Lucky Ladies

Summary

<table>
<tr><th>Game</th><th>Lucky Ladies, 6 Decks</th></tr>
<tr><td>Pay Table</td><td>LL+BJ=1000:1;LL=125:1;Match20=19:1;Suited20=9:1;Any20=4:1</td></tr>
<tr><td>House Edge</td><td>24.7%</td></tr>
<tr><td>Standard Dev.</td><td>Approx. 6-8</td></tr>
<tr><td>Strategy</td><td>Hi-Lo or KO with Queen of Hearts Side count. Never play first half of shoe. Compare queens seen with decks dealt and play if count is >= the one listed in the table.
<table>
<tr><th>Queens & Decks</th><th>HiLo TC</th><th>KO RC</th></tr>
<tr><td>Queens > Decks</td><td>+8.5</td><td>+13</td></tr>
<tr><td>Queens = Decks</td><td>+7.0</td><td>+11</td></tr>
<tr><td>Queens = Decks-1</td><td>+5.0</td><td>+7</td></tr>
<tr><td>Queens < Decks-2</td><td>+2.0</td><td>+1</td></tr>
</table></td></tr>
<tr><td>Win Rates</td><td>Bet is placed 1.5% of the time.
Expected return is 0.15 bets per 100 hands.</td></tr>
<tr><td>Comments</td><td>Tens of thousands of hands are required to get to the “long run” due to infrequent top payouts. The recommendation is to never place this bet; even when the player has an edge.</td></tr>
</table>

<table>
<tr><th>Game</th><th>Lucky Ladies, 2 Decks</th></tr>
<tr><td>Pay Table</td><td>LL+BJ=1000:1;LL=200:1;Match20=25:1;Suited20=10:1;Any20=4:1</td></tr>
<tr><td>House Edge</td><td>25.0%</td></tr>
<tr><td>Standard Dev.</td><td>Approx. 6-8</td></tr>
<tr><td>Strategy</td><td>Hi-Lo or KO. If a Queen of Hearts has been dealt, bet at TC=+9. Otherwise, play if count is >= the one listed in the table.
<table>
<tr><th>Cards Dealt</th><th>HiLo TC</th><th>KO RC</th></tr>
<tr><td>< 35 (0.67 Decks)</td><td>+8.0</td><td>+8</td></tr>
<tr><td>35-51 (0.67-1 Deck)</td><td>+4.5</td><td>+5</td></tr>
<tr><td>>=52 (> 1 Deck)</td><td>+2.0</td><td>+2</td></tr>
</table></td></tr>
<tr><td>Win Rates</td><td>Bet is placed 4.9% of the time.
Expected return is 0.61 bets per 100 hands.</td></tr>
<tr><td>Comments</td><td>Tens of thousands of hands are required to get to the “long run” due to infrequent top payouts. The recommendation is to never place this bet; even when the player has an edge.</td></tr>
</table>

Description

The Lucky Ladies side bet has become one of the most common blackjack side bets. It is popular among casino owners because it yields them a house edge of approximately 25%, or four to eight times the edge they enjoy with most other side bets. It is also among the most well known side bets among advantage players since most traditional card counting systems have a point at which the Lucky Ladies bet becomes profitable.

Among the general public, my observations are that this side bet is not played as much as many popular side bet options. The high house edge is significant enough to be noticed by most gamblers in a relatively short period of time. The player is only expected to win the side bet once every nine or ten hands. A player could place the bet for several consecutive hands without a single win. Most side bets yield a winning hand about twice as often as Lucky Ladies. Another factor is that the result of the Lucky Ladies bet is often determined after the player receives their first card. Part of the entertainment value provided by other side bets is waiting in anticipation for the rest of the cards to be dealt to determine the final result.

The primary goal of the Lucky Ladies bet is for the first two cards in a player hand to equal 20. If the cards are suited or are the same rank, the payout is higher. The premium hand is a Queen of Hearts pair (the "Lucky Ladies"), and the highest payout occurs when a player is dealt the "Lucky Ladies" and the dealer has a blackjack. Table 1 outlines the terminology used to describe each Lucky Ladies hand.

Table 1: Winning Lucky Ladies hands

Hand	Description
Lucky Ladies	Queen of Hearts Pair; There is a premium payout if this pair is accompanied with a dealer blackjack
Matched 20	Two cards of the same rank and suit totaling to 20
Paired 20	Two cards of the same rank totaling to 20; This is only used in the single deck game since a Matched 20 is not possible
Suited 20	Two cards of the same suit totaling to 20
Any 20	Any two cards totaling to 20

Since a Queen of Hearts pair is not possible in a single deck game, Lucky Ladies is almost always offered on multi-deck games. For the single-deck version, there are alternate pay tables such that the top payout is made for any pair queens. Tables 2 and 3 outline the Lucky Ladies pay tables.

