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Extended Data

² Benchmarking and Optimization of Methods for the Detection of
³ Identity-By-Descent in High-Recombining *Plasmodium falciparum*

⁴

Genomes

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Guo *et al.*

6 **Extended data for S2 Data. Detailed IBD-level benchmarking results shown in heatmaps.**

7 Each group (a-r) represents the FN/FP rates (mean \pm standard deviations) for a specific combi-

8 nation of IBD callers (`hap-IBD`, `hmmIBD`, `isoRelate`, `phased IBD` and `Refined IBD`), demographic

9 models (single-population model, multiple-population model, and UK human demographic model)

10 and recombination rates (*human versus Pf*) as indicated in the text above the panel. The standard

11 deviations are calculated across all relevant segments for length bin-specific error rates or across all

12 genome pairs for genome-wide error rates from a single simulation set. Data for each scenario (a-r)

13 from three simulation sets are shown in individual figures. Note that benchmarking for genomes

14 with human recombination rates was not performed for `hmmIBD` and `isoRelate` as they did not scale

15 well for large genome sizes (in base pair). For each heatmap, the searched parameters and their

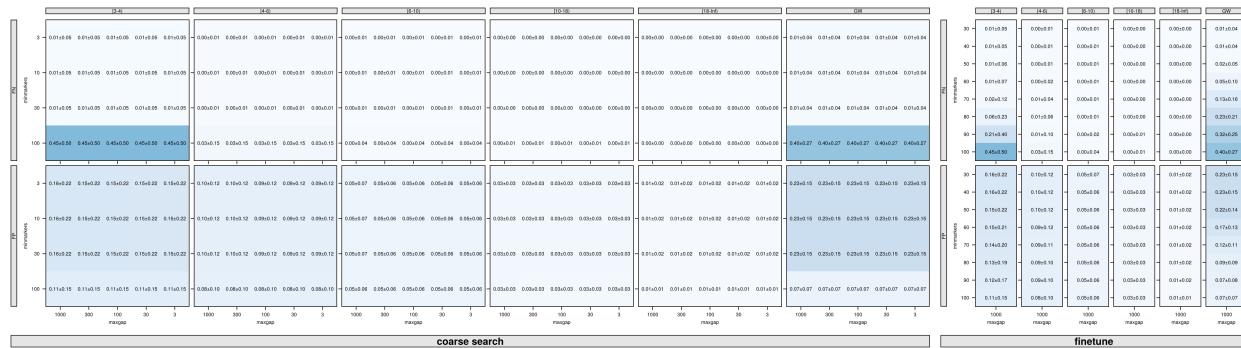
16 values are indicated as the x and y labels and tick labels, respectively; the labels in grey background

17 on the top indicate the IBD length bin that were used to calcuate FN/FP rates (labels in grey on

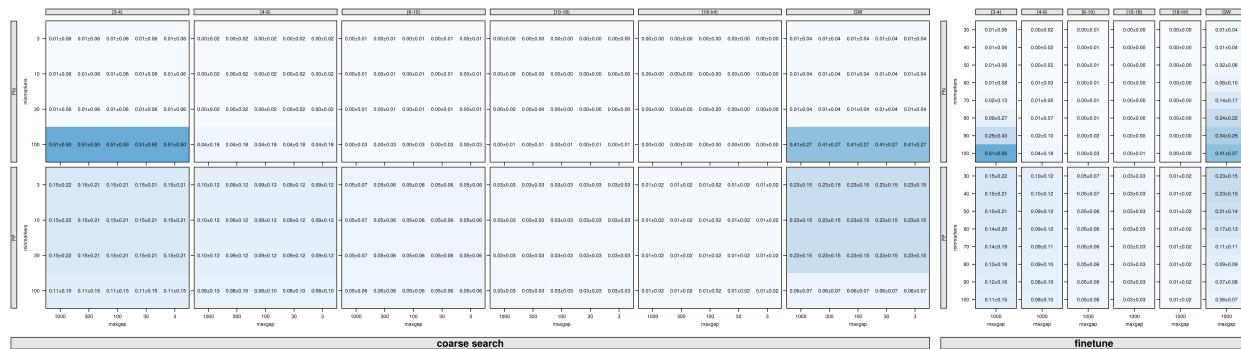
18 the left); the bold labels in grey at the bottom, show either different groups (e.g., coarse search or

19 finetune) or the third parameter searched (such as min-maf=0.01 and min-maf=0.00).

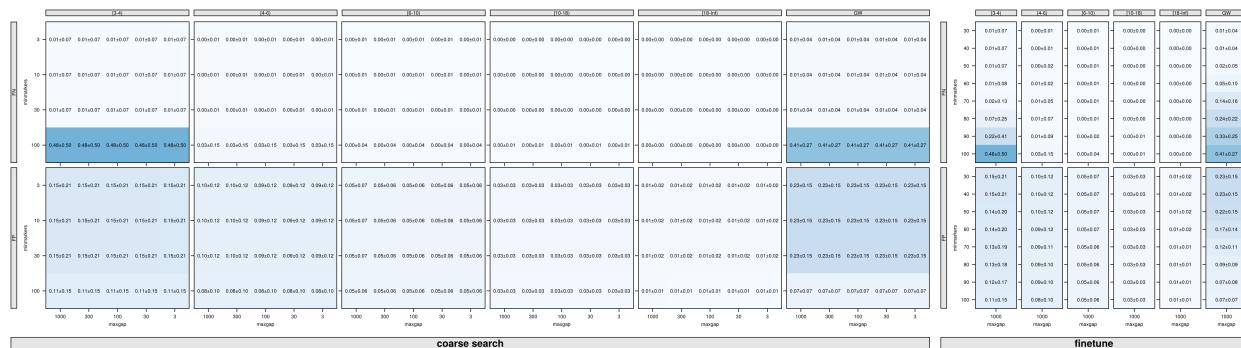
a, hap-IBD, single population model, Pf recombination rate (simulation set 1).



