Mathematical Analysis

Of The Following Game:

POKER FOR ROULETTE

March 23, 2012

Prepared By:

Michael Shackleford
The Wizard of Odds Consulting, Inc.
Las Vegas, NV

Rules

Poker for Roulette is a side bet based on five consecutive numbers drawn in roulette. Four pay tables are available below, based on a double-zero wheel. All wins are on a "for one" basis, meaning the player does not get his original bet back, even if he wins. In the event the player qualifies for more than one win, he will be paid only the higher win.

Pay Tables

Type	Pay Table 1	Pay Table 2	Pay Table 3	Pay Table 4
Five of a Kind or Five Greens	10,000	50,000	5,000	25,000
Four of a Kind plus One Green	3,500	15,000	1,000	5,000
Natural Straight	1,250	1,500	500	1,250
Four of a Kind	750	500	250	750
Full House	250	200	100	250
Wild Straight	125	100	60	125
Three of a Kind	25	20	15	25
Two Pair	15	12	8	10
Flush	5	5	2	1
Pair	-	-	2	1

Following is further explanation about each win.

Five of a Kind or Five Greens

Five of a Kind is the same number (1 to 36) five times.
For example 23-23-23-23-23.
Five Greens is any combination of zero and double zero.
For example 0-00-0-00-00

Four of a Kind plus One Green

Four of a Kind plus One Green is four of the same number (1 to 36), plus either green.
For example, 23-23-00-23-23.

Natural Straight

Five consecutive numbers. The possible range is 1-2-3-4-5 to 32-33-34-35-36. The natural straight may not include any zeros.
A winning example would be 23-21-25-22-24.

Four of a Kind

This would be any four of the same number, including 0 and 00, plus a singleton from 1 to 36. Note that the singleton may not be a zero, which would result in the higher-paying four of a kind plus one green.
Example: 23-23-5-23-23, 00-00-00-31-00.

Full House

This is three of any one number, and two of any one other number. Either the three of a kind or pair may be all 0 or 00, except not both at the same time, which would result in the higher-paying all zeros win.
Examples: 23-5-23-5-23, 00-00-17-00-17.

Wild Straight

The wild straight must use exactly one 0 or 00 as a wild. The other four numbers must be in the range of 1 to 36.
For example, 21-25-00-23-22.

Three of a Kind

The three of a kind must have three of the same number, plus two distinct singletons. Zeros may be used as either the three of a kind and/or singleton.
Examples: 23-5-23-17-5, 00-13-00-00-5, 29-0-29-7-29.

Two Pair

The two pair must have two distinct pairs and a distinct singleton. Zeros may be used as either a pair, both pairs, or singleton.
Examples: 23-5-17-5-23, 00-7-00-31-7, 0-00-19-0-00.

Flush

All numbers must be the same color (red or black). This can include a pair. It does not include all zeros, which would qualify for the higher-paying all zeros.
Examples: R5-R23-R34-R19-R12, B2-B26-B13-B2-B13.

Pair

One distinct pair and three singletons. Either the pair and/or singletons may include the 0 or 00.
Examples: 23-17-5-23-34, 00-7-13-00-31, 23-17-0-5-31.

Analysis

The following four tables show the probability and return for each pay table. The lower-right cell shows the total return to the player.

Pay Table 1

Type	Win	Combinations	Probability	Return
Five of a Kind or Five Greens	10,000	68	0.00000086	0.00858205
Four of a Kind plus One Green	3,500	360	0.00000454	0.01590203
Natural Straight	1,250	3,840	0.00004846	0.06057916
Four of a Kind	750	6,660	0.00008405	0.06304019
Full House	250	14,040	0.00017719	0.04429851
Wild Straight	125	30,960	0.00039074	0.04884195
Three of a Kind	25	506,160	0.00638807	0.15970181
Two Pair	15	759,240	0.00958211	0.14373163
Flush	5	3,525,120	0.04448934	0.22244668
Pair or Nothing	0	74,388,720	0.93883463	0.00000000
Total		79,235,168	1.00000000	0.76712401