Table 2: Lucky Ladies pay tables for multi-deck games

Hand	Pay Table A	Pay Table B
Lucky Ladies w/Dealer BJ	1000:1	1000:1
Lucky Ladies	125:1	200:1
Matched 20	19:1	25:1
Suited 20	9:1	10:1
Any 20	4:1	4:1

Table 3: Lucky Ladies pay tables for the single deck game

Hand	Pay Table C	Pay Table D
Pair of Queens w/Dealer BJ	250:1	400:1
Pair of Queens	25:1	25:1
Paired 20	9:1	9:1
Suited 20	6:1	7:1
Any 20	3:1	3:1

Pay Table A is most commonly used on games with 4, 6, or 8-deck shoes, and Pay Table B is typically used on 2-deck games. Some players refer to Pay Table A as “short pay Lucky Ladies”, especially when it is used on a 2-deck game. Pay Tables C and D are only used on a single deck game. Table 4 lists the house edge for each pay table based on the number of decks.

Table 4: Lucky Ladies house edge

Decks	Pay Table A	Pay Table B	Pay Table C	Pay Table D
1	NA	NA	29.89%	24.80%
2	30.05%	24.95%	NA	NA
4	26.03%	19.45%	NA	NA
6	24.70%	17.63%	NA	NA
8	24.04%	16.72%	NA	NA

Effect of Removal

To illustrate the effect of removal, computer simulations were run on a six deck game using Pay Table A, a two deck game using Pay Table B, and a single deck game using Pay Table C. Table 5 shows the results from this simulation.

Table 5: Lucky Ladies Effect of Removal

Card Removed	Six Deck game using Pay Table A	Two Deck game using Pay Table B	One Deck game using Pay Table C
Queen of Hearts	+2.3%	+6.4%	+10.0%
Ten thru King	+0.9%	+2.4%	+4.1%
Ace	0.0%	-0.6%	-0.3%
Nine	-0.1%	-0.7%	-1.7%
Two thru Eight	-0.6%	-1.6%	-3.1%

The removal of any ten-valued card increases the house edge. The Queen of Hearts has a much more significant effect since it is needed to win the highest payouts. The removal of any non-ten valued cards will lower the house edge, including the ace and the nine. Given that a player ace-nine makes a twenty, it may be surprising that the removal of either card does not increase the house edge. However, the results clearly show that both cards are close to neutral in a six deck game and that they lower the house edge in a single or double deck game. A nine has a slightly more significant impact on lowering the house edge because the ace is needed for the dealer to get a blackjack for the top payout.

Strategy Analysis

There are three strategies discussed, each of which are able to determine when the player has an advantage with the Lucky Ladies side bet. The first strategy is to simply use Hi-Lo or Knockout. Since the removal of small cards lowers the house edge and the removal of face cards increases the house edge, the bet becomes favorable to the player at a high enough count. The second strategy involves side counting the Queen of Hearts (or any Queen in the single deck game) and modifying the strategy based on the number of queens remaining per remaining deck. The third strategy is a simplified version of the second strategy, providing a simpler means for estimating the queens per deck ratio.

Using Blackjack Card Counting Systems

Computer simulations were run to obtain the player's advantage for each Hi-Lo True count and for each KO Running Count. The next several tables show the results for 6-deck, deck, and 1-deck games using their most common tables.

Table 2.6: Player Expectation per Hi-Lo True Count for a six-deck game using Pay Table A

Hi-Lo True Count	Player EV (Pay Table A)	Standard Deviation	Standard Error
<0.0	-0.314	4.599	0.000
+0.0	-0.242	4.997	0.000
+0.5	-0.222	5.103	0.000
+1.0	-0.204	5.185	0.000
+1.5	-0.186	5.228	0.000
+2.0	-0.167	5.312	0.000
+2.5	-0.147	5.531	0.000
+3.0	-0.129	5.546	0.001
+3.5	-0.108	5.716	0.001
+4.0	-0.090	5.707	0.001
+4.5	-0.069	5.923	0.001
+5.0	-0.050	5.876	0.001
+5.5	-0.030	5.881	0.001
+6.0	-0.007	6.271	0.002
+6.5	0.014	6.455	0.002
+7.0	0.037	6.415	0.002
+7.5	0.059	6.459	0.002
+8.0	0.080	6.476	0.003
+8.5	0.103	6.612	0.003
+9.0	0.126	6.673	0.004
+9.5	0.149	6.950	0.005
>=+10.0	0.223	7.286	0.003