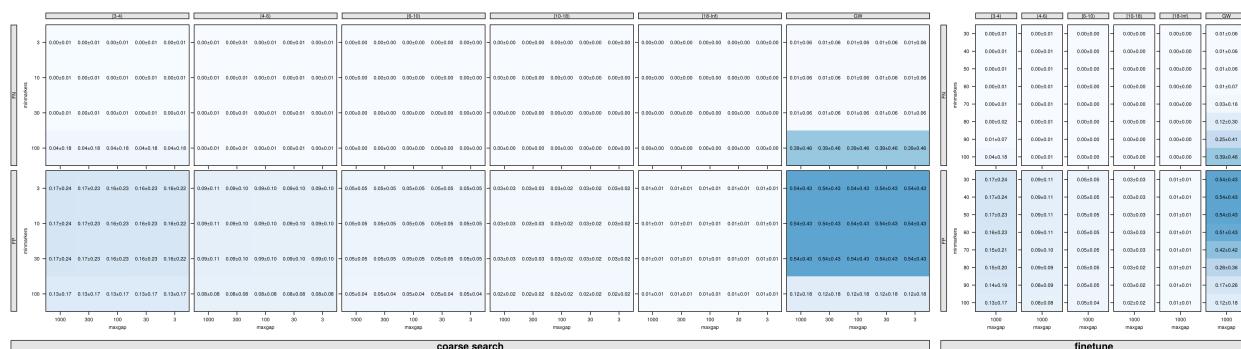
a, hap-IBD, single population model, Pf recombination rate. (simulation set 2)



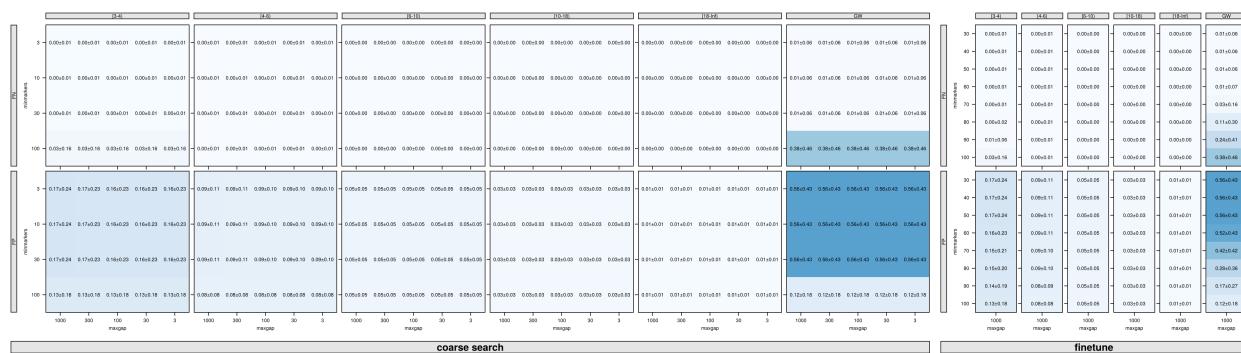
a, hap-IBD, single population model, Pf recombination rate. (simulation set 3)



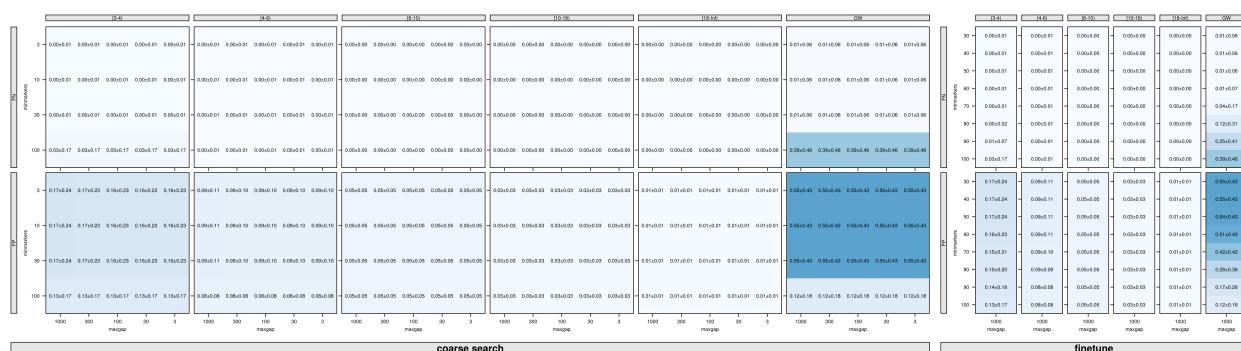
b, hap-IBD, multiple population model, Pf recombination rate (simulation set 1).



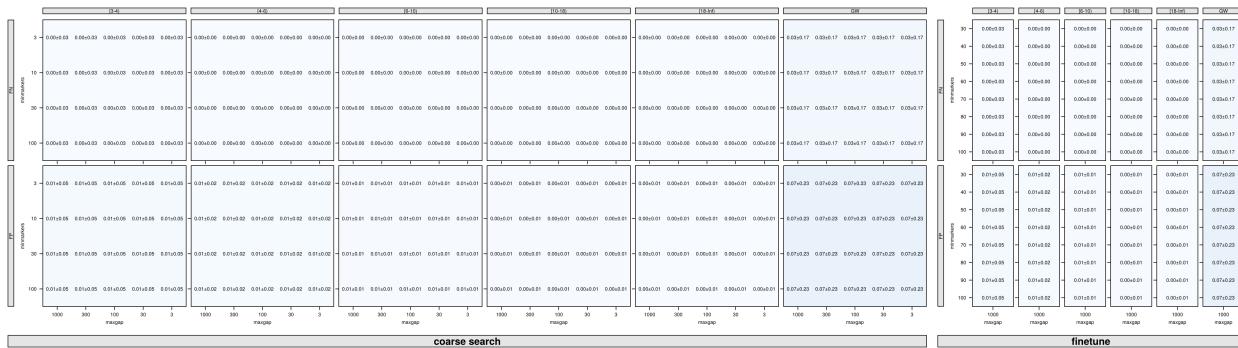
b, hap-IBD, multiple population model, Pf recombination rate (simulation set 2).



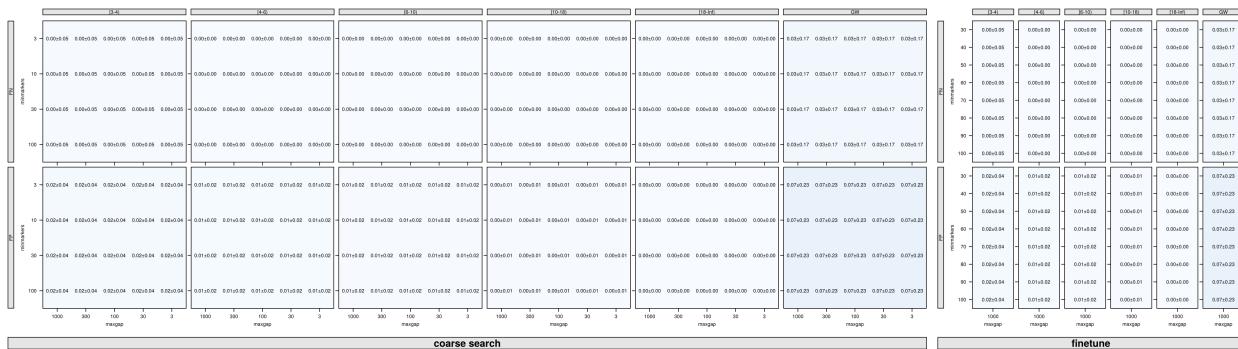
b, hap-IBD, multiple population model, Pf recombination rate (simulation set 3).



