

Range Weighting using Propokertools.com

We now need to develop an intuition for standard hand versus range flop equity calculations. Knowing how individual hands match up against each other is an important first step, but we also need to learn to accurately weight the different parts of an opponent's range. To do this we will need combinatorics (mostly from Chapter 1) and an understanding of preflop tendencies, along with a bit of cleverness to navigate the 50-character limit in the propokertools.com equity calculator.

Consider a familiar flop, **JdT_h6_d**. What hands interact with it? Chapter 8 includes a sample of much more thorough flop analyses; here we will focus on the basics. There are a handful of broad categories of flop hand strength on this board: sets (JJ, TT, 66), medium made hands (JT, J6, T6, AA-QQ, AJ), pair + draw (e.g. AA/AJ with diamonds, KQJ*), big draws (OE+FD or better, i.e. KQ9*, Q98*, with and without diamonds, KQ**/Q9** with diamonds, etc.), and medium-good draws (nut flush draw, KQ**, etc). The goal is to design a generic range that accurately represents the typical scenarios where an interesting decision occurs on this board, weighted for an average opponent's preflop tendencies, and which can be modified to suit a variety of postflop action sequences.

The biggest mistake people make in designing ranges is failing to recognize that different parts of their specified range have inherently different weights; for example, on this board, JJ**, KQ**, KQJ*, and KQJT represent 1.5%, 7%, 1%, and 0.08% of the remaining deck. A chosen range with a few four-card wrap and pair+wrap combinations and one JJ** is going to be way over-weighted toward sets and generally inaccurate, both because most opponents fold some JJ** hands preflop and because they will have many combinations of three-card wraps as well. Similarly, if we try to represent the medium-strength draws with {KQ**, Q9**, 98**, Ad*d**}, we have just named roughly 20% of the deck, much of which is not in most preflop ranges (e.g. KQ74r). In some cases, a possible range will be correctly heavy in one type of hand; e.g. in single-raised pots on Kxx boards it is accurate to give most opponents all the combinations of KK**, and someone whose range is for raising a KJ6dd flop is {top set, nut wrap+fd} really does have mostly KK because there aren't very many combos of AQTdd. But it is rare for all parts of a range to line up so cleanly that we can just use a bunch of *s as placeholders next to 2- and 3-card combos (e.g. JJ**, TT**, KQ9*,JT**, 66**) and be accurate.

The "Syntax Summary" section to the right of the simulation editor on propokertools is our weapon against this mistake. Using it and our knowledge of combinatorics, we can narrow or widen different pieces of a range relatively easily. There are a handful of letters (B, M, Z, L, N, and W) which each represent a different subset of the ranks in the deck. The most useful of these are B (A,K,Q,J); N (K,Q,J,T,9); M (T,9,8,7); and Z (6,5,4,3,2). if chosen well they can be used in lieu of a * to accomplish two goals at once, narrowing the number of combinations of a two- or three- card combo while accurately representing sidecards. Because they are targeted to Omaha 8 or better, L (A-8) and W (A-5) group aces with several low cards, which makes them less than ideal for our purposes, but they can still be used occasionally. Unfortunately, the codes do not match up with the B/M/L groupings we used in Chapter 2 to characterize flop textures – we won't ever be talking about both at once, but it is still an inconvenient bit of confusion.

The suits notation, often in conjunction with the * and/or the rank codes, is the second main tool we have to weight a range. For example, the easiest way to capture exactly half of an overpair's combinations is to use a random suit with one of the two paired cards; i.e. AdA** instead of AA**. As long as we use it correctly, this can serve a dual purpose in a situation where the Ad is a meaningful card. For example, if we believe an opponent reraises preflop with 75% of his AA** hands, and will usually need something extra to stack off with AA in a 3-bet pot on JdT_h6_d, we can represent the AA part of his stack-off range with AdA**, weighing him more to the nut flush draw without taking away all dry-AA combos.²² In general, it is extremely important to differentiate between weighting adjustments that are determined by preflop tendencies and those determined by the flop texture. In this example, we have some of both (25% of combinations dropped preflop and an additional flop-texture-determined 25% dropped on the flop).

It is important to be aware of two different kinds of redundancy. First, often the same hand is represented in more than one way within a chosen range. When this happens, it is only counted once by the simulator. For example, AKQB, AAB_B, AB_{BB} and KKB_J are all overlapping subsets of B_{BBB}, and if all five were listed in one entry, the simulator

²² It may be a bit more accurate to use something like Ah*h**, AAB_B, AAM_M, but the character limitation usually precludes using up that much space on one hand group.