Table 2.7: Player Expectation per KO Count for a six-deck game using Pay Table A

KO Running Count (IRC=-20)	Player EV (Pay Table A)	Standard Deviation	Standard Error
<=0	-0.267	4.860	0.000
+1	-0.149	5.405	0.001
+2	-0.135	5.474	0.001

+3	-0.118	5.559	0.001
+4	-0.101	5.663	0.001
+5	-0.083	5.753	0.001
+6	-0.065	5.863	0.001
+7	-0.046	5.988	0.001
+8	-0.027	6.108	0.001
+9	-0.007	6.226	0.001
+10	0.013	6.338	0.002
+11	0.032	6.393	0.002
+12	0.054	6.459	0.002
+13	0.077	6.712	0.003
+14	0.092	6.494	0.003
+15	0.118	6.789	0.004
>=+16	0.182	7.048	0.002

Table 2.8: Player Expectation per Hi-Lo True Count for a two-deck game using Pay Table B

Hi-Lo True Count	Player EV (Pay Table B)	Standard Deviation	Standard Error
<0.0	-0.358	4.160	0.000
+0.0	-0.253	4.611	0.000
+0.5	-0.226	4.776	0.000
+1.0	-0.211	4.827	0.000
+1.5	-0.188	4.943	0.000
+2.0	-0.173	4.951	0.000
+2.5	-0.156	5.046	0.000
+3.0	-0.134	5.142	0.000
+3.5	-0.117	5.222	0.001
+4.0	-0.098	5.277	0.001
+4.5	-0.077	5.408	0.001
+5.0	-0.058	5.389	0.001
+5.5	-0.039	5.498	0.001
+6.0	-0.020	5.643	0.001
+6.5	-0.003	5.610	0.001
+7.0	0.021	5.679	0.001
+7.5	0.046	5.860	0.001
+8.0	0.069	5.906	0.001
+8.5	0.087	6.111	0.001
+9.0	0.107	5.967	0.001
+9.5	0.136	6.227	0.003
>=+10.0	0.240	6.680	0.001

Table 2.9: Player Expectation per KO Count for a two-deck game using Pay Table B

KO Running Count (IRC=-4)	Player EV (Pay Table B)	Standard Deviation	Standard Error
<=0	-0.312	4.380	0.000
+1	-0.209	4.822	0.000
+2	-0.178	4.942	0.000
+3	-0.146	5.049	0.000
+4	-0.109	5.213	0.000
+5	-0.070	5.354	0.000
+6	-0.027	5.563	0.001
+7	0.019	5.758	0.001
+8	0.064	5.875	0.001
+9	0.117	6.119	0.001
+10	0.169	6.432	0.001
+11	0.227	6.780	0.002
+12	0.278	6.752	0.002
+13	0.338	7.056	0.003
+14	0.398	7.392	0.005
+15	0.463	7.430	0.007
>=+16	0.581	8.516	0.008

Table 2.10: Player Expectation per Hi-Lo True Count for a single deck game

Hi-Lo True Count	Pay Table C			Pay Table D		
	Player EV	Standard Deviation	Standard Error	Player EV	Standard Deviation	Standard Error
<0.0	-0.460	3.449	0.000	-0.426	4.828	0.000
+0.0	-0.306	4.263	0.000	-0.256	6.134	0.000
+1.0	-0.253	4.514	0.000	-0.195	6.524	0.000
+2.0	-0.222	4.632	0.000	-0.163	6.715	0.000
+3.0	-0.172	4.921	0.000	-0.108	7.181	0.001
+4.0	-0.140	5.042	0.000	-0.066	7.424	0.001
+5.0	-0.107	5.157	0.000	-0.034	7.550	0.001
+6.0	-0.058	5.418	0.001	0.022	7.976	0.001
+7.0	-0.017	5.583	0.001	0.068	8.233	0.001
+8.0	0.031	5.835	0.001	0.120	8.646	0.001
+9.0	0.081	6.132	0.001	0.189	9.189	0.002
>=+10.0	0.253	6.908	0.001	0.380	10.383	0.001