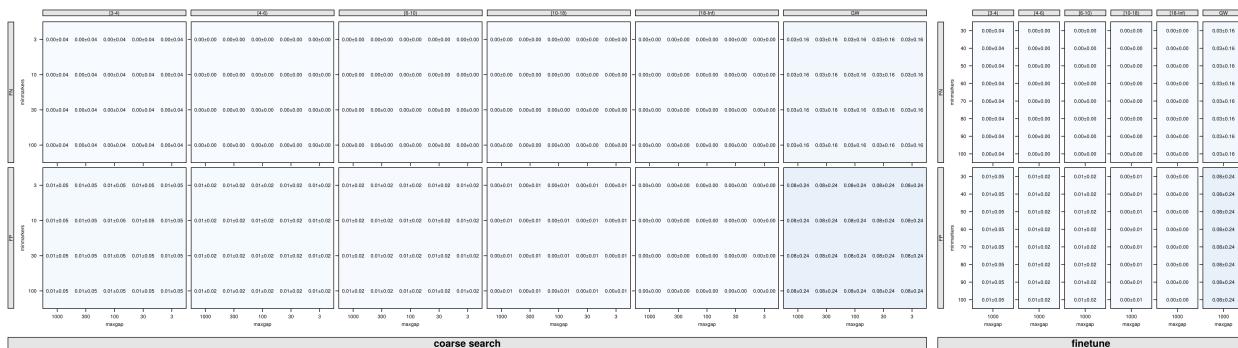
c, hap-IBD, UK human population model, Human recombination rate (simulation set 1).



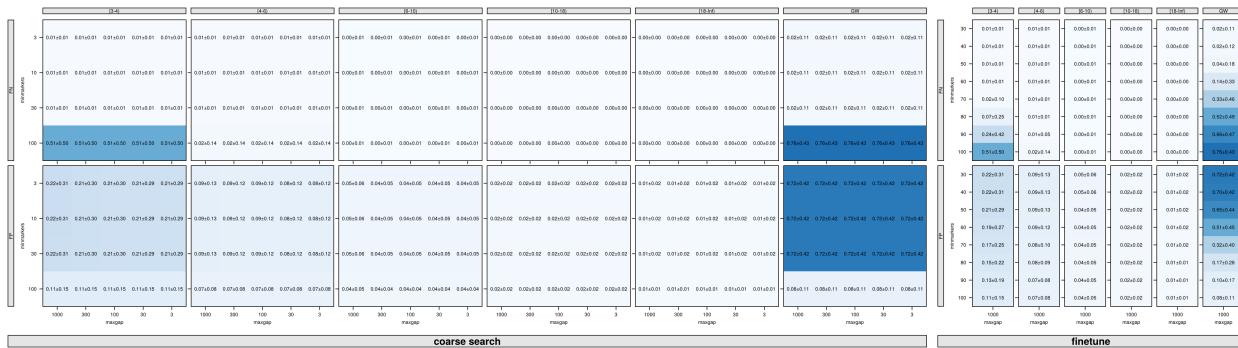
c, hap-IBD, UK human population model, Human recombination rate (simulation set 2).



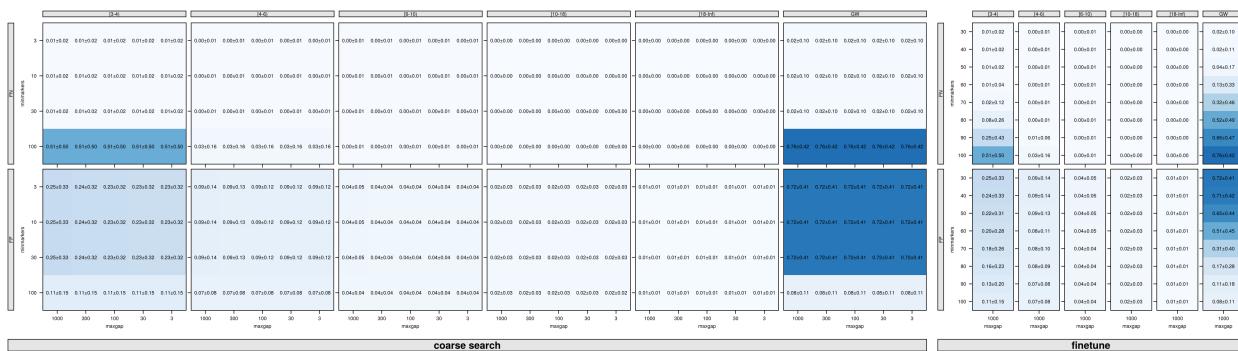
c, hap-IBD, UK human population model, Human recombination rate (simulation set 3).



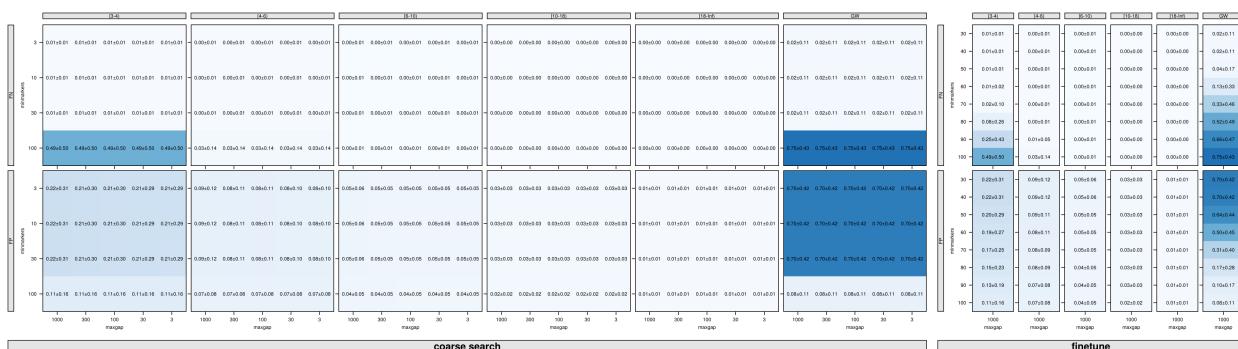
d, hap-IBD, UK human population model, Pf recombination rate (simulation set 1).



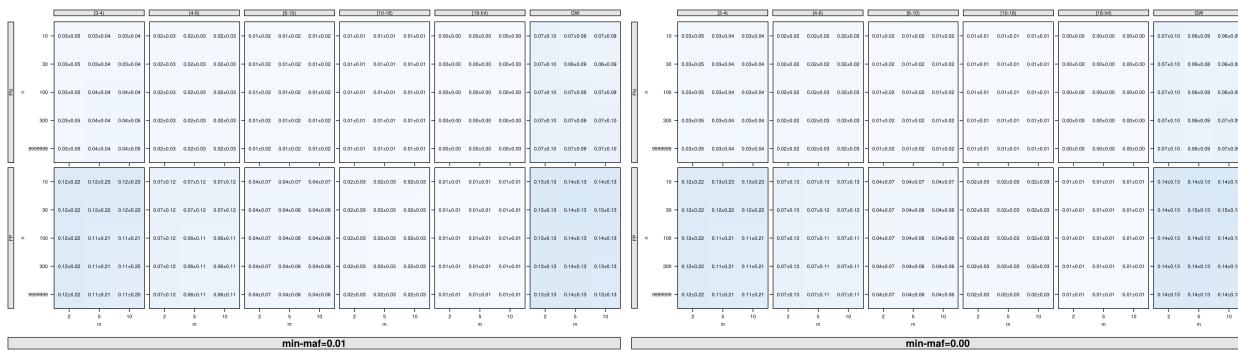
d, hap-IBD, UK human population model, Pf recombination rate (simulation set 2).



