic\_score\_CI\_difference\_2x2
22. MiettinenNurminen\_asymptotic\_score\_CI\_OR\_2x2
23. MiettinenNurminen\_asymptotic\_score\_CI\_ratio\_2x2
24. MOVER\_R\_Wilson\_CI\_OR\_2x2
25. MOVER\_R\_Wilson\_CI\_ratio\_2x2
26. Newcombe\_hybrid\_score\_CI\_2x2
27. Pearson\_chi\_squared\_test\_2x2
28. Pearson\_chi\_squared\_test\_CC\_2x2
29. PriceBonett\_approximate\_Bayes\_CI\_2x2
30. Wald\_CI\_CC\_2x2
31. Woolf\_logit\_CI\_2x2

32. `Uncorrected_asymptotic_score_CI_2x2`
33. `Z_unpooled_test_2x2`
34. `the_2x2_table_CIs_difference`
35. `the_2x2_table_CIs_OR`
36. `the_2x2_table_CIs_ratio`
37. `the_2x2_table_tests`

**Note**

You can also print the list above with `list_functions(4)`.

**References**

- Fagerland MW, Lydersen S, Laake P (2017) *Statistical Analysis of Contingency Tables*. Chapman & Hall/CRC, Boca Raton, FL
- <https://contingencytables.com/>
- <https://www.routledge.com/Statistical-Analysis-of-Contingency-Tables/Fagerland-Lydersen-Laake/p/book/978146658>

**Description**

These are the functions related to chapter 5:

1. `CochranArmitage_CI_rx2`
2. `CochranArmitage_exact_cond_midP_tests_rx2`
3. `CochranArmitage_MH_tests_rx2`
4. `Exact_cond_midP_unspecific_ordering_rx2`
5. `Pearson_LR_tests_unspecific_ordering_rx2`
6. `the_rx2_table`
7. `Trend_estimate_CI_tests_rx2`

**Note**

You can also print the list above with `list_functions(5)`.

**References**

- Fagerland MW, Lydersen S, Laake P (2017) *Statistical Analysis of Contingency Tables*. Chapman & Hall/CRC, Boca Raton, FL
- <https://contingencytables.com/>
- <https://www.routledge.com/Statistical-Analysis-of-Contingency-Tables/Fagerland-Lydersen-Laake/p/book/978146658>

**Description**

These are the functions related to chapter 6:

1. `Brant_test_2xc`
2. `Cumulative_models_for_2xc`
3. `Exact_cond_midP_linear_rank_tests_2xc`
4. `ClopperPearson_exact_CI_1x2_beta_version`
5. `Exact_cond_midP_unspecific_ordering_rx2`
6. `MantelHaenszel_test_2xc`
7. `Pearson_LR_tests_cum_OR_2xc`
8. `Score_test_for_effect_in_the_probit_model_2xc`
9. `the_2xc_table`

**Note**

You can also print the list above with `list_functions(6)`.

**References**

- Fagerland MW, Lydersen S, Laake P (2017) Statistical Analysis of Contingency Tables. Chapman & Hall/CRC, Boca Raton, FL
- <https://contingencytables.com/>
- <https://www.routledge.com/Statistical-Analysis-of-Contingency-Tables/Fagerland-Lydersen-Laake/p/book/978146658>

**Description**

These are the functions related to chapter 7:

1. `Bonferroni_type_CIs_rxc`
2. `Cumulative_models_for_rxc`
3. `Exact_cond_midP_tests_rxc`
4. `FisherFreemanHalton_asymptotic_test_rxc`
5. `gamma_coefficient_rxc_bca`
6. `gamma_coefficient_rxc`

7. JonckheereTerpstra\_test\_rxc
8. Kendalls\_tau\_b\_rxc
9. Kendalls\_tau\_b\_rxc\_bca
10. KruskalWallis\_asymptotic\_test\_rxc
11. linear\_by\_linear\_test\_rxc
12. Pearson\_correlation\_coefficient\_rxc
13. Pearson\_correlation\_coefficient\_rxc\_bca
14. Pearson\_LR\_tests\_rxc
15. Pearson\_residuals\_rxc
16. Scheffe\_type\_CIs\_rxc
17. Spearman\_correlation\_coefficient\_rxc
18. Spearman\_correlation\_coefficient\_rxc\_bca
19. the\_rxc\_table

**Note**

You can also print the list above with `list_functions(7)`.

**References**

- Fagerland MW, Lydersen S, Laake P (2017) Statistical Analysis of Contingency Tables. Chapman & Hall/CRC, Boca Raton, FL
- <https://contingencytables.com/>
- <https://www.routledge.com/Statistical-Analysis-of-Contingency-Tables/Fagerland-Lydersen-Laake/p/book/978146658>

**Description**

These are the functions related to chapter 8:

1. BonettPrice\_hybrid\_Wilson\_score\_CI\_CC\_paired\_2x2
2. BonettPrice\_hybrid\_Wilson\_score\_CI\_paired\_2x2
3. ClopperPearson\_exact\_CI\_1x2\_beta\_version
4. McNemar\_asymptotic\_test\_CC\_paired\_2x2
5. McNemar\_asymptotic\_test\_paired\_2x2
6. McNemar\_exact\_cond\_test\_paired\_2x2
7. McNemar\_exact\_unconditional\_test\_paired\_2x2
8. McNemar\_midP\_test\_paired\_2x2
9. Tang\_asymptotic\_score\_CI\_paired\_2x2

10. Tango\_asymptotic\_score\_CI\_paired\_2x2
11. MOVER\_Wilson\_score\_CI\_paired\_2x2
12. Newcombe\_square\_and\_add\_CI\_paired\_2x2
13. Transformed\_Blaker\_exact\_CI\_paired\_2x2
14. Transformed\_Clopper\_Pearson\_exact\_CI\_paired\_2x2
15. Transformed\_Clopper\_Pearson\_midP\_CI\_paired\_2x2
16. Transformed\_Wilson\_score\_CI\_paired\_2x2
17. Wald\_CI\_diff\_paired\_2x2
18. Wald\_CI\_diff\_CC\_paired\_2x2
19. Wald\_CI\_AgrestiMin\_paired\_2x2
20. Wald\_CI\_BonettPrice\_paired\_2x2
21. Wald\_CI\_OR\_Laplace\_paired\_2x2
22. Wald\_CI\_OR\_paired\_2x2
23. Wald\_CI\_ratio\_paired\_2x2
24. the\_paired\_2x2\_table\_CIs\_difference
25. the\_paired\_2x2\_table\_CIs\_OR
26. the\_paired\_2x2\_table\_CIs\_ratio
27. the\_paired\_2x2\_table\_tests

### Note

You can also print the list above with `list_functions(8)`.

### References

- Fagerland MW, Lydersen S, Laake P (2017) Statistical Analysis of Contingency Tables. Chapman & Hall/CRC, Boca Raton, FL
- <https://contingencytables.com/>
- <https://www.routledge.com/Statistical-Analysis-of-Contingency-Tables/Fagerland-Lydersen-Laake/p/book/978146658>

### Description

These are the functions related to chapter 9:

1. Bhapkar\_test\_paired\_cxc
2. Bonferroni\_type\_CIs\_paired\_cxc
3. FleissEveritt\_test\_paired\_cxc
4. FleissLevinPaik\_test\_paired\_cxc

5. McNemarBowker\_test\_paired\_cxc
6. Scheffe\_type\_CIs\_paired\_cxc
7. Score\_test\_and\_CI\_marginal\_mean\_scores\_paired\_cxc
8. Stuart\_test\_paired\_cxc
9. Wald\_test\_and\_CI\_marginal\_mean\_ranks\_paired\_cxc
10. Wald\_test\_and\_CI\_marginal\_mean\_scores\_paired\_cxc
11. the\_paired\_cxc\_table\_nominal
12. the\_paired\_cxc\_table\_ordinal

### Note

You can also print the list above with `list_functions(9)`.

### References

- Fagerland MW, Lydersen S, Laake P (2017) Statistical Analysis of Contingency Tables. Chapman & Hall/CRC, Boca Raton, FL
- <https://contingencytables.com/>
- <https://www.routledge.com/Statistical-Analysis-of-Contingency-Tables/Fagerland-Lydersen-Laake/p/book/978146658>

---

ClopperPearson\_exact\_CI\_1x2

*The Clopper-Pearson exact confidence interval*

---

### Description

The Clopper-Pearson exact confidence interval for the binomial probability Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

### Usage

`ClopperPearson_exact_CI_1x2(X, n, alpha = 0.05)`

### Arguments

<code>X</code>	the number of successes
<code>n</code>	the total number of observations
<code>alpha</code>	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```

ClopperPearson_exact_CI_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
ClopperPearson_exact_CI_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
ClopperPearson_exact_CI_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
with(singh_2010["4th", ], ClopperPearson_exact_CI_1x2(X, n)) # alternative syntax
ClopperPearson_exact_CI_1x2(ligarden_2010["X"], ligarden_2010["n"])

```

---

ClopperPearson\_exact\_CI\_1x2\_beta\_version

*The Clopper-Pearson exact confidence interval for the binomial probability (beta version)*

---

**Description**

The Clopper-Pearson exact confidence interval for the binomial probability (defined via the beta distribution)

Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
ClopperPearson_exact_CI_1x2_beta_version(X, n, alpha = 0.05)
```

**Arguments**

X	the number of successes
n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**References**

Brown LD, Cai T, DasGupta A (2001) Interval estimation for a binomial proportion. *Statistical Science*; 16:101-133

**See Also**

ClopperPearson\_exact\_CI\_1x2



**Examples**

```
ClopperPearson_exact_CI_1x2_beta_version(singh_2010["1st", "X"], singh_2010["1st", "n"])
ClopperPearson_exact_CI_1x2_beta_version(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
ClopperPearson_exact_CI_1x2_beta_version(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
with(singh_2010["4th", ], ClopperPearson_exact_CI_1x2_beta_version(X, n)) # alternative syntax
ClopperPearson_exact_CI_1x2_beta_version(ligarden_2010["X"], ligarden_2010["n"])
```

---

ClopperPearson\_midP\_CI\_1x2

*The Clopper-Pearson mid-P confidence interval*

---

**Description**

The Clopper-Pearson mid-P confidence interval for the binomial probability Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
ClopperPearson_midP_CI_1x2(X, n, alpha = 0.05)
```

**Arguments**

X	the number of successes
n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
ClopperPearson_midP_CI_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
ClopperPearson_midP_CI_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
ClopperPearson_midP_CI_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
with(singh_2010["4th", ], ClopperPearson_midP_CI_1x2(X, n)) # alternative syntax
ClopperPearson_midP_CI_1x2(ligarden_2010["X"], ligarden_2010["n"])
```

---

CochranArmitage\_CI\_rx2

*The Cochran-Armitage confidence interval for trend in the linear model*

---

### Description

The Cochran-Armitage confidence interval for trend in the linear model  
Described in Chapter 5 "The Ordered rx2 Table"

### Usage

```
CochranArmitage_CI_rx2(n, a = seq_len(nrow(n)), alpha = 0.05)
```

### Arguments

n	the observed counts (an rx2 matrix)
a	scores assigned to the rows
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
CochranArmitage_CI_rx2(mills_graubard_1987, c(1, 2, 3, 4, 5))
CochranArmitage_CI_rx2(indredavik_2008, c(1, 2, 3, 4, 5))
```

---

CochranArmitage\_exact\_cond\_midP\_tests\_rx2

*The Cochran-Armitage exact conditional and mid-P tests*

---

### Description

The Cochran-Armitage exact conditional and mid-P tests  
Described in Chapter 5 "The Ordered rx2 Table"

### Usage

```
CochranArmitage_exact_cond_midP_tests_rx2(n, a)
```

**Arguments**

n                    the observed counts (an rx2 matrix)  
a                    scores assigned to the rows

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
## Not run:
CochranArmitage_exact_cond_midP_tests_rx2(mills_graubard_1987, c(1, 2, 3, 4, 5))

## End(Not run)
CochranArmitage_exact_cond_midP_tests_rx2(indredavik_2008, c(1, 2, 3, 4, 5))
```

---

CochranArmitage\_MH\_tests\_rx2

*The Cochran-Armitage, modified Cochran-Armitage, and Mantel-Haenszel tests for trend*

---

**Description**

Described in Chapter 5 "The Ordered rx2 Table"

**Usage**

```
CochranArmitage_MH_tests_rx2(n, a)
```

**Arguments**

n                    the observed counts (an rx2 matrix)  
a                    scores assigned to the rows

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
CochranArmitage_MH_tests_rx2(mills_graubard_1987, c(1, 2, 3, 4, 5))
CochranArmitage_MH_tests_rx2(indredavik_2008, c(1, 2, 3, 4, 5))
```

---

CochranMantelHaenszel\_test\_stratified\_2x2

*The Cochran-Mantel-Haenszel test of a common odds ratio*

---

### Description

The Cochran-Mantel-Haenszel test of a common odds ratio

Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

### Usage

CochranMantelHaenszel\_test\_stratified\_2x2(n)

### Arguments

n                    the observed table (a 2x2xk matrix, where k is the number of strata)

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
CochranMantelHaenszel_test_stratified_2x2(doll_hill_1950)
CochranMantelHaenszel_test_stratified_2x2(hine_1989)
```

---

Cochran\_Q\_test\_stratified\_2x2

*The Cochran Q test of homogeneity of effects over strata*

---

### Description

The Cochran Q test of homogeneity of effects over strata

Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

### Usage

Cochran\_Q\_test\_stratified\_2x2(n, link = "linear", estimatetype = "MH")

### Arguments

n                    the observed table (a 2x2xk matrix, where k is the number of strata)

link                the link function ('linear', 'log', or 'logit')

estimatetype      Mantel-Haenszel or inverse variance estimate ('MH' or 'IV')

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Cochran_Q_test_stratified_2x2(doll_hill_1950)
Cochran_Q_test_stratified_2x2(hine_1989)
```

---

contingencytables      *Statistical Analysis of Contingency tables*

---

**Description**

Statistical Analysis of Contingency Tables is an invaluable tool for statistical inference in contingency tables. It covers effect size estimation, confidence intervals, and hypothesis tests for the binomial and the multinomial distributions, unpaired and paired 2x2 tables, rxc tables, ordered rx2 and 2xc tables, paired cxc tables, and stratified tables. This package provides functions that accompany the "Statistical Analysis of Contingency Tables" book by Fagerland et. al. <ISBN 9781466588172>.

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**References**

- Fagerland MW, Lydersen S, Laake P (2017) Statistical Analysis of Contingency Tables. Chapman & Hall/CRC, Boca Raton, FL
- <https://contingencytables.com/>
- <https://www.routledge.com/Statistical-Analysis-of-Contingency-Tables/Fagerland-Lydersen-Laake/p/book/9781466588172>
- <https://ocbe-uio.github.io/contingencytables/>

**See Also**

[print.contingencytables\\_result](#) to read about printing alternatives.

contingencytables\_result  
*contingencytables\_result class*

---

**Description**

A class for output of the main functions on this package

**Usage**