Table 2.11: Player Expectation per KO Count for a single deck game

KO Running Count	Pay Table C			Pay Table D		
	Player EV	Standard Deviation	Standard Error	Player EV	Standard Deviation	Standard Error
<=0	-0.423	3.696	0.000	-0.385	5.236	0.000
+1	-0.338	4.061	0.000	-0.292	5.801	0.000
+2	-0.287	4.318	0.000	-0.235	6.212	0.000
+3	-0.230	4.578	0.000	-0.172	6.624	0.000
+4	-0.166	4.894	0.000	-0.100	7.134	0.000
+5	-0.090	5.254	0.000	-0.014	7.709	0.000
+6	-0.006	5.632	0.000	0.080	8.314	0.001
+7	0.094	6.134	0.001	0.195	9.129	0.001
+8	0.199	6.628	0.001	0.317	9.927	0.001
+9	0.320	7.215	0.001	0.459	10.880	0.002
+10	0.445	7.759	0.002	0.605	11.758	0.003
>=+11	0.677	8.886	0.003	0.884	13.596	0.004

As shown by the tables above, Hi-Lo players have an advantage at a true count of +6.5 for the 6-deck game and a true count of +7.0 for the 2-deck game. In the single deck game, players have an advantage at a Hi-Lo true count of +8.0 when pay table C is used, and +6.0 when pay table D is used.

When using Knockout, the player has the edge at +10 in the six deck game at +7 in the double deck game and the single deck game using pay table C. A KO running count of +6 is needed in the single deck game using pay table D.

Tables 12 and 13 below summarize the counts at which the bet becomes favorable to the player for other game variations.

Table 12: Hi-Lo True Counts for which the player has an advantage with the Lucky Ladies bet

Decks	Pay Table A			Pay Table B		
	Min TC for Advantage	EV at Min TC	Approx. Increase in EV per TC	Min TC for Advantage	EV at Min TC	Approx. Increase in EV per TC
2	+8.5	0.014	0.04	+7.0	0.021	0.04
4	+7.0	0.013	0.04	+5.0	0.015	0.04
6	+6.5	0.014	0.04	+4.5	0.018	0.04
8	+6.5	0.007	0.04	+4.0	0.011	0.04

Table 13: KO Running Counts for which the player has an advantage with the Lucky Ladies bet

Decks	Pay Table A			Pay Table B		
	Min RC for Advantage	EV at Min RC	Approx. Increase in	Min RC for Advantage	EV at Min RC	Approx. Increase in

			EV per RC			EV per RC
2	+9	0.041	0.05	+7	0.019	0.05
4	+9	0.018	0.03	+6	0.014	0.03
6	+10	0.013	0.02	+5	0.003	0.02
8	+10	0.011	0.02	+5	0.014	0.02

Queen Side Count

Although blackjack counting systems alone are enough for a player to identify when they have an advantage, incorporating a Queen side-count can substantially increase the player's overall EV. When using this side count in the single deck game, all queens are tracked, but when two or more decks are in use, only the queen of hearts is tracked. Simulations with a queen side-count were run to illustrate further how much of an impact it has on the overall house edge. Table 14 lists the house edge based on the number of Queen of Hearts per deck left to be dealt multi-deck games, and table 15 lists the results based on all Queens per deck in the single deck game.

Table 14: House Edge based on number of Queen of Hearts per remaining deck

Decks	Queen of Hearts per deck	House Edge Pay Table A	House Edge Pay Table B
2	**0.0**	37.47%	33.78%
2	**0.5**	34.26%	30.51%
2	**1.0**	29.27%	24.14%
2	**1.5**	21.53%	13.95%
2	**2.0**	10.42%	-0.84%
4	**0.0**	34.16%	29.61%
4	**0.5**	29.99%	24.72%
4	**1.0**	24.36%	17.34%
4	**1.5**	16.57%	7.11%
4	**2.0**	2.43%	-12.02%
6	**0.0**	32.82%	27.96%
6	**0.5**	28.12%	22.15%
6	**1.0**	22.86%	15.27%
6	**1.5**	13.95%	3.43%
6	**2.0**	-0.53%	-16.25%
8	**0.0**	32.33%	27.31%
8	**0.5**	27.29%	21.04%
8	**1.0**	22.17%	14.31%
8	**1.5**	13.09%	2.25%
8	**2.0**	-2.30%	-18.65%

Table 15: House Edge based on number of Queens per remaining deck

Queens per	Pay Table C	Pay Table D

deck		
0	57.09%	55.67%
1	52.24%	50.51%
2	47.52%	45.23%
3	36.76%	32.79%
4	27.08%	21.47%
5	16.02%	8.63%
6	-1.13%	-11.63%
7	-20.38%	-34.40%
8	-57.13%	-78.35%

It is worth noting that a queen side-count alone is enough to determine whether or not the player has an edge. For most multi-deck versions of the game, if the remaining deck has twice the normal distribution of Queen of Hearts, the player has a small advantage. For the single deck game, only 1.5 times the normal distribution of queens is needed for the player to have an edge.