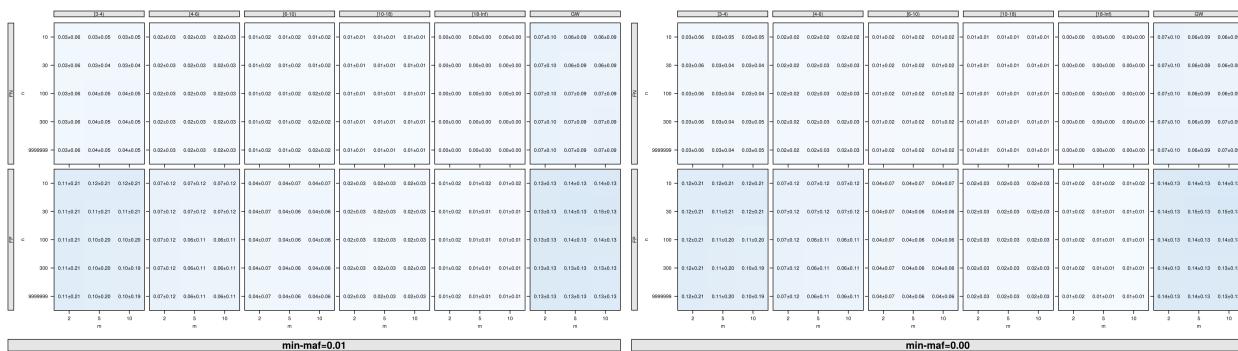
d, hap-IBD, UK human population model, Pf recombination rate (simulation set 3).



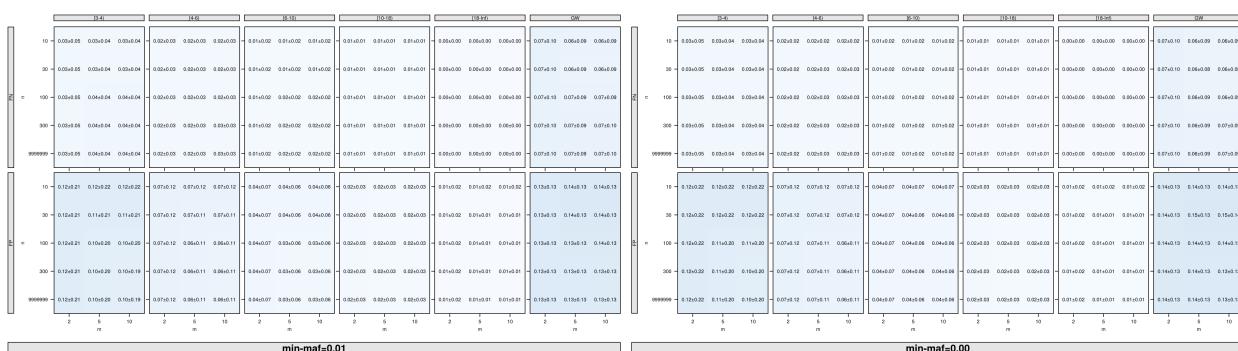
e, **hmmIBD**, single population model, *Pf* recombination rate (simulation set 1).



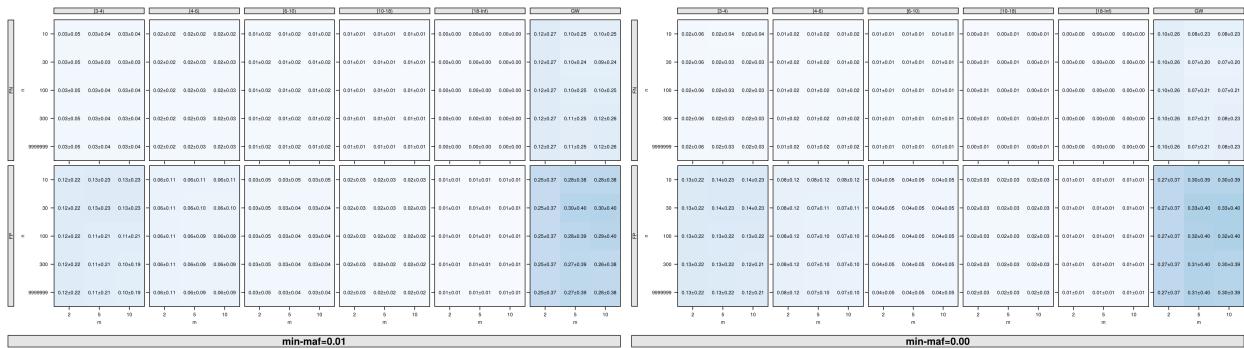
e, **hmmIBD**, single population model, *Pf* recombination rate (simulation set 2).



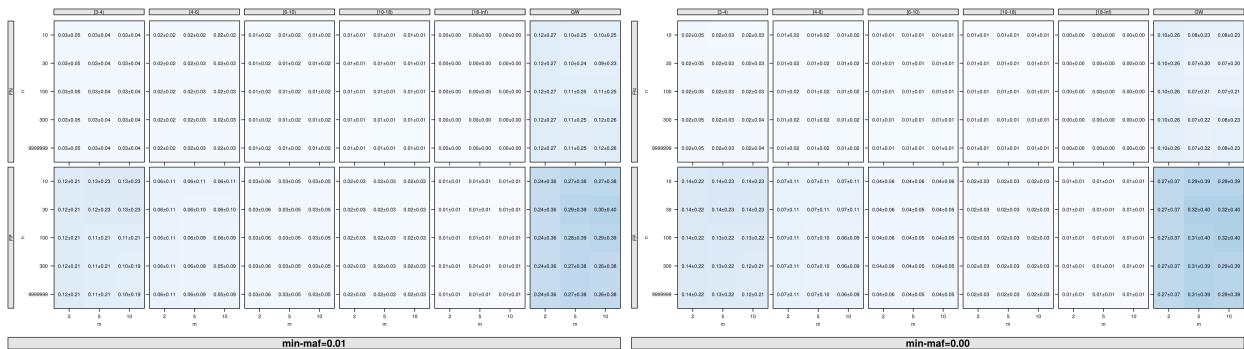
e, **hmmIBD**, single population model, *Pf* recombination rate (simulation set 3).