```
contingencytables_result(statistics, print_structure)
```

**Arguments**

statistics      Either a value or a list of values to be filled by print\_format  
print\_structure      Either a string of a function instructing how to print the values from statistics

**Value**

an object of class contingencytables\_result

**Author(s)**

Waldir Leoncio

**See Also**

[print.contingencytables\\_result](#)

---

Cornfield\_exact\_conditional\_CI\_2x2  
*The Cornfield exact conditional confidence interval for the odds ratio*

---

**Description**

The Cornfield exact conditional confidence interval for the odds ratio  
Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Cornfield_exact_conditional_CI_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed table (a 2x2 matrix)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Cornfield_exact_conditional_CI_2x2(tea)  
Cornfield_exact_conditional_CI_2x2(perondi_2004)  
Cornfield_exact_conditional_CI_2x2(lampasona_2013)  
Cornfield_exact_conditional_CI_2x2(ritland_2007)
```

---

Cornfield\_midP\_CI\_2x2 *The Cornfield mid-P confidence interval for the odds ratio*

---

**Description**

The Cornfield mid-P confidence interval for the odds ratio  
Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Cornfield_midP_CI_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed table (a 2x2 matrix)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Cornfield_midP_CI_2x2(tea)  
Cornfield_midP_CI_2x2(perondi_2004)  
Cornfield_midP_CI_2x2(lampasona_2013)  
Cornfield_midP_CI_2x2(ritland_2007)
```

---

Cumulative\_models\_for\_2xc

*Cumulative logit and probit models*

---

### Description

Cumulative logit and probit models

Described in Chapter 6 "The Ordered 2xc Table"

### Usage

```
Cumulative_models_for_2xc(n, linkfunction = "logit", alpha = 0.05)
```

### Arguments

n	the observed table (a 2xc matrix) with at least 3 columns
linkfunction	either "logit" or "probit"
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
Cumulative_models_for_2xc(fontanella_2008)
Cumulative_models_for_2xc(lydersen_2012a)
```

---

Cumulative\_models\_for\_rxc

*Cumulative logit and probit models*

---

### Description

Cumulative logit and probit models

Described in Chapter 7 "The rxc Table"

### Usage

```
Cumulative_models_for_rxc(n, linkfunction = "logit", alpha = 0.05)
```



**Arguments**

n	the observed table (an rxc matrix) with at least 3 columns
linkfunction	either "logit" or "probit"
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Cumulative_models_for_rxc(table_7.5)
Cumulative_models_for_rxc(table_7.6)
```

---

doll_hill_1950	<i>Smoking and lung cancer</i>
----------------	--------------------------------

---

**Description**

Smoking and lung cancer

**Usage**

```
doll_hill_1950
```

**Format**

An object of class array of dimension 2 x 2 x 2.

**References**

Doll and Hill (1950)

---

Exact\_binomial\_test\_1x2

*The exact binomial test for the binomial probability (pi)*

---

### Description

$H_0$   $\pi = \pi_0$  vs  $H_A$ :  $\pi \neq \pi_0$  (two-sided)

Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

### Usage

Exact\_binomial\_test\_1x2(X, n, pi0)

### Arguments

X	the number of successes
n	the total number of observations
pi0	a given probability

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
Exact_binomial_test_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"], pi0 = 0.513)
Exact_binomial_test_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"], pi0 = 0.513)
Exact_binomial_test_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"], pi0 = 0.513)
Exact_binomial_test_1x2(singh_2010["4th", "X"], singh_2010["4th", "n"], pi0 = 0.513)
Exact_binomial_test_1x2(ligarden_2010["X"], ligarden_2010["n"], pi0 = 0.5)
```

---

Exact\_cond\_midP\_linear\_rank\_tests\_2xc

*Exact conditional and mid-P linear rank tests*

---

### Description

Exact conditional and mid-P linear rank tests

Described in Chapter 6 "The Ordered 2xc Table"

### Usage

Exact\_cond\_midP\_linear\_rank\_tests\_2xc(n, b = 0)

**Arguments**

n                    the observed table (a 2xc matrix)  
 b                    scores assigned to the columns (if b=0, midranks will be used as scores)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Exact_cond_midP_linear_rank_tests_2xc(lydersen_2012a)
## Not run: Exact_cond_midP_linear_rank_tests_2xc(fontanella_2008)
```

---

Exact\_cond\_midP\_tests\_rxc

*Exact conditional and mid-P tests for the rxc table*

---

**Description**

Exact conditional and mid-P tests for the rxc table: the Fisher-Freeman-Halton, Pearson, likelihood ratio, Kruskal-Wallis, linear-by-linear, and Jonckheere-Terpstra tests.

Described in Chapter 7 "The rxc Table"

**Usage**

```
Exact_cond_midP_tests_rxc(n)
```

**Arguments**

n                    the observed counts (an rxc matrix)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Note**

Works only for 3x2 and 3x3 tables

**Examples**

```
Exact_cond_midP_tests_rxc(table_7.3) # a 3x2 table
## Not run:
  Exact_cond_midP_tests_rxc(table_7.6) # a 3x3 table

## End(Not run)
```

---

Exact\_cond\_midP\_unspecific\_ordering\_rx2

*The exact conditional and mid-P tests for unspecific ordering*

---

### Description

The exact conditional and mid-P tests for unspecific ordering. May also be used for 2xc tables, after flipping rows and columns (i.e. if n is a 2xc table, call this function with n' (the transpose of n) as the first argument).

Described in Chapter 5 "The Ordered rx2 Table"

### Usage

```
Exact_cond_midP_unspecific_ordering_rx2(n, direction, statistic = "Pearson")
```

### Arguments

n	the observed counts (an rx2 matrix)
direction	the direction of the success probabilities ("increasing" or "decreasing")
statistic	the Pearson test statistic ("Pearson") or the likelihood ratio test statistic ("LR"). Can also be used for cumulative ORs in 2xc tables with "PearsonCumOR" or "LRCumOR".

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
# Chapter 6: Postoperative nausea (Lydersen et al., 2012a)
n <- t(lydersen_2012a)
Exact_cond_midP_unspecific_ordering_rx2(n, "decreasing")
Exact_cond_midP_unspecific_ordering_rx2(n, "decreasing", "PearsonCumOR")
```

---

Exact\_multinomial\_test\_1xc

*The exact multinomial test for multinomial probabilities*

---

### Description

The exact multinomial test for multinomial probabilities

Described in Chapter 3 "The 1xc Table and the Multinomial Distribution"

**Usage**

```
Exact_multinomial_test_1xc(n, pi0)
```

**Arguments**

n                    the observed counts (a 1xc vector, where c is the number of categories)  
 pi0                  given probabilities (a 1xc vector)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Genotype counts for SNP rs 6498169 in RA patients
Exact_multinomial_test_1xc(n = snp6498169$complete$n, pi0 = snp6498169$complete$pi0)

# subset of 10 patients
Exact_multinomial_test_1xc(n = snp6498169$subset$n, pi0 = snp6498169$subset$pi0)
```

---

Exact\_unconditional\_test\_2x2

*Exact unconditional test for association in 2x2 tables*

---

**Description**

Exact unconditional test for association in 2x2 tables

Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Exact_unconditional_test_2x2(n, statistic = "Pearson", gamma = 1e-04)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)  
 statistic           'Pearson' (Suissa-Shuster test default), 'LR' (likelihood ratio), 'unpooled' (unpooled Z), or 'Fisher' (Fisher-Boschloo test)  
 gamma              parameter for the Berger and Boos procedure (default=0.0001 gamma=0: no adj)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Note**

Somewhat crude code with maximization over a simple partition of the nuisance parameter space into 'num\_pi\_values' equally spaced values (1000, hardcoded). This method could be improved with a better algorithm for the maximization however, it works well for most purposes. `plot()` the results to get an indication of the precision. A refinement of the maximization can be done with a manual restriction of the parameter space.

**Examples**

```
Exact_unconditional_test_2x2(tea)
Exact_unconditional_test_2x2(perondi_2004)
Exact_unconditional_test_2x2(lampasona_2013)
Exact_unconditional_test_2x2(ritland_2007)
```

---

 ezra\_2010

*Floppy eyelid syndrome vs obstructive sleep apnea*


---

**Description**

Floppy eyelid syndrome vs obstructive sleep apnea

**Usage**

```
ezra_2010
```

**Format**

An object of class `matrix` (inherits from `array`) with 2 rows and 2 columns.

**References**

Ezra et al. (2010)

---

 fischer\_1999

*A comparison between serial and retrospective measurements*


---

**Description**

A comparison between serial and retrospective measurements

**Usage**

```
fischer_1999
```

**Format**

An object of class `matrix` (inherits from `array`) with 5 rows and 5 columns.

**References**

Fischer et al. (1999)

---

FisherFreemanHalton\_asymptotic\_test\_rxc

*The Fisher-Freeman-Halton asymptotic test for unordered rxc tables*

---

**Description**

The Fisher-Freeman-Halton asymptotic test for unordered rxc tables

Described in Chapter 7 "The rxc Table"

**Usage**

```
FisherFreemanHalton_asymptotic_test_rxc(n)
```

**Arguments**

n                    the observed counts (an rxc matrix)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Note**

May not give results for all tables, due to overflow

**Examples**

```
FisherFreemanHalton_asymptotic_test_rxc(table_7.3)
```

---

Fisher\_exact\_test\_2x2 *The Fisher exact test for association in 2x2 tables*

---

**Description**

The Fisher exact test for association in 2x2 tables

Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Fisher_exact_test_2x2(n, statistic = "Pearson")
```

**Arguments**

`n` the observed counts (a 2x2 matrix)  
`statistic` 'hypergeometric' (i.e. Fisher-Irwin; default), 'Pearson', or 'LR' (likelihood ratio)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Fisher_exact_test_2x2(tea)
Fisher_exact_test_2x2(perondi_2004)
Fisher_exact_test_2x2(lampasona_2013)
Fisher_exact_test_2x2(ritland_2007)
```

---

Fisher\_midP\_test\_2x2 *The Fisher mid-P test for association in 2x2 tables*

---

**Description**

The Fisher mid-P test for association in 2x2 tables  
 Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Fisher_midP_test_2x2(n, statistic = "hypergeometric")
```

**Arguments**

`n` the observed counts (a 2x2 matrix)  
`statistic` 'hypergeometric' (i.e. Fisher-Irwin default), 'Pearson', or 'LR' (likelihood ratio)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Fisher_midP_test_2x2(tea)
Fisher_midP_test_2x2(perondi_2004)
Fisher_midP_test_2x2(lampasona_2013)
Fisher_midP_test_2x2(ritland_2007)
```



---

`FleissEveritt_test_paired_cxc`*The Fleiss-Everitt version of the Stuart test for marginal homogeneity*

---

**Description**

The Fleiss-Everitt version of the Stuart test for marginal homogeneity  
Described in Chapter 9 "The Paired cxc Table"

**Usage**`FleissEveritt_test_paired_cxc(n)`**Arguments**

`n` the observed table (a cxc matrix)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**`FleissEveritt_test_paired_cxc(fleiss_2003)`

---

`FleissLevinPaik_test_paired_cxc`*The Fleiss-Levin-Paik test for three-level ordinal outcomes*

---

**Description**

The Fleiss-Levin-Paik test for three-level ordinal outcomes  
Described in Chapter 9 "The Paired cxc Table"

**Usage**`FleissLevinPaik_test_paired_cxc(n)`**Arguments**

`n` the observed table (a cxc matrix)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Pretherapy susceptibility of pathogens *without the N / A category*
FleissLevinPaik_test_paired_cxc(peterson_2007[-4, -4])
```

---

fleiss\_2003

*Table 13.6, page 382, of Fleiss et al. (2003)*

---

**Description**

Table 13.6, page 382, of Fleiss et al. (2003)

**Usage**

```
fleiss_2003
```

**Format**

An object of class `matrix` (inherits from `array`) with 3 rows and 3 columns.

**References**

Fleiss et al. (2003)

---

fontanella\_2008

*The Adolescent Placement Study*

---

**Description**

The Adolescent Placement Study

**Usage**

```
fontanella_2008
```

**Format**

An object of class `matrix` (inherits from `array`) with 2 rows and 4 columns.

**References**

Fontanella et al. (2008)

---

gamma\_coefficient\_rxc *The gamma coefficient*

---

**Description**

The gamma coefficient  
 Described in Chapter 7 "The rxc Table"

**Usage**

```
gamma_coefficient_rxc(n)
```

**Arguments**

n                    the observed table (an rxc matrix)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of [base::list\(\)](#). Use the [utils::str\(\)](#) function to see the specific elements returned.

**Examples**

```
gamma_coefficient_rxc(table_7.7)
gamma_coefficient_rxc(table_7.8)
gamma_coefficient_rxc(table_7.9)
```

---

gamma\_coefficient\_rxc\_bca  
*The gamma coefficient with the bias-corrected and accelerated bootstrap confidence interval*

---

**Description**

The gamma coefficient with the bias-corrected and accelerated bootstrap confidence interval  
 Described in Chapter 7 "The rxc Table"

**Usage**

```
gamma_coefficient_rxc_bca(n, nboot = 10000, alpha = 0.05)
```

**Arguments**

n                    the observed table (an rxc matrix)  
 nboot                number of bootstrap samples  
 alpha                the nominal significance level, used to compute a 100(1-alpha) confidence interval

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
set.seed(9623)
gamma_coefficient_rxc_bca(table_7.7, nboot = 800)
gamma_coefficient_rxc_bca(table_7.8, nboot = 200)
## Not run:
  gamma_coefficient_rxc_bca(table_7.9, nboot = 3000, alpha = 0.2)

## End(Not run)
```

---

Gart\_adjusted\_logit\_CI\_2x2

*The Gart adjusted logit confidence interval for the odds ratio*

---

**Description**

The Gart adjusted logit confidence interval for the odds ratio

Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Gart_adjusted_logit_CI_2x2(n, alpha = 0.05)
```

**Arguments**

n	the observed table (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Gart_adjusted_logit_CI_2x2(lampasona_2013)
Gart_adjusted_logit_CI_2x2(ritland_2007)
```

---

Gold_Wald_CIs_1xc	<i>The Gold Wald simultaneous intervals for the multinomial probabilities</i>
-------------------	---

---

**Description**

The Gold Wald simultaneous intervals for the multinomial probabilities (with Scheffe adjustment)  
Described in Chapter 3 "The 1xc Table and the Multinomial Distribution"

**Usage**

```
Gold_Wald_CIs_1xc(n, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 1xc vector, where c is the number of categories)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Gold_Wald_CIs_1xc(n = snp6498169$complete$n)
```

---

Goodman_Wald_CIs_1xc	<i>The Goodman Wald simultaneous intervals for the multinomial probabilities</i>
----------------------	--

---

**Description**

The Goodman Wald simultaneous intervals for the multinomial probabilities  
(with Bonferroni adjustment)  
Described in Chapter 3 "The 1xc Table and the Multinomial Distribution"

**Usage**

```
Goodman_Wald_CIs_1xc(n, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 1xc vector, where c is the number of categories)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Goodman_Wald_CIs_1xc(n = snp6498169$complete$n)
```

---

```
Goodman_Wald_CIs_for_diffs_1xc
```

*The Goodman Wald simultaneous intervals for the differences between the*

---

**Description**

The Goodman Wald simultaneous intervals for the differences between the multinomial probabilities (with Scheffe or Bonferroni adjustment)

Described in Chapter 3 "The 1xc Table and the Multinomial Distribution"

**Usage**

