

Pai Gow-Mania
Bonus Side Bets Analysis

Prepared for

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Pai Gow-Mania is a new casino table game developed by New Vision Gaming. The game is dealt from a single deck of cards with a joker and can be played by up to 6 players on a blackjack-size table. The joker can be used as an Ace or to complete a straight, flush and straight flush.

In addition to the regular Pai Gow bet, players have the option to make a Three Card Bonus bet and/or a Pai Gow Bonus bet. No commission is charged on any winning Bonus bets.

Each player and the dealer will be dealt three cards face down. After viewing their cards, players that qualify for a Three Card bonus will place their cards face up on the table so the dealer can award them their bonus according to the Three Card Bonus pay tables below:

Three Card Bonus Pay Tables

Hand Type	Table 1	Table 2
St. Flush without Joker	40	40
3 of a Kind	30	25
Straight Flush	5	5
Straight	4	4
Flush	3	3
One Pair	1	1

All non-winning Three Card Bonus bets will be collected.

After all Three Card Bonus bets are settled, each player and the dealer will be dealt four more cards face down to complete their Pai Gow hand. Players then place their five-card high hand and their two-card low hand face down on the appropriate spot marked on the layout. The dealer will then arrange his or her cards making a five-card high hand and a two-card low hand. The regular Pai Gow bets are then settled as in the traditional game of Pai Gow. A 5% commission is collected on all winning regular Pai Gow hands.

Players that have a qualifying bonus hand using their best five out of seven cards will be paid according to the following Pai Gow Bonus pay tables:

Pai Gow Bonus Pay Tables

Hand Type	Table A	Table B	Table C
5 Aces	1000	500	500
Royal Flush	250	250	200
Straight Flush	50	50	40
Four of a Kind	25	25	25
Full House	5	5	5
Flush	4	4	4
Three of a Kind	3	3	3
Straight	2	2	2

Hand Type	Table D	Table E
5 Aces	500	500
Royal Flush	200	200
Straight Flush	50	50
Straight Flush with Joker	30	30
Four of a Kind	25	25
Full House	5	6
Flush	4	4
Three of a Kind	3	3
Straight	2	2

All payoff odds are "to 1."

Three Card Bonus Bet

There are $C_{53,3} = 23,426$ ways to deal seven cards from a 53-card deck. A computer program was written to determine the probability distribution below.

Pay Table 1

Hand Type	Ways	Probability in %	Pay	Contribution in %
St. Flush without Joker	48	0.2049	40	8.1960
3 of a Kind	58	0.2476	30	7.4276
Straight Flush	100	0.4269	5	2.1344
Straight	1020	4.3541	4	17.4165
Flush	1308	5.5835	3	16.7506
Any Pair	3912	16.6994	1	16.6994
Nothing	16980	72.4836	-1	-72.4836
Total	23426	100.0000		-3.8590

The hit frequency is 27.52% and the house advantage is 3.86%.

Pay Table 2

Hand Type	Ways	Probability in %	Pay	Contribution in %
St. Flush without Joker	48	0.2049	40	8.1960
3 of a Kind	58	0.2476	25	6.1897
Straight Flush	100	0.4269	5	2.1344
Straight	1020	4.3541	4	17.4165
Flush	1308	5.5835	3	16.7506
Any Pair	3912	16.6994	1	16.6994
Nothing	16980	72.4836	-1	-72.4836
Total	23426	100.0000		-5.0969

The hit frequency is 27.52% and the house advantage is 5.1%.

Pai Gow Bonus Bet

There are $C_{53,7} = 154,143,080$ ways to deal seven cards from a 53-card deck. A computer program was written to determine the probability distribution below.

Pay Table A

Hand Type	Ways	Probability in %	Pay	Contribution in %
5 Aces	1128	0.00073179	1000	0.731788
Royal Flush	26132	0.01695308	250	4.238270
Straight Flush	184832	0.11990937	50	5.995469
Four of a Kind	307472	0.19947182	25	4.986795
Full House	4188528	2.71729876	5	13.586494
Flush	6172088	4.00412915	4	16.016517
Three of a Kind	7672500	4.97751829	3	14.932555
Straight	11034204	7.15841671	2	14.316833
Nothing	124556196	80.80557103	-1	-80.805571
Total	154143080	100.00000000		-6.000851

Pay Table B

Hand Type	Ways	Probability in %	Pay	Contribution in %
5 Aces	1128	0.00073179	500	0.365894
Royal Flush	26132	0.01695308	250	4.238270
Straight Flush	184832	0.11990937	50	5.995469
Four of a Kind	307472	0.19947182	25	4.986795
Full House	4188528	2.71729876	5	13.586494
Flush	6172088	4.00412915	4	16.016517
Three of a Kind	7672500	4.97751829	3	14.932555
Straight	11034204	7.15841671	2	14.316833
Nothing	124556196	80.80557103	-1	-80.805571
Total	154143080	100.00000000		-6.366744

Pay Table C

Hand Type	Ways	Probability in %	Pay	Contribution in %
5 Aces	1128	0.00073179	500	0.365894
Royal Flush	26132	0.01695308	200	3.390616
Straight Flush	184832	0.11990937	40	4.796375
Four of a Kind	307472	0.19947182	25	4.986795
Full House	4188528	2.71729876	5	13.586494
Flush	6172088	4.00412915	4	16.016517
Three of a Kind	7672500	4.97751829	3	14.932555
Straight	11034204	7.15841671	2	14.316833
Nothing	124556196	80.80557103	-1	-80.805571
Total	154143080	100.00000000		-8.413492

Pay Table D

Hand Type	Ways	Probability in %	Pay	Contribution in %
5 Aces	1128	0.00073179	500	0.365894
Royal Flush	26132	0.01695308	200	3.390616
Straight Flush	38728	0.02512471	50	1.256235
St. Flush with Joker	146104	0.09478466	30	2.843540
Four of a Kind	307472	0.19947182	25	4.986795
Full House	4188528	2.71729876	5	13.586494
Flush	6172088	4.00412915	4	16.016517
Three of a Kind	7672500	4.97751829	3	14.932555
Straight	11034204	7.15841671	2	14.316833
Nothing	124556196	80.80557103	-1	-80.805571
Total	154143080	100.00000000		-9.110092

Pay Table E

Hand Type	Ways	Probability in %	Pay	Contribution in %
5 Aces	1128	0.00073179	500	0.365894
Royal Flush	26132	0.01695308	200	3.390616
Straight Flush	38728	0.02512471	50	1.256235
St. Flush with Joker	146104	0.09478466	30	2.843540
Four of a Kind	307472	0.19947182	25	4.986795
Full House	4188528	2.71729876	6	16.303793
Flush	6172088	4.00412915	4	16.016517
Three of a Kind	7672500	4.97751829	3	14.932555
Straight	11034204	7.15841671	2	14.316833
Nothing	124556196	80.80557103	-1	-80.805571
Total	154143080	100.00000000		-6.392793

The hit frequency is 19.19%.

A Summary of House Advantages

Pay Table	1	2	A	B	C	D	E
House Advantage	3.86%	5.1%	6.00%	6.37%	8.41%	9.11%	6.39%

As in traditional Pai Gow Poker, the house advantage on the regular Pai Gow bet should be between 2.4% and 2.9%, depending both on the house-way strategy and the player strategy.

Pai Gow-Mania should enhance player appeal for Pai Gow Poker where only even money payoffs are possible. For players who thrill at winning a big award, the two bonus side bets should give them a chance to take a shot at it. The operator has the option to offer both or one of the two side bets.