PROBABILITY OF DIFFERENT CARD DISTRIBUTIONS

These are the probabilities that the outstanding cards in a suit will be distributed in a certain way. It assumes that you have no information about the distribution of other suits.

Number of outstanding cards	Possible Holding	Percentage Probability
2	1-1 2-0 or 0-2	52 48
3	2-1 or 1-2 3-0 or 0-3	78 22
4	3-1 or 1-3 2-2 4-0 or 0-4	49.7 40.7 9.6
5	3-2 or 2-3 4-1 or 1-4 5-0 or 0-5	67.8 28.3 3.9
6	4-2 or 2-4 3-3 5-1 or 1-5 6-0 or 0-6	48.5 35.5 14.5 1.5
7	4-3 or 3-4 5-2 or 2-5 6-1 or 1-6 7-0 ro 0-7	62.2 30.5 6.8 0.5
8	5-3 or 3-5 4-4 6-2 or 2-6 7-1 or 1-7 8-0 or 0-8	47.1 32.7 17.1 2.9 0.16

It is a bit impractical to memorise this table. However, you may get a feel for the trends in the relative probabilities. If there are an odd number of cards outstanding, they break as evenly as possible (e.g. 3-2 or 2-3 with 5 cards oustannding). If there are an even number of cards outstanding, they will not break evenly but most likely break with one opponent having two more cards than the other (e.g. 2-4 or 4-2 if there are 6 cards outstanding).

If you want the probability of one or other of the distributions, just add the probabilities of either (e.g. the probability of 6 outstanding cards being 3-3 or 4-2 or 2-4 is 48.5+35.5 = 84%.

If you are missing the king in the suit, the odds are to finesse if there are 3 or more outstanding cards, otherwise play to drop the king.
If you are missing the queen in the suit, the odds are to finesse if there are 5 or more outstanding cards, otherwise play to drop the queen.

Suppose you want to know the probability of a specific holding. For example you may want to know the probability that a specific opponent has a doubleton king when there are 5 outstanding cards. Firstly, the probability he has a doubleton is 33.9%, half the probability of a 3-2 split. (We halve it because, with a 3-2 split, half the time that opponent will have 2 and half the time his partner will have 2). Given he has a doubleton, the probability he has the king is 40%. (The king is equally likely to be in any of the 5 cards the opponents hold and he has 2 or the 5 cards.) The probability that opponent has the doubleton king is then 0.339*0.4 = 0.136 or 13.6%. The same ideas can be used to calculate the probability of other specific holdings.

The probabilties in the table change if we know something about how another suit(s) is distributed. The more cards one opponent has in a second suit compared with his partner, the more likely they are to be short in the first suit. For example, suppose we are missing 4 cards in the first suit and 9 cards in a second suit. The following table gives the probabilities of the distribution of cards in the first suit if we know the distribution of cards in the second suit.

First suit	No knowledge	5-4 in second suit	6-3 in second suit	7-2 in second suit	8-1 in second suit	9-0 in second suit
4-0	4.8	2.9	1.5	0.6	0.2	0.04
3-1	24.9	21.2	14.7	9.2	5.0	2.2
2-2	40.7	42.3	39.7	34.5	27.7	19.7
1-3	24.9	28.2	35.3	41.6	46.2	48.1
0-4	4.8	5.3	8.8	13.9	20.8	30.0

Although there is no need to remember any of these numbers, it it clear that knowing something about another suit’s distribution can have a big effect on how the critical suit is distributed.