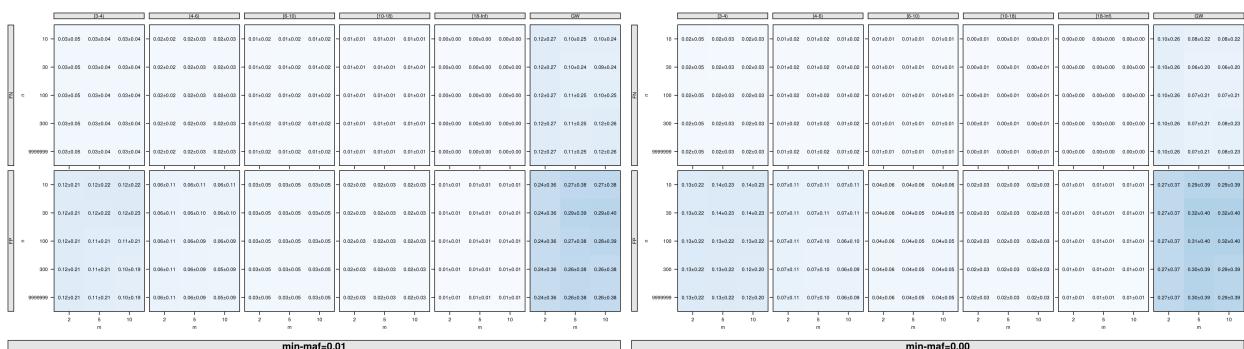
f, hmmIBD, multiple population model, Pf recombination rate (simulation set 1).



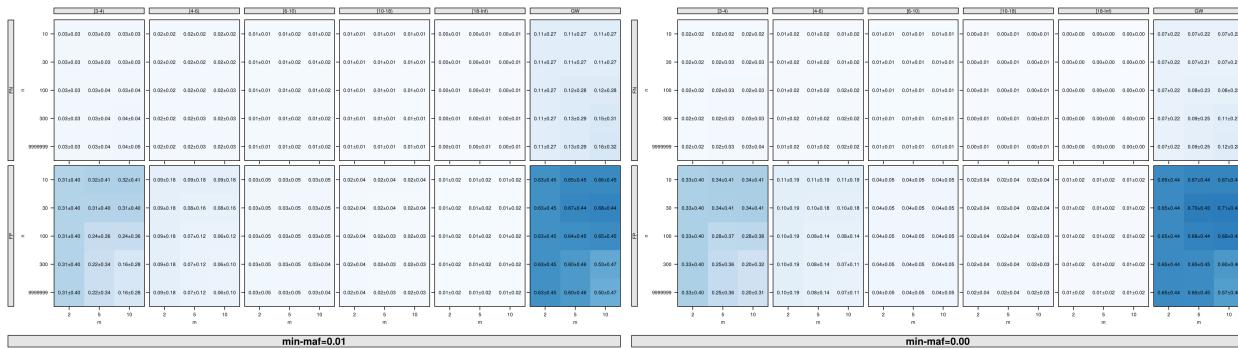
f, hmmIBD, multiple population model, Pf recombination rate (simulation set 2).



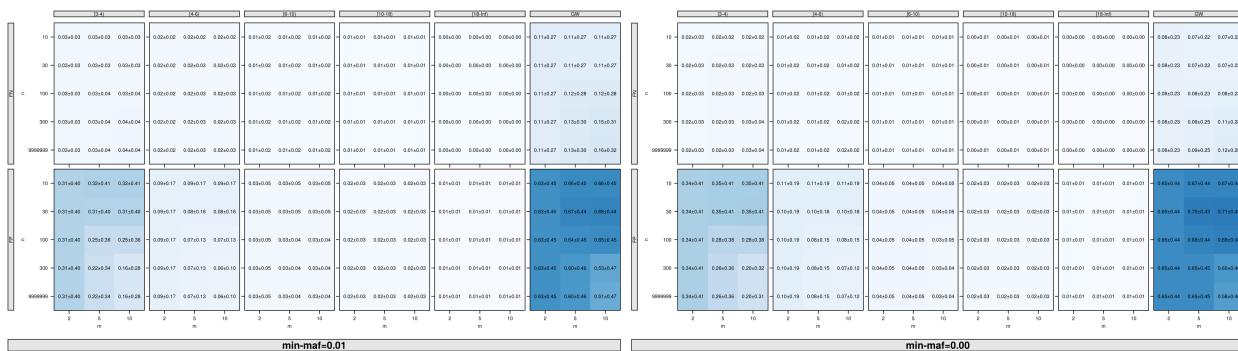
f, hmmIBD, multiple population model, Pf recombination rate (simulation set 3).



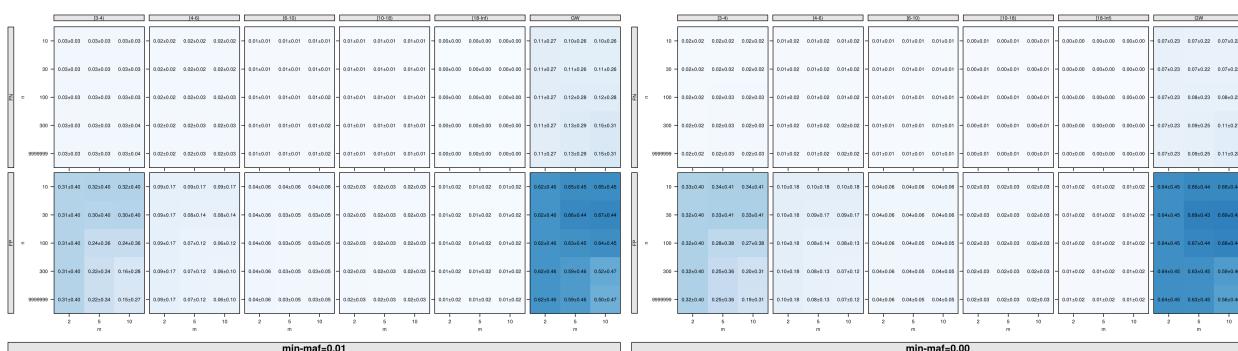
g, hmmIBD, UK human population model, *Pf* recombination rate (simulation set 1).



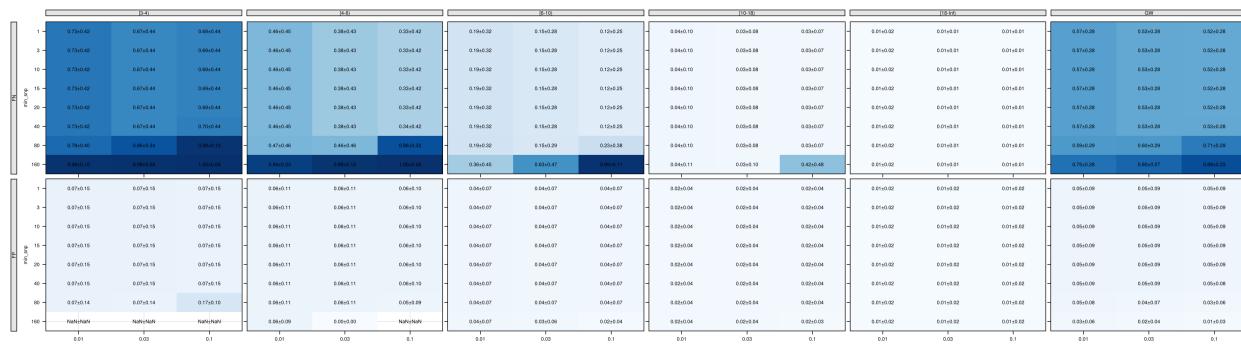
g, hmmIBD, UK human population model, *Pf* recombination rate (simulation set 2).