```
Goodman_Wald_CIs_for_diffs_1xc(n, alpha = 0.05, adjustment = "Bonferroni")
```

**Arguments**

<code>n</code>	the observed counts (a 1xc vector, where c is the number of categories)
<code>alpha</code>	the nominal level, e.g. 0.05 for 95% CIs
<code>adjustment</code>	Scheffe or Bonferroni adjustment ("Scheffe" or "Bonferroni")

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Goodman_Wald_CIs_for_diffs_1xc(n = snp6498169$complete$n)
```

---

Goodman\_Wilson\_score\_CIs\_1xc

*The Goodman Wilson score simultaneous intervals for the multinomial probabilities*

---

### Description

The Goodman Wilson score simultaneous intervals for the multinomial probabilities (with Bonferroni adjustment)

Described in Chapter 3 "The 1xc Table and the Multinomial Distribution"

### Usage

```
Goodman_Wilson_score_CIs_1xc(n, alpha = 0.05)
```

### Arguments

n                    the observed counts (a 1xc vector, where c is the number of categories)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
Goodman_Wilson_score_CIs_1xc(n = snp6498169$complete$n)
```

---

hine\_1989

*Prophylactice use of Lidocaine in myocardial infarction*

---

### Description

Prophylactice use of Lidocaine in myocardial infarction

### Usage

```
hine_1989
```

### Format

An object of class array of dimension 2 x 2 x 6.

### References

Hine et al. (1989)

---

hypothetical	<i>Hypothetical experiment</i>
--------------	--------------------------------

---

**Description**

Hypothetical experiment

**Usage**

hypothetical

**Format**

An object of class `numeric` of length 5.

---

Independence_smoothed_logit_CI_2x2	<i>The Independence-smoothed logit confidence interval for the odds ratio</i>
------------------------------------	---

---

**Description**

The Independence-smoothed logit confidence interval for the odds ratio  
Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Independence_smoothed_logit_CI_2x2(n, alpha = 0.05)
```

**Arguments**

n	the observed table (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Independence_smoothed_logit_CI_2x2(lampasona_2013)
Independence_smoothed_logit_CI_2x2(ritland_2007)
```



---

indredavik\_2008      *Elevated troponin T levels in stroke patients*

---

**Description**

Elevated troponin T levels in stroke patients

**Usage**

indredavik\_2008

**Format**

An object of class `matrix` (inherits from `array`) with 5 rows and 2 columns.

**References**

Indredavik et al. (2008)

---

InverseVariance\_estimate\_stratified\_2x2  
*The inverse variance estimate of the overall effect across strata*

---

**Description**

The inverse variance estimate of the overall effect across strata  
Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

**Usage**

`InverseVariance_estimate_stratified_2x2(n, link = "logit")`

**Arguments**

`n`                    the observed table (a 2x2xk matrix, where k is the number of strata)  
`link`                  the link function ('linear', 'log', or 'logit')

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
InverseVariance_estimate_stratified_2x2(doll_hill_1950)
InverseVariance_estimate_stratified_2x2(hine_1989)
```

---

Inv\_sinh\_CI\_OR\_2x2     *The inverse hyperbolic sine confidence interval for the odds ratio*

---

### Description

The inverse hyperbolic sine confidence interval for the odds ratio

Described in Chapter 4 "The 2x2 Table"

### Usage

```
Inv_sinh_CI_OR_2x2(n, alpha = 0.05)
```

### Arguments

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
Inv_sinh_CI_OR_2x2(lampasona_2013)
Inv_sinh_CI_OR_2x2(ritland_2007)
```

---

Inv\_sinh\_CI\_ratio\_2x2     *The inverse hyperbolic sine confidence interval for the ratio of probabilities*

---

### Description

The inverse hyperbolic sine confidence interval for the ratio of probabilities

Described in Chapter 4 "The 2x2 Table"

### Usage

```
Inv_sinh_CI_ratio_2x2(n, alpha = 0.05)
```

### Arguments

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Inv_sinh_CI_ratio_2x2(perondi_2004)
Inv_sinh_CI_ratio_2x2(ritland_2007)
```

---

Jeffreys_CI_1x2	<i>Jeffreys confidence interval for the binomial probability</i>
-----------------	--

---

**Description**

Jeffreys confidence interval for the binomial probability

Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
Jeffreys_CI_1x2(X, n, alpha = 0.05)
```

**Arguments**

X	the number of successes
n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Jeffreys_CI_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
Jeffreys_CI_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
Jeffreys_CI_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
with(singh_2010["4th", ], Jeffreys_CI_1x2(X, n)) # alternative syntax
Jeffreys_CI_1x2(ligarden_2010["X"], ligarden_2010["n"])
```

---

JonckheereTerpstra\_test\_rxc

*The Jonckheere-Terpstra test for association*

---

### Description

The Jonckheere-Terpstra test for association

Described in Chapter 7 "The rxc Table"

### Usage

```
JonckheereTerpstra_test_rxc(n)
```

### Arguments

n                    the observed table (an rxc matrix)

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
JonckheereTerpstra_test_rxc(table_7.7)
```

```
JonckheereTerpstra_test_rxc(table_7.8)
```

```
JonckheereTerpstra_test_rxc(table_7.9)
```

---

Katz\_log\_CI\_2x2

*The Katz log confidence interval for the ratio of probabilities*

---

### Description

The Katz log confidence interval for the ratio of probabilities

Described in Chapter 4 "The 2x2 Table"

### Usage

```
Katz_log_CI_2x2(n, alpha = 0.05)
```

### Arguments

n                    the observed counts (a 2x2 matrix)

alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Katz_log_CI_2x2(perondi_2004)
Katz_log_CI_2x2(ritland_2007)
```

---

Kendalls_tau_b_rxc	<i>Kendall's tau-b with confidence interval based on the Fieller standard deviation</i>
--------------------	---

---

**Description**

Kendall's tau-b with confidence interval based on the Fieller standard deviation  
 Described in Chapter 7 "The rxc Table"

**Usage**

```
Kendalls_tau_b_rxc(n, alpha = 0.05)
```

**Arguments**

n	the observed table (an rxc matrix)
alpha	the nominal significance level, used to compute a 100(1-alpha)% confidence interval

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Kendalls_tau_b_rxc(table_7.7)
Kendalls_tau_b_rxc(table_7.8)
Kendalls_tau_b_rxc(table_7.9)
```

---

Kendalls\_tau\_b\_rxc\_bca

*Kendall's tau-b with the bias-corrected and accelerated bootstrap confidence interval*

---

### Description

Kendall's tau-b with the bias-corrected and accelerated bootstrap confidence interval  
Described in Chapter 7 "The rxc Table"

### Usage

```
Kendalls_tau_b_rxc_bca(n, nboot = 10000, alpha = 0.05)
```

### Arguments

n	the observed table (an rxc matrix)
nboot	number of bootstrap samples
alpha	the nominal significance level, used to compute a 100(1-alpha) confidence interval

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
set.seed(9974)
Kendalls_tau_b_rxc_bca(table_7.7, nboot = 800)
Kendalls_tau_b_rxc_bca(table_7.8, nboot = 200)
## Not run:
  Kendalls_tau_b_rxc_bca(table_7.9)

## End(Not run)
```

---

Koopman\_asymptotic\_score\_CI\_2x2

*The Koopman asymptotic score confidence interval for the ratio of probabilities*

---

### Description

The Koopman asymptotic score confidence interval for the ratio of probabilities  
Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Koopman_asymptotic_score_CI_2x2(n, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Note**

This versions uses the score test statistic of the Miettinen-Nurminen interval without the variance correction term.

**Examples**

```
Koopman_asymptotic_score_CI_2x2(perondi_2004)  
Koopman_asymptotic_score_CI_2x2(ritland_2007)
```

---

KruskalWallis\_asymptotic\_test\_rxc

*The Kruskal-Wallis asymptotic test for singly ordered rxc tables*

---

**Description**

The Kruskal-Wallis asymptotic test for singly ordered rxc tables

Described in Chapter 7 "The rxc Table"

**Usage**

```
KruskalWallis_asymptotic_test_rxc(n)
```

**Arguments**

n	the observed counts (an rxc matrix)
---	-------------------------------------

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
KruskalWallis_asymptotic_test_rxc(table_7.5)  
KruskalWallis_asymptotic_test_rxc(table_7.6)
```

---

lampasona\_2013

*A case-control study of GADA exposure on IPEX syndrome*

---

**Description**

A case-control study of GADA exposure on IPEX syndrome

**Usage**

lampasona\_2013

**Format**

An object of class `matrix` (inherits from `array`) with 2 rows and 2 columns.

**References**

Lampasona et al. (2013)

---

ligarden\_2010

*Ligarden et al., 2010*

---

**Description**

Ligarden et al., 2010

**Usage**

ligarden\_2010

**Format**

An object of class `numeric` of length 2.

**References**

ligarden\_2010



---

 linear\_by\_linear\_test\_rxc

*The linear-by-linear test for association*


---

**Description**

The linear-by-linear test for association  
 Described in Chapter 7 "The rxc Table"

**Usage**

```
linear_by_linear_test_rxc(n, a = seq_len(ncol(n)), b = seq_len(nrow(n)))
```

**Arguments**

n	the observed table (an rxc matrix)
a	scores assigned to the rows
b	scores assigned to the columns

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
linear_by_linear_test_rxc(table_7.7)
linear_by_linear_test_rxc(table_7.8)
linear_by_linear_test_rxc(table_7.9)
```

---

 list\_functions

*List functions from a chapter*


---

**Description**

Complements the `?chapX` command by printing a list of functions related to a particular chapter X on the R console.

**Usage**

```
list_functions(chap_num)
```

**Arguments**

chap_num	Number of book chapter (from 2 to 10)
----------	---------------------------------------

**Value**

List of functions from that chapter

**Author(s)**

Waldir Leoncio

---

LR\_CI\_1x2

*The likelihood ratio confidence interval for the binomial probability*


---

**Description**

The likelihood ratio confidence interval for the binomial probability. Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
LR_CI_1x2(X, n, alpha = 0.05)
```

**Arguments**

X	the number of successes
n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
LR_CI_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
LR_CI_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
LR_CI_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
with(singh_2010["4th", ], LR_CI_1x2(X, n)) # alternative syntax
LR_CI_1x2(ligarden_2010["X"], ligarden_2010["n"])
```

---

LR_test_1x2	<i>The likelihood ratio test for the binomial probability (pi)</i>
-------------	--

---

**Description**

The likelihood ratio test for the binomial probability (pi)  $H_0: \pi = \pi_0$  vs  $H_A: \pi \neq \pi_0$  (two-sided). Described in Chapter 2 "The 1x2 Table and the Binomial Distribution".

**Usage**

```
LR_test_1x2(X, n, pi0)
```

**Arguments**

X	the number of successes
n	the total number of observations
pi0	a given probability

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
LR_test_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"], pi0 = .5)
LR_test_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"], pi0 = .5)
LR_test_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"], pi0 = .5)
LR_test_1x2(singh_2010["4th", "X"], singh_2010["4th", "n"], pi0 = .5)
LR_test_1x2(ligarden_2010["X"], ligarden_2010["n"], pi0 = .5)
```

---

LR_test_1xc	<i>The likelihood ratio test for multinomial probabilities</i>
-------------	--

---

**Description**

The likelihood ratio test for multinomial probabilities  
Described in Chapter 3 "The 1xc Table and the Multinomial Distribution"

**Usage**

```
LR_test_1xc(n, pi0)
```

**Arguments**

n                    the observed counts (a 1xc vector, where c is the number of categories)  
 pi0                  given probabilities (a 1xc vector)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Genotype counts for SNP rs 6498169 in RA patients
LR_test_1xc(n = snp6498169$complete$n, pi0 = snp6498169$complete$pi0)
# subset of 10 patients
LR_test_1xc(n = snp6498169$subset$n, pi0 = snp6498169$subset$pi0)
```

---

 LR\_test\_2x2

*The likelihood ratio test for association in 2x2 tables*


---

**Description**

The likelihood ratio test for association in 2x2 tables  
 Described in Chapter 4 "The 2x2 Table"

**Usage**

```
LR_test_2x2(n)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
LR_test_2x2(tea)
LR_test_2x2(perondi_2004)
LR_test_2x2(lampasona_2013)
LR_test_2x2(ritland_2007)
```

---

lydersen_2012a	<i>Postoperative nausea</i>
----------------	-----------------------------

---

**Description**

Postoperative nausea

**Usage**

lydersen\_2012a

**Format**

An object of class `matrix` (inherits from `array`) with 2 rows and 4 columns.

**References**

Lydersen et al. (2012a)

---

MantelHaenszel_estimate_stratified_2x2
--

*The Mantel-Haenszel estimate of the overall effect across strata*

---

**Description**

The Mantel-Haenszel estimate of the overall effect across strata  
 Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

**Usage**

`MantelHaenszel_estimate_stratified_2x2(n, link = "logit")`

**Arguments**

<code>n</code>	the observed table (a 2x2xk matrix, where k is the number of strata)
<code>link</code>	the link function ('linear', 'log', or 'logit')

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
MantelHaenszel_estimate_stratified_2x2(doll_hill_1950)
MantelHaenszel_estimate_stratified_2x2(hine_1989)
```

---

`MantelHaenszel_test_2xc`*The Mantel-Haenszel test of association with column scores*

---

**Description**

The Mantel-Haenszel test of association with column scores

Described in Chapter 6 "The Ordered 2xc Table"

**Usage**

```
MantelHaenszel_test_2xc(n, b = 0)
```

**Arguments**

`n` the observed counts (a 2xc matrix)  
`b` scores assigned to the columns (if `b=0`, midranks will be used as scores)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
MantelHaenszel_test_2xc(lydersen_2012a)
```

---

`McNemarBowker_test_paired_cxc`*The McNemar-Bowker test for marginal symmetry*

---

**Description**

The McNemar-Bowker test for marginal symmetry

Described in Chapter 9 "The Paired cxc Table"

**Usage**

```
McNemarBowker_test_paired_cxc(n)
```

**Arguments**

`n` the observed table (a cxc matrix)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Pretherapy susceptability of pathogens (Peterson et al., 2007)
McNemarBowker_test_paired_cxc(peterson_2007)
```

---

McNemar\_asymptotic\_test\_CC\_paired\_2x2

*The McNemar asymptotic test with continuity correction*

---

**Description**

The McNemar asymptotic test with continuity correction

Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
McNemar_asymptotic_test_CC_paired_2x2(n)
```

**Arguments**

n                    the observed table (a 2x2 matrix)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
McNemar_asymptotic_test_CC_paired_2x2(bentur_2009)
McNemar_asymptotic_test_CC_paired_2x2(cavo_2012)
McNemar_asymptotic_test_CC_paired_2x2(ezra_2010)
```

---

McNemar\_asymptotic\_test\_paired\_2x2

*The McNemar asymptotic test*

---

**Description**

The McNemar asymptotic test

Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
McNemar_asymptotic_test_paired_2x2(n)
```

**Arguments**

n                    the observed table (a 2x2 matrix)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
McNemar_asymptotic_test_paired_2x2(bentur_2009)
McNemar_asymptotic_test_paired_2x2(cavo_2012)
McNemar_asymptotic_test_paired_2x2(ezra_2010)
```

---

McNemar\_exact\_cond\_test\_paired\_2x2

*The McNemar exact conditional test*

---

**Description**

The McNemar exact conditional test

Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
McNemar_exact_cond_test_paired_2x2(n)
```

**Arguments**

n                    the observed table (a 2x2 matrix)



**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
McNemar_exact_cond_test_paired_2x2(bentur_2009)
McNemar_exact_cond_test_paired_2x2(cavo_2012)
McNemar_exact_cond_test_paired_2x2(ezra_2010)
```

---

McNemar\_exact\_unconditional\_test\_paired\_2x2

*The McNemar exact unconditional test*

---

**Description**

The McNemar exact unconditional test  
Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
McNemar_exact_unconditional_test_paired_2x2(
  n,
  gamma = 1e-04,
  num_pi_values = 1000L
)
```

**Arguments**

<code>n</code>	the observed table (a 2x2 matrix)
<code>gamma</code>	parameter for the Berger and Boos procedure (default=0.0001; gamma=0: no adj)
<code>num_pi_values</code>	number of values to use in the partition of the nuisance parameter space (default=1000)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Note**

Somewhat crude code with maximization over a simple partition of the nuisance parameter space into 'num\_pi\_values' equally spaced values. The number may be changed. This method could be improved with a better algorithm for the maximization; however, it works well for most purposes. Try `showplot=1` to get an indication of the precision. A refinement of the maximization can be done with a manual restriction of the parameter space.