Pay Table 2

Type	Win	Combinations	Probability	Return
Five of a Kind or Five Greens	50,000	68	0.00000086	0.04291024
Four of a Kind plus One Green	15,000	360	0.00000454	0.06815156
Natural Straight	1,500	3,840	0.00004846	0.07269499
Four of a Kind	500	6,660	0.00008405	0.04202679
Full House	200	14,040	0.00017719	0.03543881
Wild Straight	100	30,960	0.00039074	0.03907356
Three of a Kind	20	506,160	0.00638807	0.12776145
Two Pair	12	759,240	0.00958211	0.11498531
Flush	5	3,525,120	0.04448934	0.22244668
Pair or Nothing	0	74,388,720	0.93883463	0.00000000
Total		79,235,168	1.00000000	0.76548938

Pay Table 3

Type	Win	Combinations	Probability	Return
Five of a Kind or Five Greens	5,000	68	0.00000086	0.00429102
Four of a Kind plus One Green	1,000	360	0.00000454	0.00454344
Natural Straight	500	3,840	0.00004846	0.02423166
Four of a Kind	250	6,660	0.00008405	0.02101340
Full House	100	14,040	0.00017719	0.01771940
Wild Straight	60	30,960	0.00039074	0.02344414
Three of a Kind	15	506,160	0.00638807	0.09582109
Two Pair	8	759,240	0.00958211	0.07665687
Flush or Pair	2	19,771,920	0.24953465	0.49906930
Nothing	0	58,141,920	0.73378932	0.00000000
Total		79,235,168	1.00000000	0.76679032

Pay Table 4

Type	Win	Combinations	Probability	Return
Five of a Kind or Five Greens	25,000	68	0.00000086	0.02145512
Four of a Kind plus One Green	5,000	360	0.00000454	0.02271719
Natural Straight	1,250	3,840	0.00004846	0.06057916
Four of a Kind	750	6,660	0.00008405	0.06304019
Full House	250	14,040	0.00017719	0.04429851
Wild Straight	125	30,960	0.00039074	0.04884195
Three of a Kind	25	506,160	0.00638807	0.15970181
Two Pair	10	759,240	0.00958211	0.09582109
Flush or Pair	1	19,771,920	0.24953465	0.24953465
Nothing	0	58,141,920	0.73378932	0.00000000
Total		79,235,168	1.00000000	0.76598967

The final table summarizes the return, house edge, and hit frequency for each pay table.

Pay Table	Return	House Edge	Hit Frequency
1	76.71%	23.29%	6.12%
2	76.55%	23.45%	6.12%
3	76.68%	23.32%	26.62%
4	76.60%	23.40%	26.62%

Progressive Version

The following table shows a progressive version of pay table 1, based on the following rules and assumptions. The wins for the top two prizes are averages and per player.

1. 10,000 jackpot reseed, upon opening the game and after each full jackpot won.
2. 8% contribution rate. In other words, 8% of money bet is added to the jackpot meter. Fixed wins are not deducted from the meter.
3. Any jackpots will be split among all players at the table who made the Poker for Roulette bet.
4. The math assumes the same number of players make the bet at all times.

Type	Payout	Jackpot share	Combinations	Probability	Return
Five of a Kind or Five Greens	67,489	100%	68	0.00000086	0.05791903
Four of a Kind plus One Green	6,749	10%	360	0.00000454	0.03066302
Natural Straight	600		3,840	0.00004846	0.02907800
Four of a Kind	400		6,660	0.00008405	0.03362143
Full House	200		14,040	0.00017719	0.03543881
Wild Straight	100		30,960	0.00039074	0.03907356
Three of a Kind	25		506,160	0.00638807	0.15970181
Two Pair	15		759,240	0.00958211	0.14373163
Flush	5		3,525,120	0.04448934	0.22244668
Nothing	0		74,388,720	0.93883463	0.00000000
Total			79,235,168	1.00000000	0.75167397
Edge					24.83%

The meter advances faster when more players place the Poker For Roulette bet at the same time. The table above reflects the average win after the jackpot is divided among all eligible players.

Conclusion

This analysis was done using combinatorial mathematics in Excel.

If you or any interested party has any questions about the analysis, you may reach me by phone or postal mail below.

Phone: 702-804-0015
Postal mail: 9125 Golden Eagle Drive, Las Vegas, NV 89134

Thank you for choosing me to analyze Poker for Roulette, and I wish you success with it.

Regards,

Michael Shackleford, A.S.A.