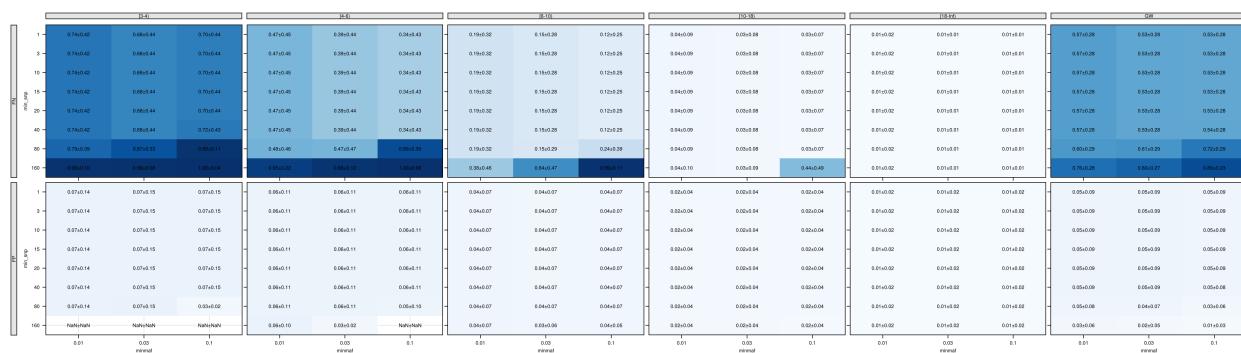
g, hmmIBD, UK human population model, *Pf* recombination rate (simulation set 3).



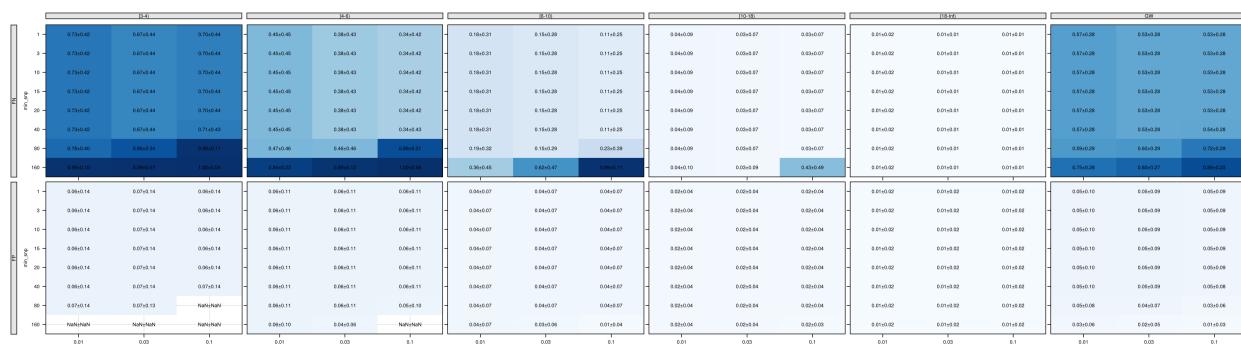
h, isoRelate, single population model, *Pf* recombination rate (simulation set 1).



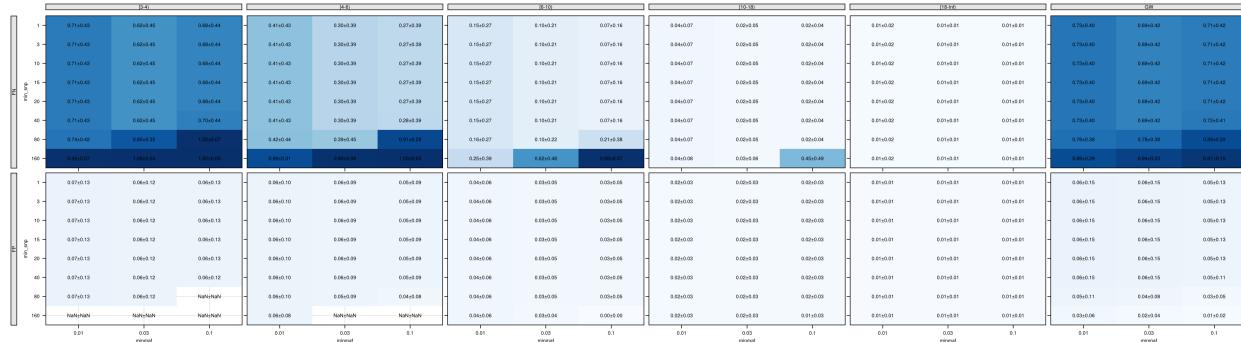
h, isoRelate, single population model, *Pf* recombination rate (simulation set 2).



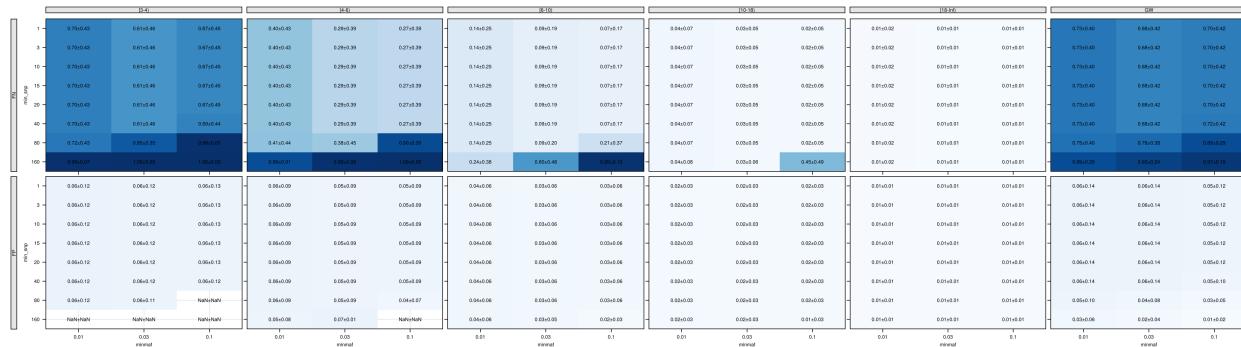
h, isoRelate, single population model, *Pf* recombination rate (simulation set 3).