The next simulation incorporated both the queen side-count and the blackjack card counting systems to determine which count, based on the number of queens remaining, the Lucky Ladies bet becomes favorable. Tables 16, 17, 18, and 19 show the results from these simulations. Note that in all of these tables, the minimum count listed is the lowest count for which the player has an EV of at least 0.005. There are a few entries where the player has a slight advantage (less than 0.005) at lower counts than are listed. For single deck games, the sample size was too small to obtain meaningful numbers for a Queens per deck ratio greater than 7.

Table 16: Hi-Lo True Counts for which the player has an advantage based on a Queen of Hearts side-count

		Pay Table A			Pay Table B		
Decks	Queen of Hearts per deck	Min TC for Advantage	EV at Min TC	Approx. Increase in EV per TC	Min TC for Advantage	EV at Min TC	Approx. Increase in EV per TC
2	0	+10.5	0.027	0.03	+9.0	0.022	0.04
2	0.5	+10.0	0.019	0.04	+8.5	0.017	0.04
2	1.0	+9.5	0.005	0.04	+8.0	0.005	0.04
2	1.5	+7	0.033	0.04	+4.5	0.007	0.04
2	2.0	+4.5	0.012	0.03	+2.0	0.036	0.02
4	0	+9.5	0.034	0.04	+7.5	0.016	0.04
4	0.5	+8.5	0.006	0.04	+7.0	0.012	0.04
4	1.0	+7.5	0.029	0.04	+5.5	0.032	0.04
4	1.5	+6.0	0.017	0.04	+2.5	0.009	0.04
4	2.0	+2.5	0.034	0.04	0.0	0.057	0.06
6	0	+8.5	0.014	0.04	+7.0	0.022	0.04
6	0.5	+8.5	0.022	0.04	+6.5	0.017	0.04

6	**1.0**	+7.0	0.020	0.04	+4.5	0.016	0.04
6	**1.5**	+5.0	0.022	0.04	+2.0	0.022	0.04
6	**2.0**	+1.5	0.009	0.04	-2.0	0.032	0.04
8	**0**	+8.5	0.011	0.04	+7.0	0.030	0.05
8	**0.5**	+8.0	0.018	0.04	+6.0	0.017	0.04
8	**1.0**	+6.5	0.007	0.03	+4.0	0.011	0.04
8	**1.5**	+4.5	0.012	0.03	+1.5	0.017	0.04
8	**2.0**	+1.0	0.007	0.04	-3.0	0.009	0.03

Table 17: KO Running Counts for which the player has an advantage based on a Queen of Hearts side-count

Decks	**Queen of Hearts per deck**	**Pay Table A**			**Pay Table B**		
		Min TC for Advantage	EV at Min TC	Approx. Increase in EV per TC	Min TC for Advantage	EV at Min TC	Approx. Increase in EV per TC
2	**0**	+10	0.044	0.05	+9	0.055	0.05
2	**0.5**	+11	0.008	0.04	+10	0.031	0.04
2	**1.0**	+9	0.013	0.05	+8	0.025	0.05
2	**1.5**	+8	0.017	0.03	+5	0.007	0.03
2	**2.0**	+5	0.021	0.05	+2	0.007	0.05
4	**0**	+11	0.011	0.03	+9	0.019	0.03
4	**0.5**	+11	0.005	0.03	+9	0.018	0.03
4	**1.0**	+10	0.014	0.02	+7	0.022	0.02
4	**1.5**	+7	0.020	0.03	+3	0.016	0.03
4	**2.0**	+2	0.005	0.03	-2	0.031	0.03
6	**0**	+14	0.007	0.02	+11	0.023	0.02
6	**0.5**	+13	0.009	0.02	+10	0.024	0.02
6	**1.0**	+11	0.016	0.02	+6	0.018	0.02
6	**1.5**	+6	0.013	0.02	0	0.021	0.02
6	**2.0**	0	0.028	0.03	-8	0.016	0.02
8	**0**	+14	0.013	0.01	+10	0.006	0.02
8	**0.5**	+14	0.015	0.01	+9	0.008	0.02
8	**1.0**	+11	0.014	0.02	+5	0.011	0.02
8	**1.5**	+6	0.014	0.02	-1	0.016	0.02
8	**2.0**	-1	0.030	0.02	-11	0.005	0.02

Table 18: Single Deck Hi-Lo counts for which the player has an advantage based on a queen side count