## Examples

```
McNemar_exact_unconditional_test_paired_2x2(bentur_2009)
## Not run:
  McNemar_exact_unconditional_test_paired_2x2(cavo_2012, gamma = 0)
  McNemar_exact_unconditional_test_paired_2x2(ezra_2010)

## End(Not run)
```

---

McNemar\_midP\_test\_paired\_2x2  
*The McNemar mid-P test*

---

## Description

The McNemar mid-P test  
Described in Chapter 8 "The Paired 2x2 Table"

## Usage

```
McNemar_midP_test_paired_2x2(n)
```

## Arguments

n                    the observed table (a 2x2 matrix)

## Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

## Examples

```
McNemar_midP_test_paired_2x2(bentur_2009)
McNemar_midP_test_paired_2x2(cavo_2012)
McNemar_midP_test_paired_2x2(ezra_2010)
```

---

Mee\_asymptotic\_score\_CI\_2x2

*The Mee asymptotic score confidence interval for the difference between probabilities*

---

### Description

The Mee asymptotic score confidence interval for the difference between probabilities

Described in Chapter 4 "The 2x2 Table"

### Usage

```
Mee_asymptotic_score_CI_2x2(n, alpha = 0.05)
```

### Arguments

n                    the observed counts (a 2x2 matrix)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
# An RCT of high vs standard dose of epinephrine (Perondi et al., 2004):  
Mee_asymptotic_score_CI_2x2(perondi_2004)  
  
# The association between CHRNA4 genotype and XFS (Ritland et al., 2007):  
Mee_asymptotic_score_CI_2x2(ritland_2007)
```

---

MidP\_binomial\_test\_1x2

*The mid-P binomial test for the binomial probability (pi)*

---

### Description

The mid-P binomial test for the binomial probability (pi)  $H_0: \pi = \pi_0$  vs  $H_A: \pi \neq \pi_0$  (two-sided) Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

### Usage

```
MidP_binomial_test_1x2(X, n, pi0)
```

**Arguments**

X	the number of successes
n	the total number of observations
pi0	a given probability

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# The number of 1st order male births (Singh et al. 2010, adapted)
MidP_binomial_test_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"], pi0 = .5)
# The number of 2nd order male births (Singh et al. 2010, adapted)
MidP_binomial_test_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"], pi0 = .5)
# The number of 3rd order male births (Singh et al. 2010, adapted)
MidP_binomial_test_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"], pi0 = .5)
# The number of 4th order male births (Singh et al. 2010, adapted)
MidP_binomial_test_1x2(singh_2010["4th", "X"], singh_2010["4th", "n"], pi0 = .5)
# Ligarden et al. (2010, adapted)
MidP_binomial_test_1x2(ligarden_2010["X"], ligarden_2010["n"], pi0 = .5)
```

---

MidP\_multinomial\_test\_1xc

*The mid-P multinomial test for multinomial probabilities*

---

**Description**

The mid-P multinomial test for multinomial probabilities

Described in Chapter 3 "The 1xc Table and the Multinomial Distribution"

**Usage**

```
MidP_multinomial_test_1xc(n, pi0)
```

**Arguments**

n	the observed counts (a 1xc vector, where c is the number of categories)
pi0	given probabilities (a 1xc vector)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

## Examples

```
# Genotype counts for SNP rs 6498169 in RA patients
MidP_multinomial_test_1xc(n = snp6498169$complete$n, pi0 = snp6498169$complete$pi0)

# subset of 10 patients
MidP_multinomial_test_1xc(n = snp6498169$subset$n, pi0 = snp6498169$subset$pi0)
```

---

MiettinenNurminen\_asymptotic\_score\_CI\_difference\_2x2

*The Miettinen-Nurminen asymptotic score confidence interval for the*

---

## Description

The Miettinen-Nurminen asymptotic score confidence interval for the difference between probabilities

Described in Chapter 4 "The 2x2 Table"

## Usage

```
MiettinenNurminen_asymptotic_score_CI_difference_2x2(n, alpha = 0.05)
```

## Arguments

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

## Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

## Examples

```
# An RCT of high vs standard dose of epinephrine (Perondi et al., 2004):
MiettinenNurminen_asymptotic_score_CI_difference_2x2(perondi_2004)
# The association between CHRNA4 genotype and XFS (Ritland et al., 2007):
MiettinenNurminen_asymptotic_score_CI_difference_2x2(ritland_2007)
```

---

MiettinenNurminen\_asymptotic\_score\_CI\_OR\_2x2

*The Miettinen-Nurminen asymptotic score CI for the odds ratio*

---

### Description

The Miettinen-Nurminen asymptotic score confidence interval for the odds ratio  
Described in Chapter 4 "The 2x2 Table"

### Usage

```
MiettinenNurminen_asymptotic_score_CI_OR_2x2(n, alpha = 0.05)
```

### Arguments

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
# A case-control study of GADA exposure on IPEX syndrome (Lampasona et al., 2013)
MiettinenNurminen_asymptotic_score_CI_OR_2x2(lampasona_2013)
# The association between CHRNA4 genotype and XFS (Ritland et al., 2007)
MiettinenNurminen_asymptotic_score_CI_OR_2x2(ritland_2007)
```

---

MiettinenNurminen\_asymptotic\_score\_CI\_ratio\_2x2

*The Miettinen-Nurminen asymptotic score confidence interval for the ratio of probabilities*

---

### Description

The Miettinen-Nurminen asymptotic score confidence interval for the ratio of probabilities  
Described in Chapter 4 "The 2x2 Table"

### Usage

```
MiettinenNurminen_asymptotic_score_CI_ratio_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# An RCT of high vs standard dose of epinephrine (Perondi et al., 2004)
MiettinenNurminen_asymptotic_score_CI_ratio_2x2(perondi_2004)
# The association between CHRNA4 genotype and XFS (Ritland et al., 2007)
MiettinenNurminen_asymptotic_score_CI_ratio_2x2(ritland_2007)
```

---

mills\_graubard\_1987    *Alcohol consumption and malformations*

---

**Description**

Alcohol consumption and malformations

**Usage**

```
mills_graubard_1987
```

**Format**

An object of class `matrix` (inherits from `array`) with 5 rows and 2 columns.

**References**

Mills and Graubard (1987)

---

ML\_estimates\_and\_CIs\_stratified\_2x2

*Maximum likelihood estimates with CIs of the grouping and strata effects*

---

### Description

Maximum likelihood estimates with CIs of the grouping and strata effects  
Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

### Usage

```
ML_estimates_and_CIs_stratified_2x2(n, link = "log", alpha = 0.05)
```

### Arguments

n	the observed table (a 2x2xk matrix, where k is the number of strata)
link	the link function ('linear', 'log', or 'logit')
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
# Smoking and lung cancer (Doll and Hill, 1950)
ML_estimates_and_CIs_stratified_2x2(doll_hill_1950)

# Prophylactice use of Lidocaine in myocardial infarction (Hine et al., 1989)
ML_estimates_and_CIs_stratified_2x2(hine_1989)
```

---

MOVER\_R\_Wilson\_CI\_OR\_2x2

*The MOVER-R Wilson confidence interval for the odds ratio*

---

### Description

The MOVER-R Wilson confidence interval for the odds ratio  
Described in Chapter 4 "The 2x2 Table"

### Usage

```
MOVER_R_Wilson_CI_OR_2x2(n, alpha = 0.05)
```



**Arguments**

n                    the observed counts (a 2x2 matrix)  
 alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# A case-control study of GADA exposure on IPEX syndrome (Lampasona et al., 2013):
MOVER_R_Wilson_CI_OR_2x2(lampasona_2013)

# The association between CHRNA4 genotype and XFS (Ritland et al., 2007):
MOVER_R_Wilson_CI_OR_2x2(ritland_2007)
```

---

```
MOVER_R_Wilson_CI_ratio_2x2
```

*The MOVER-R Wilson confidence interval for the ratio of probabilities*

---

**Description**

The MOVER-R Wilson confidence interval for the ratio of probabilities  
 Described in Chapter 4 "The 2x2 Table"

**Usage**

```
MOVER_R_Wilson_CI_ratio_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)  
 alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# An RCT of high vs standard dose of epinephrine (Perondi et al., 2004)
MOVER_R_Wilson_CI_ratio_2x2(perondi_2004)

# The association between CHRNA4 genotype and XFS (Ritland et al., 2007)
MOVER_R_Wilson_CI_ratio_2x2(ritland_2007)
```

MOVER\_Wilson\_score\_CI\_paired\_2x2

*The MOVER Wilson score confidence interval for the ratio of paired probabilities*

---

### Description

The MOVER Wilson score confidence interval for the ratio of paired probabilities  
Described in Chapter 8 "The Paired 2x2 Table"

### Usage

```
MOVER_Wilson_score_CI_paired_2x2(n, alpha = 0.05)
```

### Arguments

n                    the observed counts (a 2x2 matrix)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
MOVER_Wilson_score_CI_paired_2x2(bentur_2009)  
MOVER_Wilson_score_CI_paired_2x2(cavo_2012)
```

---

Newcombe\_hybrid\_score\_CI\_2x2

*The Newcombe hybrid score confidence interval for the difference between probabilities*

---

### Description

The Newcombe hybrid score confidence interval for the difference between probabilities  
Described in Chapter 4 "The 2x2 Table"

### Usage

```
Newcombe_hybrid_score_CI_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# An RCT of high vs standard dose of epinephrine (Perondi et al., 2004)
Newcombe_hybrid_score_CI_2x2(perondi_2004)

# The association between CHRNA4 genotype and XFS (Ritland et al., 2007)
Newcombe_hybrid_score_CI_2x2(ritland_2007)
```

---

Newcombe\_square\_and\_add\_CI\_paired\_2x2

*The Newcombe square-and-add confidence interval for the difference*

---

**Description**

The Newcombe square-and-add confidence interval for the difference between paired probabilities.  
Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
Newcombe_square_and_add_CI_paired_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed table (a 2x2 matrix)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Airway hyper-responsiveness before and after stem cell transplantation
# (Bentur et al., 2009)
Newcombe_square_and_add_CI_paired_2x2(bentur_2009)

# Complete response before and after consolidation therapy
# (Cavo et al., 2012)
Newcombe_square_and_add_CI_paired_2x2(cavo_2012)
```

---

Pearson\_chi\_squared\_test\_1xc

*The Pearson chi-squared test for multinomial probabilities*

---

**Description**

The Pearson chi-squared test for multinomial probabilities

Described in Chapter 3 "The 1xc Table and the Multinomial Distribution"

**Usage**

```
Pearson_chi_squared_test_1xc(n, pi0)
```

**Arguments**

n	the observed counts (a 1xc vector, where c is the number of categories)
pi0	given probabilities (a 1xc vector)

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Genotype counts for SNP rs 6498169 in RA patients
Pearson_chi_squared_test_1xc(n = snp6498169$complete$n, pi0 = snp6498169$complete$pi0)
# subset of 10 patients
Pearson_chi_squared_test_1xc(n = snp6498169$subset$n, pi0 = snp6498169$subset$pi0)
```

---

Pearson\_chi\_squared\_test\_2x2

*The Pearson chi-squared test for association in 2x2 tables*

---

### Description

The Pearson chi-squared test for association in 2x2 tables  
Described in Chapter 4 "The 2x2 Table"

### Usage

```
Pearson_chi_squared_test_2x2(n)
```

### Arguments

n                    the observed counts (a 2x2 matrix)

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
# Example: A lady tasting a cup of tea
Pearson_chi_squared_test_2x2(tea)

# Example: Perondi et al. (2004)
Pearson_chi_squared_test_2x2(perondi_2004)

# Example: Lampasona et al. (2013)
Pearson_chi_squared_test_2x2(lampasona_2013)

# Example: Ritland et al. (2007)
Pearson_chi_squared_test_2x2(ritland_2007)
```

---

Pearson\_chi\_squared\_test\_CC\_2x2

*The Pearson chi-squared test for association in 2x2 tables*

---

### Description

The Pearson chi-squared test for association in 2x2 tables  
with continuity correction  
Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Pearson_chi_squared_test_CC_2x2(n)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Example: A lady tasting a cup of tea
Pearson_chi_squared_test_CC_2x2(tea)

# Example: Perondi et al. (2004)
Pearson_chi_squared_test_CC_2x2(perondi_2004)

# Example: Lampasona et al. (2013)
Pearson_chi_squared_test_CC_2x2(lampasona_2013)

# Example: Ritland et al. (2007)
Pearson_chi_squared_test_CC_2x2(ritland_2007)
```

---

Pearson\_correlation\_coefficient\_rxc

*The Pearson correlation coefficient*

---

**Description**

The Pearson correlation coefficient

Described in Chapter 7 "The rxc Table"

**Usage**

```
Pearson_correlation_coefficient_rxc(
  n,
  a = seq_len(nrow(n)),
  b = seq_len(ncol(n)),
  alpha = 0.05
)
```

**Arguments**

n	the observed table (an rxc matrix)
a	scores assigned to the rows
b	scores assigned to the columns
alpha	the nominal significance level, used to compute a 100(1-alpha) confidence interval

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Pearson_correlation_coefficient_rxc(table_7.7)
Pearson_correlation_coefficient_rxc(table_7.8)
Pearson_correlation_coefficient_rxc(table_7.9)
```

---

Pearson\_correlation\_coefficient\_rxc\_bca

*The Pearson correlation coefficient with the bias-corrected and accelerated*

---

**Description**

The Pearson correlation coefficient with the bias-corrected and accelerated bootstrap confidence interval

Described in Chapter 7 "The rxc Table"

**Usage**

```
Pearson_correlation_coefficient_rxc_bca(
  n,
  nboot = 10000,
  a = seq_len(nrow(n)),
  b = seq_len(ncol(n)),
  alpha = 0.05
)
```

**Arguments**

n	the observed table (an rxc matrix)
nboot	number of bootstrap samples
a	scores assigned to the rows
b	scores assigned to the columns
alpha	the nominal significance level, used to compute a 100(1-alpha) confidence interval

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
set.seed(3509)
Pearson_correlation_coefficient_rxc_bca(table_7.7, nboot = 800)
Pearson_correlation_coefficient_rxc_bca(table_7.8, nboot = 200)
## Not run:
  Pearson_correlation_coefficient_rxc_bca(table_7.9)

## End(Not run)
```