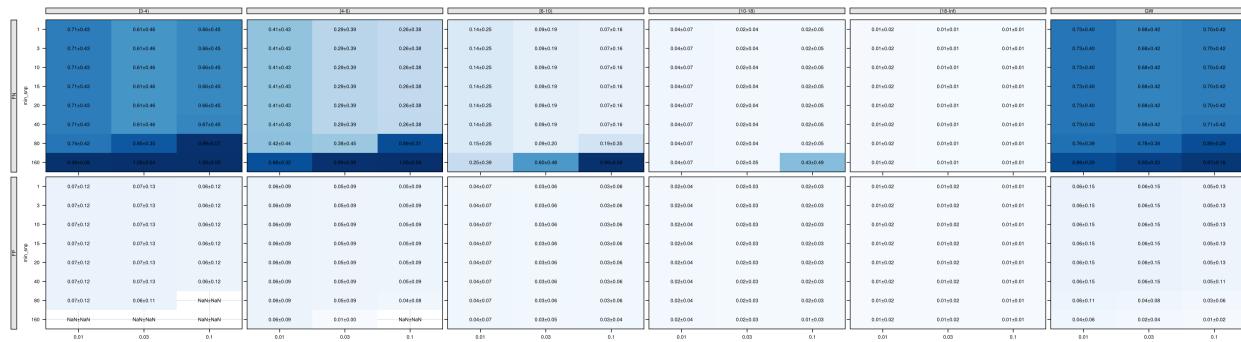
i, isoRelate, multiple population model, Pf recombination rate (simulation set 1).



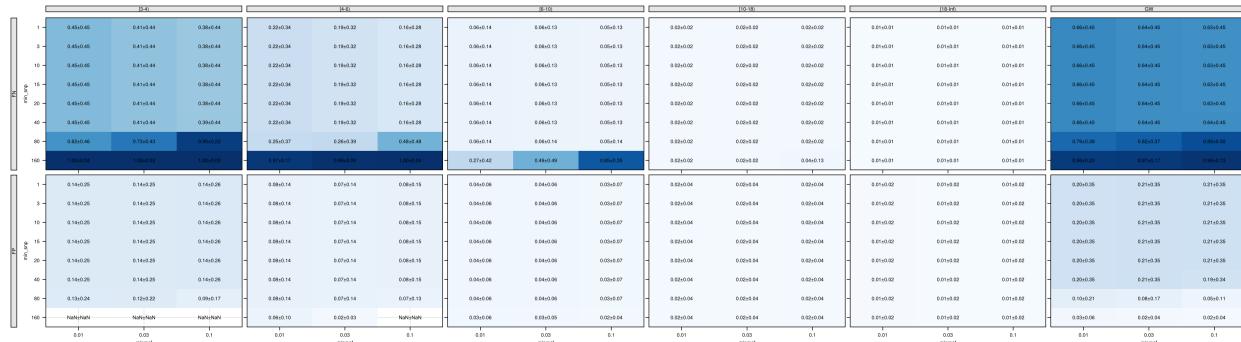
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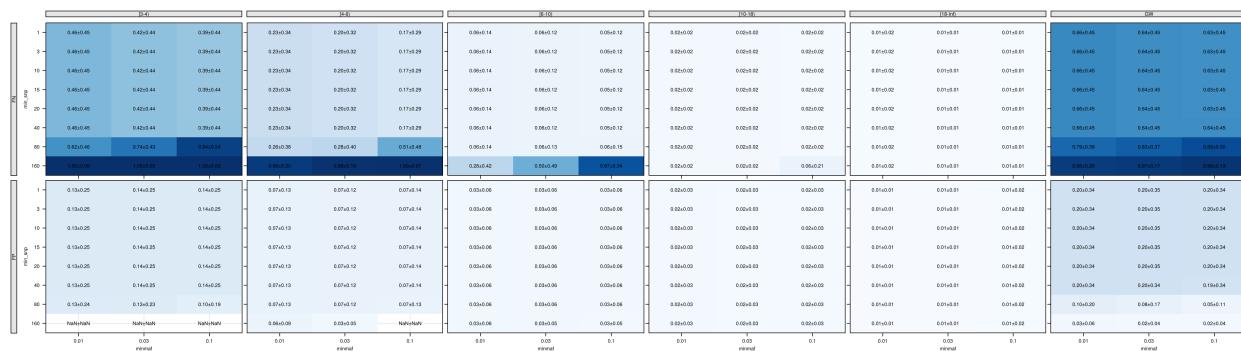
i, isoRelate, multiple population model, Pf recombination rate (simulation set 3).



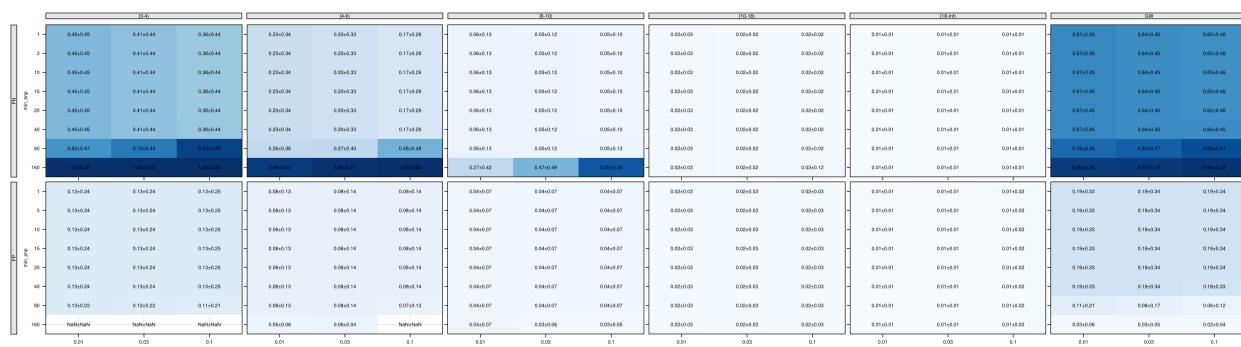
j, isoRelate, UK human population model, Pf recombination rate (simulation set 1).



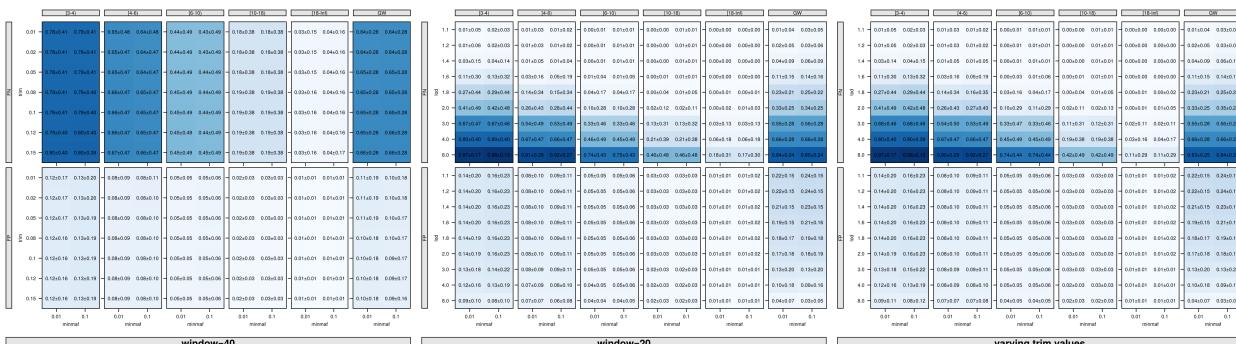
j, isoRelate, UK human population model, Pf recombination rate (simulation set 2).



