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 candidates, and (2) the support from non-POC voters for POC candidates. The Placket-Luce-Dirichlet (PL-D) and Bradley-Terry-Dirichlet (BT-D) 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.

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 candidates).

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

Scenario D: non-POC vary non-POC (non-POC voters dont agree on strongest candidates).

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

	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E
PL-D	?	?	?	?	?
BT-D	?	?	?	?	?
AC	?	?	?	?	?
CS	?	?	?	?	?