Decks	**Queens per deck**	**Pay Table C**			**Pay Table D**		
		Min TC for Advantage	EV at Min TC	Approx. Increase	Min TC for Advantage	EV at Min TC	Approx. Increase

				in EV per TC			in EV per TC
1	**3**	+13	0.038	0.02	+10	0.039	0.02
1	**4**	+9	0.049	0.02	+7	0.017	0.03
1	**5**	+5	0.013	0.04	+3.5	0.010	0.04
1	**6**	+3	0.050	0.03	+1.5	0.102	0.03
1	**7**	0	0.031	0.04	-4.0	0.014	0.03

Table 19: Single Deck Hi-Lo and KO Counts for which the player has an advantage based on a queen side count

		Pay Table C			Pay Table D		
Decks	**Queens per deck**	**Min RC for Advantage**	**EV at Min RC**	**Approx. Increase in EV per RC**	**Min RC for Advantage**	**EV at Min RC**	**Approx. Increase in EV per RC**
1	**3**	+9	0.029	0.07	+8	0.023	0.07
1	**4**	+8	0.060	0.07	+6	0.013	0.07
1	**5**	+6	0.032	0.07	+5	0.055	0.09
1	**6**	+4	0.036	0.07	+3	0.062	0.09
1	**7**	+3	0.076	0.10	+2	0.095	0.11

Simplified Queen Side Count

Memorizing the count at which the Lucky Ladies side bet becomes playable based on the number of queens remaining in the deck may seem like the best way to approach the game. Although it will yield the highest overall return, the process of calculating the number of queens remaining per deck in addition to all of the other calculations required at the table to be a successful advantage player may be a bit too much at the table in a casino environment. The "Simplified Queen Side Count" offers some shortcuts which may be used to simplify the task of finding the Queens per deck.

Shoe Games (4, 6, and 8 decks)

There are two components to simplifying the Queen side-count on a shoe game. The first component is to never bet until half of the shoe has been dealt. The second component is to use compare the Queen side-count with the number of decks dealt in lieu of calculating the Queens per deck ratio.

Early in a shoe, the Queens per deck is going to be at most 1.0 until ¼ of the shoe has been dealt (assuming the count is floored to the nearest 0.5). The counts shown in Tables 16 and 17 this early in a shoe are exceptionally rare, and a player is giving up little by deciding to never play the side bet until the second half of the shoe.

Once half the shoe has been dealt, the number of decks in the discard rack and the number Queen of Hearts dealt are compared to determine the count for which the player has an advantage. Table 20 lists the Hi-Lo and KO counts for which the player has an advantage using this approximation.

Table 20: Minimum counts for which the player has a minimum 0.5% advantage using the Simplified Queen Side-count on 4+ deck games.

Decks	Decks Dealt vs. Queen of Hearts Count	Pay Table A		Pay Table B	
		Min Hi-Lo TC	Min KO RC	Min Hi-Lo TC	Min KO RC
4	Queens seen > Decks Dealt	+9.0	+11	+7.5	+9
4	Queens seen = Decks Dealt	+7.5	+9	+5.5	+6
4	Queens seen = Decks Dealt - 1	+4.5	+5	+1.5	+1
4	Queens seen <= Decks Dealt – 2	+1.5	0	-1.0	-7
6	Queens seen > Decks Dealt	+8.5	+13	+6.5	+10
6	Queens seen = Decks Dealt	+7.0	+11	+5.0	+6
6	Queens seen = Decks Dealt - 1	+5.0	+7	+2.5	+1
6	Queens seen <= Decks Dealt – 2	+2.0	+1	-1.0	-7
8	Queens seen > Decks Dealt	+8.0	+14	+6.5	+10
8	Queens seen = Decks Dealt	+7.0	+11	+4.5	+6
8	Queens seen = Decks Dealt – 1	+5.0	+7	+1.5	+1
8	Queens seen <= Decks Dealt – 2	+3.0	+1	0.0	-8

For example, if playing a six-deck game using Pay Table A, the side bet should never be placed when the discard rack contains three or fewer decks. Suppose that three decks have been dealt, and that no Queen of Hearts had been seen. At this point, the Queens seen (zero) is less than the Decks dealt (three) minus two, and the player has the advantage with the side bet if the Hi-Lo true count is >=+2, or if the KO running count is >=+1. Now, suppose that on the next round of play, two queens were observed. At this point, the Queens seen (two) is only one less than the decks dealt (still approximately three), and the side bet has positive EV if the Hi-Lo true count is >=+5 or if the KO running count is >=+7. A similar comparison can be made until the end of the shoe to determine the count for which the player has an advantage.