---

Pearson\_LR\_homogeneity\_test\_stratified\_2x2

*The Pearson chi-squared and likelihood ratio tests for homogeneity over strata*

---

**Description**

The Pearson chi-squared and likelihood ratio tests for homogeneity over strata  
Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

**Usage**

```
Pearson_LR_homogeneity_test_stratified_2x2(n, link = "logit")
```

**Arguments**

<code>n</code>	the observed table (a 2x2xk matrix, where k is the number of strata)
<code>link</code>	the link function ('linear', 'log', or 'logit')

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Smoking and lung cancer (Doll and Hill, 1950)
Pearson_LR_homogeneity_test_stratified_2x2(doll_hill_1950)

# Prophylactic use of Lidocaine in myocardial infarction (Hine et al., 1989)
Pearson_LR_homogeneity_test_stratified_2x2(hine_1989)
```



---

 Pearson\_LR\_tests\_cum\_OR\_2xc

*The Pearson chi-squared and likelihood ratio tests for cumulative ORs in 2xc tables*

---

**Description**

The Pearson chi-squared and likelihood ratio tests for cumulative ORs in 2xc tables  
Described in Chapter 6 "The Ordered 2xc Table"

**Usage**

```
Pearson_LR_tests_cum_OR_2xc(n, direction = "decreasing")
```

**Arguments**

n                    the observed counts (a 2xc matrix)  
direction            the direction of column probabilities ("increasing" or "decreasing")

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Postoperative nausea (Lydersen et al., 2012a)
Pearson_LR_tests_cum_OR_2xc(lydersen_2012a)
```

---

 Pearson\_LR\_tests\_rxc    *The Pearson chi-squared and likelihood ratio tests for association in rxc tables*


---

**Description**

The Pearson chi-squared and likelihood ratio tests for association in rxc tables  
Described in Chapter 7 "The rxc Table"

**Usage**

```
Pearson_LR_tests_rxc(n)
```

**Arguments**

n                    the observed counts (an rxc matrix)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Examples from Chapter 5 (ordered rx2 tables)

## Alcohol consumption and malformations (Mills and Graubard, 1987):
Pearson_LR_tests_rxc(mills_graubard_1987)

## Elevated troponin T levels in stroke patients (Indredavik et al., 2008):
Pearson_LR_tests_rxc(indredavik_2008)

# Examples from Chapter 6 (ordered 2xc tables)
## The Adolescent Placement Study (Fontanella et al., 2008):
Pearson_LR_tests_rxc(fontanella_2008)

## Postoperative nausea (Lydersen et al., 2012a):
Pearson_LR_tests_rxc(lydersen_2012a)

# Examples from Chapter 7 (unordered rxc tables)

## Treatment for ear infection (van Balen et al., 2003):
Pearson_LR_tests_rxc(table_7.3)

## Psychiatric diagnoses vs PA (Mangerud et al., 2004):
Pearson_LR_tests_rxc(table_7.4)

## Psychiatric diag. vs BMI (Mangerud et al., 2004):
Pearson_LR_tests_rxc(table_7.5)
```

---

Pearson\_LR\_tests\_unspecific\_ordering\_rx2

*The Pearson chi-squared and likelihood ratio tests for unspecific ordering in rx2 tables*

---

**Description**

The Pearson chi-squared and likelihood ratio tests for unspecific ordering in rx2 tables. Described in Chapter 5 "The Ordered rx2 Table". May also be used for 2xc tables, after flipping rows and columns (i.e. if `n` is a 2xc table, call this function with `n'` (the transpose of `n`) as the first argument).

**Usage**

```
Pearson_LR_tests_unspecific_ordering_rx2(n, direction)
```

**Arguments**

n                    the observed counts (an rx2 matrix)  
 direction           the direction of the success probabilities ("increasing" or "decreasing")

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Chapter 5: Alcohol consumption and malformations (Mills and Graubard, 1987)
Pearson_LR_tests_unspecific_ordering_rx2(mills_graubard_1987, "increasing")

# Chapter 5: Elevated troponin T levels in stroke patients (Indredavik et al., 2008)
Pearson_LR_tests_unspecific_ordering_rx2(indredavik_2008, "decreasing")

# Chapter 6: Postoperative nausea (Lydersen et al., 2012a)
Pearson_LR_tests_unspecific_ordering_rx2(t(lydersen_2012a), "decreasing")
```

---

Pearson\_LR\_test\_common\_effect\_stratified\_2x2

*The Pearson chi-squared and likelihood ratio tests of a common difference*

---

**Description**

The Pearson chi-squared and likelihood ratio tests of a common difference between probabilities (link = 'linear'), ratio of probabilities (link = 'log'), or odds ratio (link = 'logit')  
 Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

**Usage**

```
Pearson_LR_test_common_effect_stratified_2x2(n, link = "logit")
```

**Arguments**

n                    the observed table (a 2x2xk matrix, where k is the number of strata)  
 link                the link function ('linear', 'log', or 'logit')

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

## Examples

```
# Smoking and lung cancer (Doll and Hill, 1950)
Pearson_LR_test_common_effect_stratified_2x2(doll_hill_1950)

# Prophylactice use of Lidocaine in myocardial infarction (Hine et al., 1989)
Pearson_LR_test_common_effect_stratified_2x2(hine_1989)
```

---

Pearson\_residuals\_rxc *The Pearson residuals and the standardized Pearson residuals*

---

## Description

The Pearson residuals and the standardized Pearson residuals  
Described in Chapter 7 "The rxc Table"

## Usage

```
Pearson_residuals_rxc(n)
```

## Arguments

n                    the observed counts (an rxc matrix)

## Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

## Examples

```
## Treatment for ear infection (van Balen et al., 2003):
Pearson_residuals_rxc(table_7.3)

## Psychiatric diagnoses vs PA (Mangerud et al., 2004):
Pearson_residuals_rxc(table_7.4)

## Psychiatric diag. vs BMI (Mangerud et al., 2004):
Pearson_residuals_rxc(table_7.5)
```

---

perondi\_2004

*An RCT of high vs standard dose of epinephrine*

---

**Description**

An RCT of high vs standard dose of epinephrine

**Usage**

perondi\_2004

**Format**

An object of class `matrix` (inherits from `array`) with 2 rows and 2 columns.

**References**

Perondi et al. (2004)

---

peterson\_2007

*Pretherapy susceptibility of pathogens*

---

**Description**

Pretherapy susceptibility of pathogens

**Usage**

peterson\_2007

**Format**

An object of class `matrix` (inherits from `array`) with 4 rows and 4 columns.

**References**

Peterson et al. (2007)

---

Peto\_homogeneity\_test\_stratified\_2x2

*The Peto test for homogeneity of odds ratios over strata*

---

### Description

The Peto test for homogeneity of odds ratios over strata

Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

### Usage

```
Peto_homogeneity_test_stratified_2x2(n)
```

### Arguments

n                    the observed table (a 2x2xk matrix, where k is the number of strata)

### Examples

```
# Smoking and lung cancer (Doll and Hill, 1950)
Peto_homogeneity_test_stratified_2x2(doll_hill_1950)
```

```
# Prophylactic use of Lidocaine in myocardial infarction (Hine et al., 1989)
Peto_homogeneity_test_stratified_2x2(hine_1989)
```

---

Peto\_OR\_estimate\_stratified\_2x2

*The Peto estimate of the common odds ratio across strata*

---

### Description

The Peto estimate of the common odds ratio across strata

Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

### Usage

```
Peto_OR_estimate_stratified_2x2(n)
```

### Arguments

n                    the observed table (a 2x2xk matrix, where k is the number of strata)

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Smoking and lung cancer (Doll and Hill, 1950)
Peto_OR_estimate_stratified_2x2(doll_hill_1950)

# Prophylactice use of Lidocaine in myocardial infarction (Hine et al., 1989)
Peto_OR_estimate_stratified_2x2(hine_1989)
```

---

```
PriceBonett_approximate_Bayes_CI_2x2
```

*The Price-Bonett approximate Bayes confidence interval for the ratio of probabilities*

---

**Description**

The Price-Bonett approximate Bayes confidence interval for the ratio of probabilities  
Described in Chapter 4 "The 2x2 Table"

**Usage**

```
PriceBonett_approximate_Bayes_CI_2x2(n, a = 1.25, b = 2.5, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 2x2 matrix)
a, b	parameters of the beta distribution
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# An RCT of high vs standard dose of epinephrine (Perondi et al., 2004)
PriceBonett_approximate_Bayes_CI_2x2(perondi_2004)

# The association between CHRNA4 genotype and XFS (Ritland et al., 2007)
PriceBonett_approximate_Bayes_CI_2x2(ritland_2007)
```

---

```
print.contingencytables_result
```

*Output from a contingency tables method*

---

### Description

Output from a contingency tables method

### Usage

```
## S3 method for class 'contingencytables_result'
print(x, as_list = FALSE, ...)
```

### Arguments

x	The output from a function from the <a href="#">contingencytables</a> package
as_list	Print the elements of x as a list
...	unused (kept for consistency with the generic <code>base::print()</code> )

---

```
QuesenberryHurst_Wilson_score_CIs_1xc
```

*The Quesenberry-Hurst Wilson score simultaneous intervals for the multinomial probabilities*

---

### Description

The Quesenberry-Hurst Wilson score simultaneous intervals for the multinomial probabilities (with Scheffe adjustment)

Described in Chapter 3 "The 1xc Table and the Multinomial Distribution"

### Usage

```
QuesenberryHurst_Wilson_score_CIs_1xc(n, alpha = 0.05)
```

### Arguments

n	the observed counts (a 1xc vector, where c is the number of categories)
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.



**Examples**

```
# Genotype counts for SNP rs 6498169 in RA patients
QuesenberryHurst_Wilson_score_CIs_1xc(n = snp6498169$complete$n)
```

---

RBG\_test\_and\_CI\_stratified\_2x2

*The RBG test and CI for a common odds ratio*

---

**Description**

The RBG test and CI for a common odds ratio

(A Wald-type test and CI based on the Mantel-Haenszel estimate)

Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

**Usage**

```
RBG_test_and_CI_stratified_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed table (a 2x2xk matrix, where k is the number of strata)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Smoking and lung cancer (Doll and Hill, 1950)
RBG_test_and_CI_stratified_2x2(doll_hill_1950)

# Prophylactic use of Lidocaine in myocardial infarction (Hine et al., 1989)
RBG_test_and_CI_stratified_2x2(hine_1989)
```

---

 ritland\_2007

*The association between CHRNA4 genotype and XFS*


---

**Description**

The association between CHRNA4 genotype and XFS

**Usage**

```
ritland_2007
```

**Format**

An object of class `matrix` (inherits from `array`) with 2 rows and 2 columns.

**References**

Ritland et al. (2007)

---

 Scheffe\_type\_CIs\_paired\_cxc

*Scheffe-type confidence intervals for differences of marginal probabilities*


---

**Description**

Scheffe-type confidence intervals for differences of marginal probabilities  
 Described in Chapter 9 "The Paired kxk Table"

**Usage**

```
Scheffe_type_CIs_paired_cxc(n, alpha = 0.05)
```

**Arguments**

<code>n</code>	the observed table (a cxc matrix)
<code>alpha</code>	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Pretherapy susceptibility of pathogens (Peterson et al., 2007)
Scheffe_type_CIs_paired_cxc(peterson_2007)
```

---

Scheffe_type_CIs_rxc	<i>The Scheffe-type simultaneous confidence intervals for the differences <math>\pi_{1i} - \pi_{1j}</math></i>
----------------------	--

---

**Description**

The Scheffe-type simultaneous confidence intervals for the differences  $\pi_{1i} - \pi_{1j}$   
 Described in Chapter 7 "The rxc Table"

**Usage**

```
Scheffe_type_CIs_rxc(n, alpha = 0.05)
```

**Arguments**

n	the observed counts (an rx2 vector)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Example: Treatment for ear infection
Scheffe_type_CIs_rxc(table_7.3)
```

---

Score_test_1x2	<i>The score test for the binomial probability (<math>\pi</math>)</i>
----------------	---

---

**Description**

The score test for the binomial probability ( $\pi$ )  $H_0: \pi = \pi_0$  vs  $H_A: \pi \neq \pi_0$  (two-sided) Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
Score_test_1x2(X, n, pi0)
```

**Arguments**

X	the number of successes
n	the total number of observations
pi0	a given probability

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# The number of 1st order male births (Singh et al. 2010, adapted)
Score_test_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"], pi0 = .5)
# The number of 2nd order male births (Singh et al. 2010, adapted)
Score_test_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"], pi0 = .5)
# The number of 3rd order male births (Singh et al. 2010, adapted)
Score_test_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"], pi0 = .5)
# The number of 4th order male births (Singh et al. 2010, adapted)
Score_test_1x2(singh_2010["4th", "X"], singh_2010["4th", "n"], pi0 = .5)
# Ligarden et al. (2010, adapted)
Score_test_1x2(ligarden_2010["X"], ligarden_2010["n"], pi0 = .5)
```

---

Score\_test\_and\_CI\_marginal\_mean\_scores\_paired\_cxc

*Score test and CI marginal mean scores paired CxC*

---

**Description**

The score test and confidence interval for the difference between marginal mean scores Described in Chapter 9 "The Paired cxc Table"

**Usage**

```
Score_test_and_CI_marginal_mean_scores_paired_cxc(
  n,
  a = seq_len(nrow(n)),
  alpha = 0.05
)
```

**Arguments**

<code>n</code>	the observed table (a cxc matrix)
<code>a</code>	scores assigned to the outcome categories
<code>alpha</code>	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# A comparison between serial and retrospective measurements
# (Fischer et al., 1999)
a <- c(8, 3.5, 0, -3.5, -8)
Score_test_and_CI_marginal_mean_scores_paired_cxc(fischer_1999, a)
```

---

Score\_test\_CC\_1x2      *The score test with continuity correction for the*

---

**Description**

The score test with continuity correction for the binomial probability ( $\pi$ ).  $H_0: \pi = \pi_0$  vs  $H_A: \pi \neq \pi_0$  (two-sided). Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
Score_test_CC_1x2(X, n, pi0)
```

**Arguments**

X	the number of successes
n	the total number of observations
pi0	a given probability

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# The number of 1st order male births (Singh et al. 2010, adapted)
Score_test_CC_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"], pi0 = .5)
# The number of 2nd order male births (Singh et al. 2010, adapted)
Score_test_CC_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"], pi0 = .5)
# The number of 3rd order male births (Singh et al. 2010, adapted)
Score_test_CC_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"], pi0 = .5)
# The number of 4th order male births (Singh et al. 2010, adapted)
Score_test_CC_1x2(singh_2010["4th", "X"], singh_2010["4th", "n"], pi0 = .5)
# Ligarden et al. (2010, adapted)
Score_test_CC_1x2(ligarden_2010["X"], ligarden_2010["n"], pi0 = .5)
```

---

`Score_test_for_effect_in_the_probit_model_2xc`*Score test for effect in the cumulative probit model*

---

## Description

The score test for effect in the cumulative probit model described in Chapter 6 "The Ordered 2xc Table"

## Usage

```
Score_test_for_effect_in_the_probit_model_2xc(n, alphahat0)
```

## Arguments

<code>n</code>	the observed counts (a 2xc matrix)
<code>alphahat0</code>	a column vector with c-1 estimated coefficients ( $\alpha_j$ ) under the null hypothesis ( $\beta = 0$ )

## Value

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

## Note

Must give the alphahats under the null hypothesis as input, because Matlab does not calculate an intercept-only probit model (and this may apply to R code as well). `alphahat0` can be calculated in, for instance, Stata.

