We use four different models to estimate minority representation under ranked choice voting. All the models take a very simple input consisting of two values:

(1) the support from POC voters for POC-preferred candidates, and

(2) the support from non-POC voters for POC-preferred candidates

The Placket-Luce-Dirichlet (PL) and Bradley-Terry-Dirichlet (BT) models rely on classical probabilistic models of ranking from the literature. The Alternating crossover (AC) and Cambridge sampler (CS) models rely on specific assumptions on how voters vote: the AC model assumes that crossover voters alternate between outgroup and ingroup candidates, while the CS model uses ballot data from a decade's worth of Cambridge MA city council races (which were ranked choice) to model voter behavior. We also consider five scenarios of how voters divide their support among non-POC and POC candidates. For the PL and BT models these scenarios are encoded in a parameter α displayed in the second row of the table below.

- Scenario A: unanimous order (all voters agree on who are the best candidates in each group).

- Scenario B: POC vary POC (POC voters vary preferences among POC-preferred candidates).

- Scenario C: all vary order (no agreement on strongest candidates).

- Scenario D: non-POC vary non-POC (non-POC voters don't agree on strongest candidates).

- Scenario E: generic (all levels of agreement equally likely).

· **seats** · **C / · candidates**	Scenario A (.5, .5, .5, .5)	Scenario B (2, .5, .5, .5)	Scenario C (2, 2, 2, 2)	Scenario D (.5, .5, 2, 2)	average (1, 1, 1, 1)
PL (Individual draws)	·	·	·	·	·
BT (Paired comparisons)	·	·	·	·	·
Alternating crossover	·	·	·	·	·
Cambridge sampler	·	·	·	·	·