It's worth noting that comparing Queens dealt with the number of decks dealt is simply a means to approximate the Queens per deck ratio. There are a few betting opportunities lost, but the reduction in the overall win rate by using these approximations is a small cost to pay when considering the simplicity of this system. The *Win Rates* section includes tables to illustrate the impact of using this approximation in more detail.

Double Deck Games

The simplified strategy for a double deck game is more straightforward and much more accurate than a shoe game. Once a Queen of Hearts has been observed, it is impossible to win one of the top two payouts, and the Queens per deck ratio is assumed to be 0.0. As long as no Queen of Hearts has been dealt, table 21 may be used to determine the Queens per deck ratio, and tables 16 and 17 may be used to find the minimum count for which the player has the advantage.

Table 21 Queens per deck ratio in a double deck game when no Queen of Hearts has been dealt

Cards Dealt	Queen of Hearts per Deck
<35 (<0.67 Decks)	1.0
35-51 (0.67-1 Deck)	1.5
>52 (>1 Deck)	2.0

Single Deck Games

To use the simplified strategy on the single deck game, do not place the side bet until at least ¼ of the cards have been dealt. Players who are not comfortable with deck estimation may choose to never play the first hand if there are 4 or more spots being played, never play the first two hands if there are 3 spots being played, and never play the first three hands when head's up and only playing one hand. Waiting the prerequisite number of hands will on average use up about ¼ of the deck.

Once the required numbers of hands are dealt, the Queen side-count may be used directly with no additional computation following table 22.

Table 22: Minimum counts for which the player has a minimum 0.5% advantage using a Queen Side-Count.

Queens Dealt	Pay Table C		Pay Table D	
	Min Hi-Lo TC	Min KO RC	Min Hi-Lo TC	Min KO RC
0	+5	+5	+3.5	+4
1	+7	+6	+5	+5
2	+13	+8	+10	+7
3-4	+14	+9	+14	+9

Win Rates

In the *Strategy Analysis* section, three different options were provided to determine whether or not the player has an advantage with the Lucky Ladies side bet. The three options were (1) Use a blackjack card counting system, (2) Incorporate a Queen side-count and bet based on a precise calculation of the number of queens per deck remaining in the shoe, and (3) Incorporate a Queen side-count, but use a simplified system to approximate the queens per remaining deck. The tables below provide a comparison for each of these systems. Table 23 lists the average number of times per 100 blackjack hands played the player will place the side bet using the specified strategy. Table 24 lists the expected win rate per 100 blackjack hands assuming the player is flat betting one unit on the Lucky Ladies side bet whenever they have an advantage.

Table 23: Average number of times per 100 blackjack hands the player has an advantage with the Lucky Ladies side bet

Decks	Pay Table	Hi-Lo	KO	Hi-Lo w/ Queen Side Count	KO w/ Queen Side Count	Hi-Lo w/ Simplified Side Count	KO w/ Simplified Side Count
2	A	1.9	1.8	2.4	2.7	2.1	2.5
4	A	1.8	2.2	2.5	2.9	2.2	2.5
6	A	1.1	1.3	1.7	2.0	1.5	1.6
8	A	1.1	1.4	1.8	2.0	1.6	1.8
2	B	3.5	4.5	4.6	5.6	4.6	5.2
4	B	4.8	5.5	6.3	6.1	4.9	5.2
6	B	3.6	4.7	5.4	5.7	4.2	4.5
8	B	4.4	4.3	5.5	5.5	4.9	5.0
1	C	5.1	4.6	8.4	6.8	5.6	6.2
1	D	9.0	8.1	11.2	10.4	10.1	11.1

Table 24: Expected units won per 100 blackjack hands flat betting one unit on the side bet when the player has the advantage

Decks	Pay Table	Hi-Lo	KO	Hi-Lo w/ Queen Side Count	KO w/ Queen Side Count	Hi-Lo w/ Simplified Side Count	KO w/ Simplified Side Count
2	A	0.18	0.20	0.27	0.29	0.27	0.29
4	A	0.17	0.18	0.27	0.29	0.26	0.28
6	A	0.08	0.08	0.14	0.16	0.13	0.15
8	A	0.08	0.09	0.16	0.17	0.15	0.16
2	B	0.40	0.44	0.62	0.67	0.62	0.67
4	B	0.46	0.52	0.75	0.80	0.68	0.73
6	B	0.29	0.33	0.53	0.56	0.47	0.51
8	B	0.32	0.36	0.58	0.59	0.53	0.58
1	C	0.89	0.95	1.45	1.57	1.26	1.26
1	D	1.65	1.78	2.64	2.71	2.28	2.34

When analyzing these tables, there are a couple of interesting things worth pointing out. The first is that Knockout outperforms Hi-Lo. This is because any non-ten valued card lowers the house edge, and KO incorporates all sevens into its count. The second point is that using the simplified system for estimating the number of queens remaining per deck has a minimal impact on the player's overall expectation. For most players, the additional advantage gained by more precisely calculating the queens per deck is not going to be worth the effort. The additional EV could easily be lost due to an increase of errors using a more complicated system.