## Examples

```
# The Adolescent Placement Study (Fontanella et al., 2008)
alphahat0 <- c(-1.246452, -0.5097363, 0.2087471)
Score_test_for_effect_in_the_probit_model_2xc(fontanella_2008, alphahat0)

# Postoperative nausea (Lydersen et al., 2012a)
alphahat0 <- c(-0.1923633, 0.5588396, 1.271953)
Score_test_for_effect_in_the_probit_model_2xc(lydersen_2012a, alphahat0)
```

---

singh_2010_1	<i>The number of n-th order male births</i>
--------------	---

---

**Description**

The number of n-th order male births

**Usage**

singh\_2010

**Format**

An object of class `data.frame` with 4 rows and 2 columns.

**References**

Singh et al. (2010)

---

snp6498169	<i>Genotype counts for SNP rs 6498169 in RA patients</i>
------------	--

---

**Description**

Genotype counts for SNP rs 6498169 in RA patients

**Usage**

snp6498169

**Format**

An object of class `list` of length 2.

Spearman\_correlation\_coefficient\_rxc

*The Spearman correlation coefficient*

---

### Description

The Spearman correlation coefficient

Described in Chapter 7 "The rxc Table"

### Usage

```
Spearman_correlation_coefficient_rxc(n, alpha = 0.05)
```

### Arguments

n	the observed table (an rxc matrix)
alpha	the nominal significance level, used to compute a 100(1-alpha)% confidence interval

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
Spearman_correlation_coefficient_rxc(table_7.7)
Spearman_correlation_coefficient_rxc(table_7.8)
Spearman_correlation_coefficient_rxc(table_7.9)
```

---

Spearman\_correlation\_coefficient\_rxc\_bca

*The Spearman correlation coefficient with the bias-corrected and accelerated*

---

### Description

The Spearman correlation coefficient with the bias-corrected and accelerated bootstrap confidence interval

Described in Chapter 7 "The rxc Table"

### Usage

```
Spearman_correlation_coefficient_rxc_bca(n, nboot = 10000, alpha = 0.05)
```



**Arguments**

n	the observed table (an rxc matrix)
nboot	number of bootstrap samples
alpha	the nominal significance level, used to compute a 100(1-alpha) confidence interval

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
set.seed(2921)
Spearman_correlation_coefficient_rxc_bca(table_7.7, nboot = 800)
Spearman_correlation_coefficient_rxc_bca(table_7.8, nboot = 200)
## Not run:
  Spearman_correlation_coefficient_rxc_bca(table_7.9)

## End(Not run)
```

---

stratified\_2x2\_tables *Stratified 2x2 tables*

---

**Description**

Stratified 2x2 tables

**Usage**

```
stratified_2x2_tables(n, alpha = 0.05)
```

**Arguments**

n	the observed table (a 2x2xk matrix, where k is the number of strata)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

NULL. This function should be called for its printed output

**Examples**

```
# Smoking and lung cancer (Doll and Hill, 1950)
stratified_2x2_tables(doll_hill_1950)

# Prophylactice use of Lidocaine in myocardial infarction (Hine et al., 1989)
stratified_2x2_tables(hine_1989)
```

---

```
Stuart_test_paired_cxc
```

*The Stuart test for marginal homogeneity*

---

### Description

The Stuart test for marginal homogeneity

Described in Chapter 9 "The Paired cxc Table"

### Usage

```
Stuart_test_paired_cxc(n)
```

### Arguments

`n` the observed table (a cxc matrix)

### Value

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
# Pretherapy susceptibility of pathogens (Peterson et al., 2007)
Stuart_test_paired_cxc(peterson_2007)
```

---

```
table_7.3
```

*Treatment for ear infection*

---

### Description

Status after 21 days treatment of the ear infection acute otitis externa (Van Balen et al., 2003).

Van Balen et al. (2003) report a randomized, double-blind, controlled trial comparing three treatments for an ear infection. The numbers and proportions of patients reported cured and not cured after 21 days of treatment are summarized in Table 7.3. Because there is no ordering between the treatments, we regard Table 7.3 as an unordered  $3 \times 2$  table.

### Usage

```
table_7.3
vanbalen_2003
```

### Format

An object of class `matrix` (inherits from `array`) with 3 rows and 2 columns.

**References**

- Fagerland MW, Lydersen S, Laake P (2017)  
 Van Balen et al. (2003)

table\_7.4

*Psychiatric Diagnoses and Physical Activity***Description**

Psychiatric diagnoses and participation in team sports (Mangerud et al., 2014)

Table 7.4 shows the number of subjects participating in team sports within each of six psychiatric diagnoses, based on data from a study of physical activity in adolescents aged 13 to 18 years who were referred to a child and adolescent psychiatric clinic from 2009 to 2001 (Mangerud et al., 2014). The psychiatric diagnoses are unordered, and we shall treat this as an unordered 6 x 2 table

**Usage**

table\_7.4  
 mangerud\_2014\_PA

**Format**

An object of class `matrix` (inherits from `array`) with 6 rows and 2 columns.

**References**

- Fagerland MW, Lydersen S, Laake P (2017)

table\_7.5

*Psychiatric diag. vs BMI with hyperkinetic disorders as reference category***Description**

Psychiatric diagnoses and weight categories based on age- and sex-adjusted BMI (Mangerud et al., 2014).

Table 7.5 shows the number of thin, normal weight, and overweight subjects within each of six psychiatric diagnoses, based on the same study as in Section 7.2.2 (Mangerud et al., 2014). Body mass index (BMI) is calculated as the weight in kg divided by the squared height in meters. In subjects aged 18 years or older, the cut-off points for being categorized as thin, normal weight, and overweight are BMI less than 18.5, BMI between 18.5 and 25, and BMI above 25, respectively. For younger subjects (below 18 years of age), the categorization was done following internationally adopted cut-off points for age and sex (Cole et al., 2000, 2007). For example, the cut-off point for being overweight at age 13 is 21.91 for males and 22.58 for females.

**Usage**

```
table_7.5
mangerud_2014_BMI
```

**Format**

An object of class `matrix` (inherits from `array`) with 6 rows and 3 columns.

**References**

Fagerland MW, Lydersen S, Laake P (2017)

Mangerud et al. (2014)

---

table_7.6	<i>Low Birth Weight vs psychiatric morbidity with control as reference category</i>
-----------	---

---

**Description**

Categories of birth weight and psychiatric problems at age 20 years (Lund et al., 2012).

Lund et al. (2012) report psychiatric morbidity in young adulthood in two low birth weight groups and a control group. The subjects were born between 1986 and 1988. The very low birth weight (VLBW) group consisted of babies born preterm with birth weight up to 1500 grams. The small for gestational age at term (SGA) group was born at term with birth weight below the 10th percentile adjusted for gestational age, sex, and parity. The control group was born at term, and was not small for gestational age. Table 7.6 shows the severity level of psychiatric problems at age 20 years. We shall regard the birth groups as unordered; however, the diagnostic groups are naturally ordered. Hence, Table 7.6 is a singly ordered  $3 \times 3$  table with unordered rows and ordered columns.

**Usage**

```
table_7.6
lund_2012
```

**Format**

An object of class `matrix` (inherits from `array`) with 3 rows and 3 columns.

**References**

Fagerland MW, Lydersen S, Laake P (2017)

Lund et al. (2012)

---

table_7.7	<i>Colorectal cancer (Table 7.7)</i>
-----------	--------------------------------------

---

**Description**

Duration of symptoms and tumor stage for patients treated for colorectal cancer (Jullumstroe et al., 2009).

Early detection and treatment of colorectal cancer is beneficial, because advanced stages of colorectal cancer have poorer prognosis. Table 7.7 displays duration of symptoms (rows) versus tumor stage (columns) in a study of 784 patients treated for colorectal cancer at a regional hospital in Norway from 1980 to 2004 (Jullumstroe et al., 2009). The rows as well as the columns are ordered, and Table 7.7 can be regarded as a doubly ordered  $4 \times 4$  table.

**Usage**

```
table_7.7  
jullumstroe_2009
```

**Format**

An object of class `matrix` (inherits from `array`) with 4 rows and 4 columns.

**References**

Fagerland MW, Lydersen S, Laake P (2017)  
Jullumstroe et al. (2009)

---

table_7.8	<i>Breast Tumor</i>
-----------	---------------------

---

**Description**

Nuclear pleomorphism from fine needle aspiration smears and breast tumor type (Bofin et al., 2004).

Bofin et al. (2004) studied associations between different findings in fine needle aspiration (FNA) smears from breast tumors and the final histological diagnosis of tumor type in 133 patients. The aim of the study was to identify variables developed from FNA smears that could differentiate between the different tumor diagnoses. Table 7.8 presents the cross-classification of the FNA variable nuclear pleomorphism with tumor types. Both variables can be considered as ordered, with tumor type ordered from benign (as in NPBD) to most malign (as in IDC).

**Usage**

```
table_7.8  
bofin_2004
```

**Format**

An object of class `matrix` (inherits from `array`) with 3 rows and 5 columns.

**References**

Fagerland MW, Lydersen S, Laake P (2017)

Bofin et al. (2004)

---

table_7.9	<i>Self-rated health (Table 7.9)</i>
-----------	--------------------------------------

---

**Description**

Self-rated health for 12 to 17 years old adolescents in Young-HUNT 1 and four years later in Young-HUNT 2 (Breidablik et al., 2008).

In the HUNT study (Nord-Trøndelag county health survey), one of the questions is: “How is your overall health at the moment?” The outcome categories are “Very good”, “Good”, “Not very good”, and “Poor”. Table 7.9 shows the counts for the adolescents aged 12 to 17 years in 1995 to 1997 (Young-HUNT 1), and for the same individuals four years later (Young-HUNT 2; Breidablik et al. (2008)). Both the rows and the columns are ordered. In this example, it may be appropriate to regard self-rated health as an unobserved (latent) continuous variable, where only a categorized version has been observed. Table 7.9 is actually an example of a paired  $c \times c$  table with ordinal data.

**Usage**

```
table_7.9
breidablik_2008
```

**Format**

An object of class `matrix` (inherits from `array`) with 4 rows and 4 columns.

**References**

Fagerland MW, Lydersen S, Laake P (2017)

Breidablik et al. (2008)

---

Tango\_asymptotic\_score\_CI\_paired\_2x2

*The Tango asymptotic score confidence interval for the difference between paired probabilities*

---

### Description

The Tango asymptotic score confidence interval for the difference between paired probabilities

Described in Chapter 8 "The Paired 2x2 Table"

### Usage

```
Tango_asymptotic_score_CI_paired_2x2(n, alpha = 0.05)
```

### Arguments

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
# Airway hyper-responsiveness before and after stem cell transplantation
# (Bentur et al., 2009)
Tango_asymptotic_score_CI_paired_2x2(bentur_2009)

# Complete response before and after consolidation therapy
# (Cavo et al., 2012)
Tango_asymptotic_score_CI_paired_2x2(cavo_2012)
```

---

Tang\_asymptotic\_score\_CI\_paired\_2x2

*The Tang asymptotic score confidence interval for the ratio of paired probabilities*

---

### Description

The Tang asymptotic score confidence interval for the ratio of paired probabilities

Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
Tang_asymptotic_score_CI_paired_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed table (a 2x2 matrix)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Airway hyper-responsiveness before and after stem cell transplantation  
# (Bentur et al., 2009)  
Tang_asymptotic_score_CI_paired_2x2(bentur_2009)  
  
# Complete response before and after consolidation therapy  
# (Cavo et al., 2012)  
Tang_asymptotic_score_CI_paired_2x2(cavo_2012)
```

---

tea

*A lady tasting a cup of tea*

---

**Description**

A lady tasting a cup of tea

**Usage**

```
tea
```

**Format**

An object of class `matrix` (inherits from `array`) with 2 rows and 2 columns.



---

the_1x2_table_CIs	<i>The 1x2 Table CIs</i>
-------------------	--------------------------

---

**Description**

The 1x2 Table CIs

**Usage**

```
the_1x2_table_CIs(X, n, alpha = 0.05)
```

**Arguments**

X	the number of successes
n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

NULL. This function should be called for its printed output

**Examples**

```
# The number of 1st order male births (Singh et al. 2010)
the_1x2_table_CIs(singh_2010["1st", "X"], singh_2010["1st", "n"])
# The number of 2nd order male births (Singh et al. 2010)
the_1x2_table_CIs(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
# The number of 3rd order male births (Singh et al. 2010)
the_1x2_table_CIs(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
# The number of 4th order male births (Singh et al. 2010)
with(singh_2010["4th", ], the_1x2_table_CIs(X, n)) # alternative syntax
# Ligarden et al. (2010)
the_1x2_table_CIs(ligarden_2010["X"], ligarden_2010["n"])
```

---

the_1x2_table_tests	<i>The 1x2 Table tests</i>
---------------------	----------------------------

---

**Description**

The 1x2 Table tests

**Usage**

```
the_1x2_table_tests(X, n, pi0)
```

**Arguments**

X                    the number of successes  
n                     the total number of observations  
pi0                   a given probability

**Value**

NULL. This function should be called for its printed output

**Examples**

```
# Example: The number of 1st order male births (Singh et al. 2010)
the_1x2_table_tests(singh_2010["1st", "X"], singh_2010["1st", "n"], pi0 = 0.513)
# Example: The number of 2nd order male births (Singh et al. 2010)
the_1x2_table_tests(singh_2010["2nd", "X"], singh_2010["2nd", "n"], pi0 = 0.513)
# Example: The number of 3rd order male births (Singh et al. 2010)
the_1x2_table_tests(singh_2010["3rd", "X"], singh_2010["3rd", "n"], pi0 = 0.513)
# Example: The number of 4th order male births (Singh et al. 2010)
the_1x2_table_tests(singh_2010["4th", "X"], singh_2010["4th", "n"], pi0 = 0.513)
# Example: Ligarden et al. (2010)
the_1x2_table_tests(ligarden_2010["X"], ligarden_2010["n"], pi0 = 0.5)
```

---

the\_1xc\_table\_CIs        *The 1xc table CIs*

---

**Description**

The 1xc table CIs

**Usage**

```
the_1xc_table_CIs(n, alpha = 0.05)
```

**Arguments**

n                    the observed counts (a 1xc vector, where c is the number of categories)  
alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

NULL. This function should be called for its printed output

**Examples**

```
# Genotype counts for SNP rs 6498169 in RA patients
the_1xc_table_CIs(n = snp6498169$complete$n)
```

---

the\_1xc\_table\_tests     *The 1xc table tests*

---

**Description**

The 1xc table tests

**Usage**

```
the_1xc_table_tests(n, pi0, chacko.test = FALSE)
```

**Arguments**

`n`                    the observed counts (a 1xc vector, where c is the number of categories)  
`pi0`                    given probabilities (a 1xc vector)  
`chacko.test`        if TRUE, only performs the Chacko test

**Value**

NULL. This function should be called for its printed output

**Examples**

```
# Genotype counts for SNP rs 6498169 in RA patients
the_1xc_table_tests(n = snp6498169$complete$n, pi0 = snp6498169$complete$pi0)
# subset of 10 patients
the_1xc_table_tests(n = snp6498169$subset$n, pi0 = snp6498169$subset$pi0)
# Example for the Chacko test: Hypothetical experiment
the_1xc_table_tests(n = hypothetical, pi0 = c(0.402, 0.479, 0.119), TRUE)
```

---

the\_2x2\_table\_CIs\_difference  
                                   *The 2x2 table CIs difference*

---

**Description**

Wrapper for `_CI_2x2` functions on Chapter 4.

**Usage**

