

# Package ‘RKelly’

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**Type** Package

**Title** Translate Odds and Probabilities

**Version** 1.0

**Description** Calculates the Kelly criterion (Kelly, J.L. (1956) <[doi:10.1002/j.1538-7305.1956.tb03809.x](https://doi.org/10.1002/j.1538-7305.1956.tb03809.x)>) for bets given quoted prices, model predictions and commissions. Additionally it contains helper functions to calculate the probabilities for wins and draws in multi-leg games.

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**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 6.1.1

**Suggests** testthat, knitr, rmarkdown

**VignetteBuilder** knitr

**NeedsCompilation** no

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**Repository** CRAN

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## Contents

|                                  |   |
|----------------------------------|---|
| chance_to_draw_n_games . . . . . | 2 |
| chance_to_win_n_games . . . . .  | 2 |
| kelly_back_dec . . . . .         | 3 |
| kelly_criterion . . . . .        | 3 |
| kelly_lay_dec . . . . .          | 4 |

|              |          |
|--------------|----------|
| <b>Index</b> | <b>5</b> |
|--------------|----------|

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chance\_to\_draw\_n\_games

*Calculates the chance to draw out of n matches*

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**Description**

Calculates the chance to draw out of n matches

**Usage**

```
chance_to_draw_n_games(p, n)
```

**Arguments**

|   |   |
|---|---|
| p | probability of first (or second) player winning match |
| n | number of matches                                     |

**Value**

The decimal chance for a draw

**Examples**

```
chance_to_draw_n_games(0.4, 4) # Draw chance if one player has p=0.4 in four matches
```

---

chance\_to\_win\_n\_games *Calculate win chance after multiple matches*

---

**Description**

Chance of a player winning the majority of n matches. Draws count not as a win

**Usage**

```
chance_to_win_n_games(p, n)
```

**Arguments**

|   |  |
|---|--|
| p | probability for player to win a single match |
| n | number of total matches played               |

**Value**

The decimal chance of winning a game

**Examples**

```
chance_to_win_n_games(0.55,5) # Chance for player with p=0.55 to win best of 5 matches
```

---

|                |                           |
|----------------|---------------------------|
| kelly_back_dec | <i>Kelly for back bet</i> |
|----------------|---------------------------|

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**Description**

Kelly for back bet

**Usage**

```
kelly_back_dec(price, p, commision_rate)
```

**Arguments**

|                |  |
|----------------|--|
| price          | Price to back in decimal odds          |
| p              | Probability of event to to materialise |
| commision_rate | Rate of commision charged on WINNINGS  |

**Value**

Kelly optimised fraction of stake relative to bank

**Examples**

```
kelly_back_dec(2,0.5,0.05)
```

---

|                 |                            |
|-----------------|----------------------------|
| kelly_criterion | <i>The Kelly criterion</i> |
|-----------------|----------------------------|

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**Description**

The Kelly criterion

**Usage**

```
kelly_criterion(p, alpha_w, alpha_l)
```

**Arguments**

|         |  |
|---------|--|
| p       | The objective probability of the event                   |
| alpha_w | The return multiplier in case of the event happening     |
| alpha_l | The return multiplier in case of the event not happening |

**Value**

The Kelly optimised fraction of the bankroll that should be bet

**References**

Thorp, Edward O. (1997; revised 1998). The Kelly Criterion in Blackjack, Sports Betting, and the Stock Market. [http://www.eecs.harvard.edu/cs286r/courses/fall12/papers/Thorpe\\_KellyCriterion2007.pdf](http://www.eecs.harvard.edu/cs286r/courses/fall12/papers/Thorpe_KellyCriterion2007.pdf)

**Examples**

```
kelly_criterion(0.5,1,1)
```

---

|               |                          |
|---------------|--------------------------|
| kelly_lay_dec | <i>Kelly for lay bet</i> |
|---------------|--------------------------|

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**Description**

Kelly for lay bet

**Usage**

```
kelly_lay_dec(price, p, commision_rate)
```

**Arguments**

|                |  |
|----------------|--|
| price          | Price at which to lay                        |
| p              | Base probability of event that is being laid |
| commision_rate | Rate of commision charged on WINNINGS        |

**Value**

Kelly optimised fraction of stake relative to bank

# Index

[chance\\_to\\_draw\\_n\\_games](#), 2

[chance\\_to\\_win\\_n\\_games](#), 2

[kelly\\_back\\_dec](#), 3

[kelly\\_criterion](#), 3

[kelly\\_lay\\_dec](#), 4