The final analysis done on the Lucky Ladies bet is to determine the distribution of each payout. Table 25 outlines the percentage of the time each payout is expected to occur for players using Hi-Lo with a simplified Queen side-count. Table 26 outlines the percentage of the total return obtained from each payout. Only the results for Hi-Lo are shown because the KO numbers are comparable.

Table 25: Frequency of winning hands using Hi-Lo with the simplified side count

Decks	Pay Table	Lucky Ladies + Dealer BJ	Lucky Ladies	Matched or Paired 20	Suited 20	Any 20	Total
1	C	0.07%	0.94%	1.92%	3.25%	9.75%	15.93%
1	D	0.06%	0.84%	1.79%	3.02%	9.05%	14.76%
2	A	0.004%	0.06%	0.40%	3.10%	12.05%	15.62%
2	B	0.004%	0.06%	0.37%	2.86%	11.12%	14.42%
4	A	0.005%	0.08%	0.56%	2.88%	11.19%	14.72%
4	B	0.004%	0.08%	0.51%	2.66%	10.29%	13.54%
6	A	0.005%	0.08%	0.59%	2.76%	10.69%	14.13%
6	B	0.004%	0.07%	0.55%	2.56%	9.92%	13.11%
8	A	0.005%	0.08%	0.63%	2.76%	10.70%	14.17%
8	B	0.004%	0.07%	0.58%	2.54%	9.83%	13.02%

Table 26: Percentage of the total return per winning payout using Hi-Lo with the simplified side count

Decks	Pay Table	Lucky Ladies + Dealer BJ	Lucky Ladies	Matched or Paired 20	Suited 20	Any 20
1	C	15.9%	22.0%	16.3%	18.3%	27.5%
1	D	20.8%	19.4%	15.0%	19.6%	25.2%
2	A	4.6%	8.1%	8.0%	29.0%	50.2%
2	B	4.0%	12.8%	9.3%	28.9%	44.9%
4	A	5.6%	10.7%	11.0%	26.7%	46.1%
4	B	4.4%	15.4%	12.8%	26.5%	41.0%
6	A	5.6%	11.1%	11.9%	26.2%	45.2%
6	B	4.3%	15.1%	14.1%	26.1%	40.5%
8	A	5.6%	10.9%	12.5%	26.1%	45.0%
8	B	4.3%	15.0%	14.7%	25.9%	40.2%

Recommendations

For multi-deck games, the recommendation is to never place the Lucky Ladies bet. There are rare cases where the player has a substantial theoretical advantage; however, a significant portion of this advantage can only be obtained by being dealt a Queen of Hearts pair and winning one of the top two payouts. If the top payout were eliminated from the 6-deck game, the win rate per 100 hands would be reduced from 0.13 units to 0.05 units. If the top two payouts were eliminated, the player would still be at a disadvantage. A player can expect to get a Queen of Hearts pair roughly once every 1250 hands. However, since the player only has the advantage 1.5% of the time and is not placing the Lucky Ladies bet the other 98.5% of their hands, they will need to play more than 80,000 blackjack hands before they have an expectation of winning the Queen of Hearts Pair payout even once. It would require most serious blackjack players roughly two years to play this many hands. The number of hands required before a player can expect to hit the top payout (Queen of Hearts Pair with a Dealer Blackjack) is more than 1.3 million. Most players will not play this many hands in their lifetime.

The single deck game is a little more promising. It takes just over 1400 hands to win the top payout, and just over 100 hands to win the second highest payout. Given that the player has an advantage roughly 5-10% of the time (depending on the pay table and the playing strategy), a player can expect to win the Lucky Ladies payout every 1000-2000 hands of blackjack. The top payout with the dealer blackjack will require 15000-30000 hands. However, even if the player never wins this top payout, they still have a positive expectation. Unfortunately, there are very few playable single deck games, and at the time of this writing, the author is aware of only one casino that offers a single deck Lucky Ladies game. It is questionable that anyone will be able to play enough hands at a single deck Lucky Ladies game to have an expectation of winning one of the top payouts.