```
the_2x2_table_CIs_difference(n, alpha = 0.05)
```

**Arguments**

`n`                    frequency matrix  
`alpha`                type I error

**Value**

NULL. This function should be called for its printed output

**Examples**

```
# An RCT of high vs standard dose of epinephrine (Perondi et al., 2004)
the_2x2_table_CIs_difference(perondi_2004)

# The association between CHRNA4 genotype and XFS (Ritland et al., 2007)
the_2x2_table_CIs_difference(ritland_2007)
```

---

the\_2x2\_table\_CIs\_OR *The 2x2 table CIs odds ratio*

---

**Description**

Wrapper for \_CI\_OR\_2x2 functions on Chapter 4.

**Usage**

```
the_2x2_table_CIs_OR(n, alpha = 0.05)
```

**Arguments**

n	frequency matrix
alpha	type I error

**Value**

NULL. This function should be called for its printed output

**Examples**

```
# Example: A lady tasting a cup of tea
the_2x2_table_CIs_OR(tea)

# Example: Perondi et al. (2004)
the_2x2_table_CIs_OR(perondi_2004)

# Example: Lampasona et al. (2013)
the_2x2_table_CIs_OR(lampasona_2013)

# Example: Ritland et al. (2007)
the_2x2_table_CIs_OR(ritland_2007)
```

---

the\_2x2\_table\_CIs\_ratio  
*The 2x2 table CIs ratio*

---

**Description**

Wrapper for \_CI\_2x2 functions on Chapter 4.

**Usage**

```
the_2x2_table_CIs_ratio(n, alpha = 0.05)
```

**Arguments**

n	frequency matrix
alpha	type I error

**Value**

NULL. This function should be called for its printed output

**See Also**

the\_2x2\_table\_CIs\_difference the\_2x2\_table\_CIs\_OR the\_2x2\_table\_tests

**Examples**

```
# An RCT of high vs standard dose of epinephrine (Perondi et al., 2004)
the_2x2_table_CIs_ratio(perondi_2004)

# The association between CHRNA4 genotype and XFS (Ritland et al., 2007)
the_2x2_table_CIs_ratio(ritland_2007)
```

---

the\_2x2\_table\_tests    *The 2x2 table tests*

---

**Description**

Wrapper for \_test\_2x2 functions on Chapter 4.

**Usage**

```
the_2x2_table_tests(n, gamma = 1e-04)
```

**Arguments**

n                    frequency matrix  
 gamma                parameter for the Berger and Boos procedure

**Value**

NULL. This function should be called for its printed output

**Examples**

```
# Example: A lady tasting a cup of tea
the_2x2_table_tests(tea)

# Example: Lampasona et al. (2013)
the_2x2_table_tests(lampasona_2013)

## Not run:
the_2x2_table_tests(perondi_2004) # Example: Perondi et al. (2004)
the_2x2_table_tests(ritland_2007) # Example: Ritland et al. (2007)

## End(Not run)
```

---

the_2xc_table	<i>The 2xc table</i>
---------------	----------------------

---

**Description**

The 2xc table

**Usage**

```
the_2xc_table(n, alpha = 0.05, direction = "increasing")
```

**Arguments**

n                    the total number of observations  
 alpha                the nominal level, e.g. 0.05 for 95% CIs  
 direction            the direction of the success probabilities

**Value**

NULL. This function should be called for its printed output.

**Examples**

```
## Not run:  
# The Adolescent Placement Study (Fontanella et al., 2008)  
the_2xc_table(fontanella_2008)  
  
# Postoperative nausea (Lydersen et al., 2012a)  
the_2xc_table(lydersen_2012a, direction = "decreasing")  
  
## End(Not run)
```

---

the\_paired\_2x2\_table\_CIs\_difference

*The Paired 2x2 table CIs difference*

---

**Description**

The Paired 2x2 table CIs difference

**Usage**

```
the_paired_2x2_table_CIs_difference(n, alpha = 0.05)
```

**Arguments**

n	frequency matrix
alpha	type I error

**Value**

NULL. This function should be called for its printed output.

**Examples**

```
# Airway hyper-responsiveness before and after stem cell transplantation  
# (Bentur et al., 2009)  
the_paired_2x2_table_CIs_difference(bentur_2009)  
  
# Complete response before and after consolidation therapy  
# (Cavo et al., 2012)  
the_paired_2x2_table_CIs_difference(cavo_2012)
```

---

the\_paired\_2x2\_table\_CIs\_OR

*The Paired 2x2 table CIs OR*

---

**Description**

The Paired 2x2 table CIs OR

**Usage**

```
the_paired_2x2_table_CIs_OR(n, alpha = 0.05)
```

**Arguments**

n	frequency matrix
alpha	type I error

**Value**

NULL. This function should be called for its printed output.

**Examples**

```
the_paired_2x2_table_CIs_OR(ezra_2010)
```

---

the\_paired\_2x2\_table\_CIs\_ratio

*The Paired 2x2 table CIs ratio*

---

**Description**

The Paired 2x2 table CIs ratio

**Usage**

```
the_paired_2x2_table_CIs_ratio(n, alpha = 0.05)
```

**Arguments**

n	frequency matrix
alpha	type I error

**Value**

NULL. This function should be called for its printed output.



**Examples**

```
# Airway hyper-responsiveness before and after stem cell transplantation
# (Bentur et al., 2009)
the_paired_2x2_table_CIs_ratio(bentur_2009)

# Complete response before and after consolidation therapy
# (Cavo et al., 2012)
the_paired_2x2_table_CIs_ratio(cavo_2012)
```

---

```
the_paired_2x2_table_tests
      The Paired 2x2 table tests
```

---

**Description**

The Paired 2x2 table tests

**Usage**

```
the_paired_2x2_table_tests(n, gamma = 1e-04, num_pi_values = 1000L)
```

**Arguments**

n	frequency matrix
gamma	parameter for the Berger and Boos procedure
num_pi_values	number of values to use in the partition of the nuisance parameter space (default=1000)

**Value**

NULL. This function should be called for its printed output.

**Examples**

```
the_paired_2x2_table_tests(bentur_2009)
the_paired_2x2_table_tests(cavo_2012, gamma = 0, num_pi_values = 10)
the_paired_2x2_table_tests(ezra_2010, gamma = 0, num_pi_values = 20)
```

---

`the_paired_cxc_table_nominal`*The Paired CxC table - nominal*

---

**Description**

The Paired CxC table - nominal

**Usage**

```
the_paired_cxc_table_nominal(n, alpha = 0.05)
```

**Arguments**

n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

NULL. This function should be called for its printed output.

**Examples**

```
# Pretherapy susceptibility of pathogens (Peterson et al., 2007)
the_paired_cxc_table_nominal(peterson_2007)
```

---

`the_paired_cxc_table_ordinal`*The Paired CxC table - ordinal*

---

**Description**

The Paired CxC table - ordinal

**Usage**

```
the_paired_cxc_table_ordinal(n, a = seq_len(nrow(n)), alpha = 0.05)
```

**Arguments**

n	the total number of observations
a	scores assigned to the outcome categories
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

NULL. This function should be called for its printed output.

**Examples**

```
the_paired_cxc_table_ordinal(fischer_1999, c(8, 3.5, 0, -3.5, -8))
```

---

the_rx2_table	<i>The rx2 table</i>
---------------	----------------------

---

**Description**

The rx2 table

**Usage**

```
the_rx2_table(n, alpha = 0.05, direction = "increasing", skip_exact = FALSE)
```

**Arguments**

n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs
direction	the direction of the success probabilities
skip_exact	If FALSE, skips the exact conditional and mid-P tests for unspecific ordering (often saves calculation time) ("increasing" or "decreasing")

**Value**

NULL. This function should be called for its printed output.

**Examples**

```
the_rx2_table(mills_graubard_1987, skip_exact = TRUE)  
the_rx2_table(indredavik_2008, direction = "decreasing", skip_exact = TRUE)
```

---

the_rxc_table	<i>The rxc table</i>
---------------	----------------------

---

**Description**

The rxc table

**Usage**

```
the_rxc_table(n, alpha = 0.05, nboot = 10000)
```

**Arguments**

n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs
nboot	number of bootstrap samples. If 0, skips tests that use bootstrapping

**Value**

NULL. This function should be called for its printed output.

**Examples**

```
set.seed(8047)
# Unordered tables

## Treatment for ear infection (van Balen et al., 2003)
the_rxc_table(table_7.3, nboot = 200)

## Psychiatric diagnoses vs PA (Mangerud et al., 2004)
the_rxc_table(table_7.4, nboot = 0)

# Singly ordered tables

## Psychiatric diag. vs BMI (Mangerud et al., 2004)
the_rxc_table(table_7.5, nboot = 0)

## Low birth weight vs psychiatric morbidity (Lund et al., 2012)
the_rxc_table(table_7.6, nboot = 150)

# Doubly ordered tables

## Colorectal cancer (Jullumstroe et al., 2009)
the_rxc_table(table_7.7, nboot = 0)

## Breast Tumor (Bofin et al., 2004)
the_rxc_table(table_7.8, nboot = 200)

## Self-rated health (Breidablik et al., 2008)
the_rxc_table(table_7.9, nboot = 0)
```

---

Transformed\_Blaker\_exact\_CI\_paired\_2x2

*The Transformed Blaker exact confidence interval for the conditional odds ratio*

---

### Description

The Transformed Blaker exact confidence interval for the conditional odds ratio  
Described in Chapter 8 "The Paired 2x2 Table"

### Usage

```
Transformed_Blaker_exact_CI_paired_2x2(n, alpha = 0.05)
```

### Arguments

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
Transformed_Blaker_exact_CI_paired_2x2(ezra_2010)
```

---

Transformed\_Clopper\_Pearson\_exact\_CI\_paired\_2x2

*The Transformed Clopper-Pearson exact confidence interval for the conditional odds ratio*

---

### Description

The Transformed Clopper-Pearson exact confidence interval for the conditional odds ratio  
Described in Chapter 8 "The Paired 2x2 Table"

### Usage

```
Transformed_Clopper_Pearson_exact_CI_paired_2x2(n, alpha = 0.05)
```

### Arguments

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Transformed_Clopper_Pearson_exact_CI_paired_2x2(ezra_2010)
```

---

```
Transformed_Clopper_Pearson_midP_CI_paired_2x2
```

*The Transformed Clopper-Pearson mid-P confidence interval for the conditional odds ratio*

---

**Description**

The Transformed Clopper-Pearson mid-P confidence interval for the conditional odds ratio  
Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
Transformed_Clopper_Pearson_midP_CI_paired_2x2(n, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Transformed_Clopper_Pearson_midP_CI_paired_2x2(ezra_2010)
```

---

 Transformed\_Wilson\_score\_CI\_paired\_2x2

*The Transformed Wilson score confidence interval for the conditional odds ratio*

---

### Description

The Transformed Wilson score confidence interval for the conditional odds ratio

Described in Chapter 8 "The Paired 2x2 Table"

### Usage

```
Transformed_Wilson_score_CI_paired_2x2(n, alpha = 0.05)
```

### Arguments

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
Transformed_Wilson_score_CI_paired_2x2(ezra_2010)
```

---

 Trend\_estimate\_CI\_tests\_rx2

*Trend estimate for linear and logit models*

---

### Description

Trend estimate for linear and logit models

- The Wald test and CI
- Likelihood ratio test
- The Pearson goodness-of-fit test
- Likelihood ratio (deviance) goodness-of-fit test

Described in Chapter 5 "The Ordered rx2 Table"

**Usage**

```
Trend_estimate_CI_tests_rx2(
  n,
  a = seq_len(nrow(n)),
  linkfunction = "logit",
  alpha = 0.05
)
```

**Arguments**

n	the observed counts (an rx2 matrix)
a	scores assigned to the rows
linkfunction	Link function for the binomial distribution see ?family for more details
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of [base::list\(\)](#). Use the [utils::str\(\)](#) function to see the specific elements returned.

**Examples**

```
# Alcohol consumption and malformations (Mills and Graubard, 1987)
Trend_estimate_CI_tests_rx2(mills_graubard_1987, 1:5)

# levated troponin T levels in stroke patients (Indredavik et al., 2008)
Trend_estimate_CI_tests_rx2(indredavik_2008, 1:5)
```

---

Uncorrected\_asymptotic\_score\_CI\_2x2

*The uncorrected asymptotic score confidence interval for the odds ratio*

---

**Description**

The uncorrected asymptotic score confidence interval for the odds ratio  
Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Uncorrected_asymptotic_score_CI_2x2(n, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs



**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# A case-control study of GADA exposure on IPEX syndrome
# (Lampasona et al., 2013):
Uncorrected_asymptotic_score_CI_2x2(Lampasona_2013)

# The association between CHRNA4 genotype and XFS (Ritland et al., 2007):
Uncorrected_asymptotic_score_CI_2x2(ritland_2007)
```

---

validateArguments	<i>Validate arguments of a function</i>
-------------------	---

---

**Description**

This is an internal function used by user-level functions to validate their arguments.

**Usage**

```
validateArguments(x, types = "default")
```

**Arguments**

x	named list containing function arguments and their values
types	named vector of types for x

**Details**

Accepted validation types are:

- "counts"
- "positive"
- "probability"
- "linear, log or logit"
- "MH or IV"
- "logit or probit"
- "increasing or decreasing"
- A vector of possible values

**Value**

Nothing if all arguments fit their type. An error message otherwise.

**Note**

Types are evaluated alphabetically, and errors accuse no more than one invalid argument at a time.

