The popularity of a pattern $p$ is the total number of copies of $p$ within all permutations of a set. We address popularity in the set of 132-avoiding permutations. Bóna showed that in this set, all other non-monotone length-3 patterns are equipopular, and proved equipopularity relations between some length-$k$ patterns of a specific form. We prove equipopularity relations between general length-$k$ patterns, based on the structure of their corresponding binary plane trees. Our result explains all equipopularity relations for patterns of length up to 7, and we conjecture that it provides a complete classification of equipopularity in 132-avoiding permutations. (Received August 30, 2012)