**Author(s)**

Waldir Leoncio

**Examples**

```
Adjusted_inv_sinh_CI_OR_2x2(ritland_2007)
## Not run: Adjusted_inv_sinh_CI_OR_2x2(-ritland_2007)
```

---

Wald\_CI\_1x2

*The Wald confidence interval for the binomial probability*

---

**Description**

Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
Wald_CI_1x2(X, n, alpha = 0.05)
```

**Arguments**

X	the number of successes
n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Wald_CI_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
Wald_CI_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
Wald_CI_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
with(singh_2010["4th", ], Wald_CI_1x2(X, n)) # alternative syntax
Wald_CI_1x2(ligarden_2010["X"], ligarden_2010["n"]) # Ligarden et al. (2010)
```

---

`Wald_CI_2x2`*The Wald confidence interval for the difference between probabilities*

---

**Description**

The Wald confidence interval for the difference between probabilities  
Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Wald_CI_2x2(n, alpha = 0.05)
```

**Arguments**

`n` the observed counts (a 2x2 matrix)  
`alpha` the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# An RCT of high vs standard dose of epinephrine (Perondi et al., 2004):  
Wald_CI_2x2(n = perondi_2004)  
# The association between CHRNA4 genotype and XFS (Ritland et al., 2007):  
Wald_CI_2x2(n = ritland_2007)
```

---

`Wald_CI_AgrestiMin_paired_2x2`*The Wald confidence interval for the difference between paired probabilities*

---

**Description**

The Wald confidence interval for the difference between paired probabilities  
with the pseudo-frequency adjustment suggested by Agresti and Min (2005)  
Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
Wald_CI_AgrestiMin_paired_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)  
 alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Airway hyper-responsiveness before and after stem cell transplantation
# (Bentur et al., 2009)
Wald_CI_AgrestiMin_paired_2x2(bentur_2009)

# Complete response before and after consolidation therapy
# (Cavo et al., 2012)
Wald_CI_AgrestiMin_paired_2x2(cavo_2012)
```

---

Wald\_CI\_BonettPrice\_paired\_2x2

*The Wald confidence interval for the difference between paired probabilities*

---

**Description**

The Wald confidence interval for the difference between paired probabilities with the pseudo-frequency adjustment suggested by Bonett and Price(2012) Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
Wald_CI_BonettPrice_paired_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)  
 alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Airway hyper-responsiveness before and after stem cell transplantation
# (Bentur et al., 2009)
Wald_CI_BonettPrice_paired_2x2(bentur_2009)

# Complete response before and after consolidation therapy
# (Cavo et al., 2012)
Wald_CI_BonettPrice_paired_2x2(cavo_2012)
```

---

Wald\_CI\_CC\_1x2

*The Wald CI with CC for the binomial probability*


---

**Description**

The Wald confidence interval with continuity correction for the binomial probability. Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

**Usage**

```
Wald_CI_CC_1x2(X, n, alpha = 0.05)
```

**Arguments**

X	the number of successes
n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# The number of 1st order male births (Singh et al. 2010)
Wald_CI_CC_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
# The number of 2nd order male births (Singh et al. 2010)
Wald_CI_CC_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
# The number of 3rd order male births (Singh et al. 2010)
Wald_CI_CC_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
# The number of 4th order male births (Singh et al. 2010)
with(singh_2010["4th", ], Wald_CI_CC_1x2(X, n)) # alternative syntax
# Ligarden et al. (2010)
Wald_CI_CC_1x2(ligarden_2010["X"], ligarden_2010["n"])
```

---

Wald\_CI\_CC\_2x2

*The Wald confidence interval for the difference between probabilities*


---

**Description**

The Wald confidence interval for the difference between probabilities with Yates's continuity correction. Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Wald_CI_CC_2x2(n, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# An RCT of high vs standard dose of epinephrine (Perondi et al., 2004)
Wald_CI_CC_2x2(perondi_2004)

# The association between CHRNA4 genotype and XFS (Ritland et al., 2007)
Wald_CI_CC_2x2(ritland_2007)
```

---

Wald\_CI\_diff\_CC\_paired\_2x2

*The Wald confidence interval for the difference between paired probabilities*


---

**Description**

The Wald confidence interval for the difference between paired probabilities with continuity correction

Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
Wald_CI_diff_CC_paired_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)  
 alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Airway hyper-responsiveness before and after stem cell transplantation
# (Bentur et al., 2009)
Wald_CI_diff_CC_paired_2x2(bentur_2009)

# Complete response before and after consolidation therapy
# (Cavo et al., 2012)
Wald_CI_diff_CC_paired_2x2(cavo_2012)
```

---

Wald\_CI\_diff\_paired\_2x2

*The Wald confidence interval for the difference between paired probabilities*

---

**Description**

The Wald confidence interval for the difference between paired probabilities  
 Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
Wald_CI_diff_paired_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)  
 alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
# Airway hyper-responsiveness before and after stem cell transplantation
# (Bentur et al., 2009)
Wald_CI_diff_paired_2x2(bentur_2009)

# Complete response before and after consolidation therapy
# (Cavo et al., 2012)
Wald_CI_diff_paired_2x2(cavo_2012)
```

---

Wald\_CI\_OR\_Laplace\_paired\_2x2

*The Wald confidence interval for the conditional odds ratio with Laplace adjustment*

---

### Description

The Wald confidence interval for the conditional odds ratio with Laplace adjustment  
Described in Chapter 8 "The Paired 2x2 Table"

### Usage

```
Wald_CI_OR_Laplace_paired_2x2(n, alpha = 0.05)
```

### Arguments

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
Wald_CI_OR_Laplace_paired_2x2(ezra_2010)
```



---

Wald\_CI\_OR\_paired\_2x2 *The Wald confidence interval for the conditional odds ratio*

---

**Description**

The Wald confidence interval for the conditional odds ratio  
Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
Wald_CI_OR_paired_2x2(n, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
Wald_CI_OR_paired_2x2(ezra_2010)
```

---

Wald\_CI\_ratio\_paired\_2x2  
*The Wald confidence interval for the ratio of paired probabilities*

---

**Description**

The Wald confidence interval for the ratio of paired probabilities  
Described in Chapter 8 "The Paired 2x2 Table"

**Usage**

```
Wald_CI_ratio_paired_2x2(n, alpha = 0.05)
```

**Arguments**

n	the observed counts (a 2x2 matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Airway hyper-responsiveness before and after stem cell transplantation
# (Bentur et al., 2009)
Wald_CI_ratio_paired_2x2(bentur_2009)

# Complete response before and after consolidation therapy
# (Cavo et al., 2012)
Wald_CI_ratio_paired_2x2(cavo_2012)
```

---

Wald\_test\_1x2

*The Wald test for the binomial probability (pi)*


---

**Description**

The Wald test for the binomial probability ( $\pi$ )

$H_0$ :  $\pi = \pi_0$  vs  $H_A$ :  $\pi \neq \pi_0$  (two-sided)

**Usage**

```
Wald_test_1x2(X, n, pi0)
```

**Arguments**

X	the number of successes
n	the total number of observations
pi0	a given probability

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# The number of 1st order male births (adapted from Singh et al. 2010)
Wald_test_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"], pi0 = 0.1)
# The number of 2nd order male births (adapted from Singh et al. 2010)
Wald_test_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"], pi0 = 0.1)
# The number of 3rd order male births (adapted from Singh et al. 2010)
Wald_test_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"], pi0 = 0.1)
# The number of 4th order male births (adapted from Singh et al. 2010)
Wald_test_1x2(singh_2010["4th", "X"], singh_2010["4th", "n"], pi0 = 0.1)
```

```
# Ligarden et al. (2010)
Wald_test_1x2(ligarden_2010["X"], ligarden_2010["n"], pi0 = 0.1)
```

---

Wald\_test\_and\_CI\_common\_diff\_stratified\_2x2

*The Wald test and CI for a common difference between probabilities*

---

### Description

The Wald test and CI for a common difference between probabilities based on either the Mantel-Haenszel or inverse variance estimate

Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

### Usage

```
Wald_test_and_CI_common_diff_stratified_2x2(
  n,
  estimatetype = "MH",
  alpha = 0.05
)
```

### Arguments

n	the observed table (a 2x2xk matrix, where k is the number of strata)
estimatetype	Mantel-Haenszel or inverse variance estimate ('MH' or 'IV')
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
# Smoking and lung cancer (Doll and Hill, 1950)
Wald_test_and_CI_common_diff_stratified_2x2(doll_hill_1950)

# Prophylactice use of Lidocaine in myocardial infarction (Hine et al., 1989)
Wald_test_and_CI_common_diff_stratified_2x2(hine_1989)
```

---

`Wald_test_and_CI_common_ratio_stratified_2x2`*The Wald test and CI for a common ratio of probabilities*

---

**Description**

The Wald test and CI for a common ratio of probabilities

based on either the Mantel-Haenszel or inverse variance estimate

Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

**Usage**

```
Wald_test_and_CI_common_ratio_stratified_2x2(  
  n,  
  estimatetype = "MH",  
  alpha = 0.05  
)
```

**Arguments**

<code>n</code>	the observed table (a 2x2xk matrix, where k is the number of strata)
<code>estimatetype</code>	Mantel-Haenszel or inverse variance estimate ('MH' or 'IV')
<code>alpha</code>	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the [utils::str\(\)](#) function to see the specific elements returned.

**Examples**

```
# Smoking and lung cancer (Doll and Hill, 1950)  
Wald_test_and_CI_common_ratio_stratified_2x2(doll_hill_1950)  
  
# Prophylactic use of Lidocaine in myocardial infarction (Hine et al., 1989)  
Wald_test_and_CI_common_ratio_stratified_2x2(hine_1989)
```

---

Wald\_test\_and\_CI\_marginal\_mean\_ranks\_paired\_cxc

*The Wald test and confidence interval for the difference between marginal mean ranks / ridits*

---

### Description

The Wald test and confidence interval for the difference between marginal mean ranks / ridits  
Described in Chapter 9 "The Paired cxc Table"

### Usage

```
Wald_test_and_CI_marginal_mean_ranks_paired_cxc(n, alpha = 0.05)
```

### Arguments

n	the observed table (a cxc matrix)
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### Examples

```
# A comparison between serial and retrospective measurements
# (Fischer et al., 1999)
Wald_test_and_CI_marginal_mean_ranks_paired_cxc(fischer_1999)
```

---

Wald\_test\_and\_CI\_marginal\_mean\_scores\_paired\_cxc

*The Wald test and confidence interval for the difference between marginal mean scores*

---

### Description

The Wald test and confidence interval for the difference between marginal mean scores  
Described in Chapter 9 "The Paired cxc Table"

### Usage

```
Wald_test_and_CI_marginal_mean_scores_paired_cxc(
  n,
  a = seq_len(nrow(n)),
  alpha = 0.05
)
```

**Arguments**

n	the observed table (a cxc matrix)
a	scores assigned to the outcome categories
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# A comparison between serial and retrospective measurements
# (Fischer et al., 1999)
a <- c(8, 3.5, 0, -3.5, -8)
Wald_test_and_CI_marginal_mean_scores_paired_cxc(fischer_1999, a)
```

---

Wald\_test\_CC\_1x2

*The Wald test with continuity correction for the binomial probability*


---

**Description**

The Wald test with continuity correction for the binomial probability ( $\pi$ )

$H_0$ :  $\pi = \pi_0$  vs  $H_A$ :  $\pi \neq \pi_0$  (two-sided)

**Usage**

```
Wald_test_CC_1x2(X, n, pi0)
```

**Arguments**

X	the number of successes
n	the total number of observations
pi0	a given probability

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# The number of 1st order male births (adapted from Singh et al. 2010)
Wald_test_CC_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"], pi0 = 0.1)
# The number of 2nd order male births (adapted from Singh et al. 2010)
Wald_test_CC_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"], pi0 = 0.1)
# The number of 3rd order male births (adapted from Singh et al. 2010)
Wald_test_CC_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"], pi0 = 0.1)
# The number of 4th order male births (adapted from Singh et al. 2010)
Wald_test_CC_1x2(singh_2010["4th", "X"], singh_2010["4th", "n"], pi0 = 0.1)
# Ligarden et al. (2010)
Wald_test_CC_1x2(ligarden_2010["X"], ligarden_2010["n"], pi0 = 0.1)
```

---

Wilson\_score\_CI\_1x2    *The Wilson score confidence interval*

---

**Description**

The Wilson score confidence interval

**Usage**

```
Wilson_score_CI_1x2(X, n, alpha = 0.05)
```

**Arguments**

X	the number of successes
n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**References**

Reference Wilson EB (1927) Probable inference, the law of succession, and statistical inference. Journal of the American Statistical Association 22209-212

**Examples**

```
# birth order 1, Singh et al. (2010)
Wilson_score_CI_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
# birth order 2, Singh et al. (2010)
Wilson_score_CI_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
# birth order 3, Singh et al. (2010)
Wilson_score_CI_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
# birth order 4, Singh et al. (2010)
```

```
with(singh_2010["4th", ], Wilson_score_CI_1x2(X, n)) # alternative syntax
# Ligarden (2010)
Wilson_score_CI_1x2(ligarden_2010["X"], ligarden_2010["n"])
```

---

Wilson\_score\_CI\_CC\_1x2

*The Wilson score confidence interval with continuity correction for the binomial probability*

---

### Description

Described in Chapter 2 "The 1x2 Table and the Binomial Distribution"

### Usage

```
Wilson_score_CI_CC_1x2(X, n, alpha = 0.05)
```

### Arguments

X	the number of successes
n	the total number of observations
alpha	the nominal level, e.g. 0.05 for 95% CIs

### Value

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

### References

Reference Wilson EB (1927) Probable inference, the law of succession, and statistical inference. Journal of the American Statistical Association; 22:209-212

### Examples

```
# The number of 1st order male births (Singh et al. 2010)
Wilson_score_CI_CC_1x2(singh_2010["1st", "X"], singh_2010["1st", "n"])
# The number of 2nd order male births (Singh et al. 2010)
Wilson_score_CI_CC_1x2(singh_2010["2nd", "X"], singh_2010["2nd", "n"])
# The number of 3rd order male births (Singh et al. 2010)
Wilson_score_CI_CC_1x2(singh_2010["3rd", "X"], singh_2010["3rd", "n"])
# The number of 4th order male births (Singh et al. 2010)
with(singh_2010["4th", ], Wilson_score_CI_CC_1x2(X, n)) # alternative syntax
# Ligarden et al. (2010)
Wilson_score_CI_CC_1x2(ligarden_2010["X"], ligarden_2010["n"])
```



---

Woolf\_logit\_CI\_2x2      *The Woolf logit confidence interval for the odds ratio*

---

**Description**

The Woolf logit confidence interval for the odds ratio  
Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Woolf_logit_CI_2x2(n, alpha = 0.05)
```

**Arguments**

n                      the observed table (a 2x2 matrix)  
alpha                  the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the [contingencytables\\_result](#) class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# A case-control study of GADA exposure on IPEX syndrome  
# (Lampasona et al., 2013):  
Woolf_logit_CI_2x2(lampasona_2013)  
  
# The association between CHRNA4 genotype and XFS (Ritland et al., 2007):  
Woolf_logit_CI_2x2(ritland_2007)
```

---

Woolf\_test\_and\_CI\_stratified\_2x2  
*The Woolf test and CI for a common odds ratio*

---

**Description**

The Woolf test and CI for a common odds ratio  
(A Wald-type test and CI based on the inverse variance estimate)  
Described in Chapter 10 "Stratified 2x2 Tables and Meta-Analysis"

**Usage**

```
Woolf_test_and_CI_stratified_2x2(n, alpha = 0.05)
```

**Arguments**

n                    the observed table (a 2x2xk matrix, where k is the number of strata)  
 alpha                the nominal level, e.g. 0.05 for 95% CIs

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Smoking and lung cancer (Doll and Hill, 1950)
Woolf_test_and_CI_stratified_2x2(doll_hill_1950)

# Prophylactic use of Lidocaine in myocardial infarction (Hine et al., 1989)
Woolf_test_and_CI_stratified_2x2(hine_1989)
```

---

Z\_unpooled\_test\_2x2    *The Z-unpooled test for association in 2x2 tables*

---

**Description**

The Z-unpooled test for association in 2x2 tables  
 Described in Chapter 4 "The 2x2 Table"

**Usage**

```
Z_unpooled_test_2x2(n)
```

**Arguments**

n                    the observed counts (a 2x2 matrix)

**Value**

An object of the `contingencytables_result` class, basically a subclass of `base::list()`. Use the `utils::str()` function to see the specific elements returned.

**Examples**

```
# Example: A lady tasting a cup of tea
Z_unpooled_test_2x2(tea)

# Example: Perondi et al. (2004)
Z_unpooled_test_2x2(perondi_2004)

# Example: Lampasona et al. (2013)
```

```
Z_unpooled_test_2x2(lampasona_2013)
```

```
# Example: Ritland et al. (2007)
```

```
Z_unpooled_test_2x2(ritland_2007)
```

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