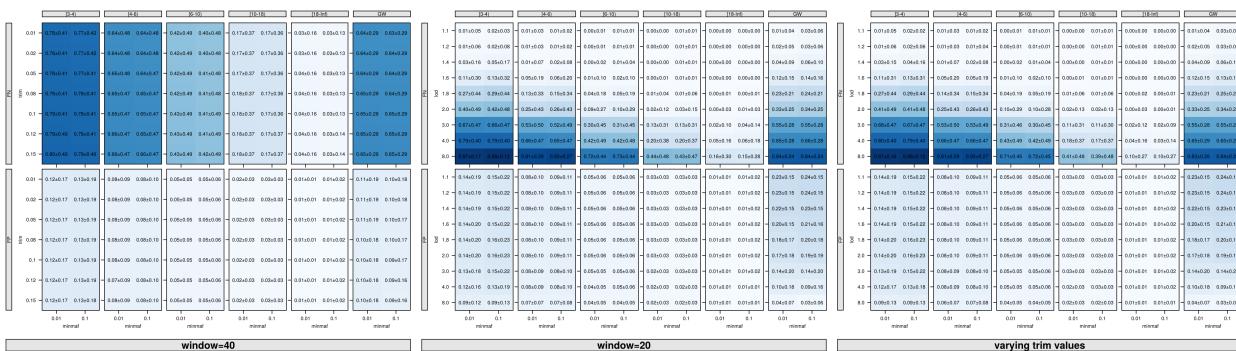
j, isoRelate, UK human population model, Pf recombination rate (simulation set 3).



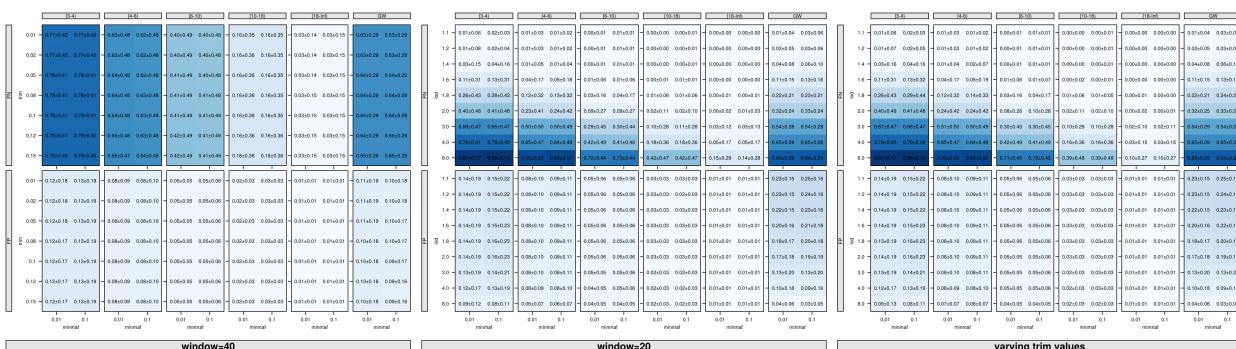
k, Refined IBD, single population model, Pf recombination rate (simulation set 1).



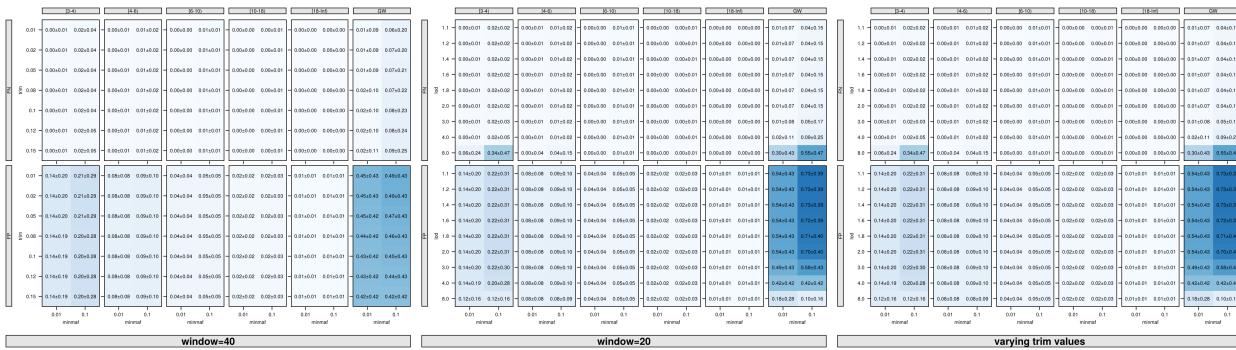
k, Refined IBD, single population model, Pf recombination rate (simulation set 2).



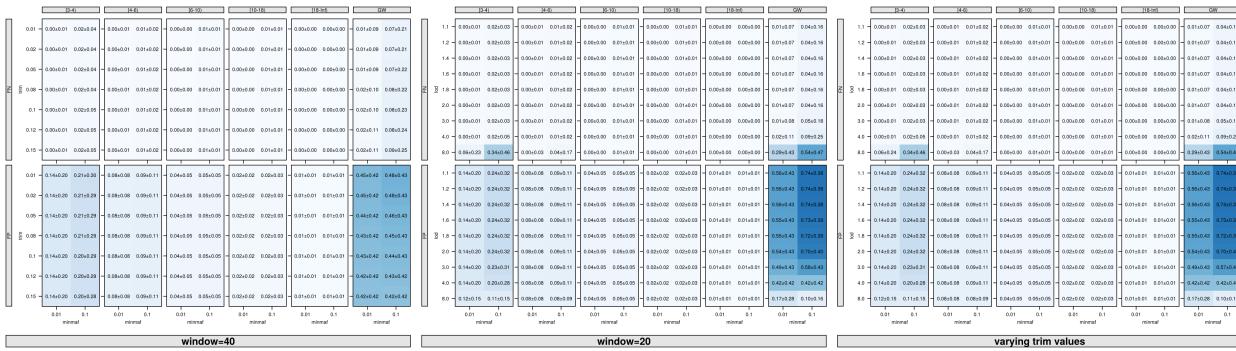
k, Refined IBD, single population model, Pf recombination rate (simulation set 3).



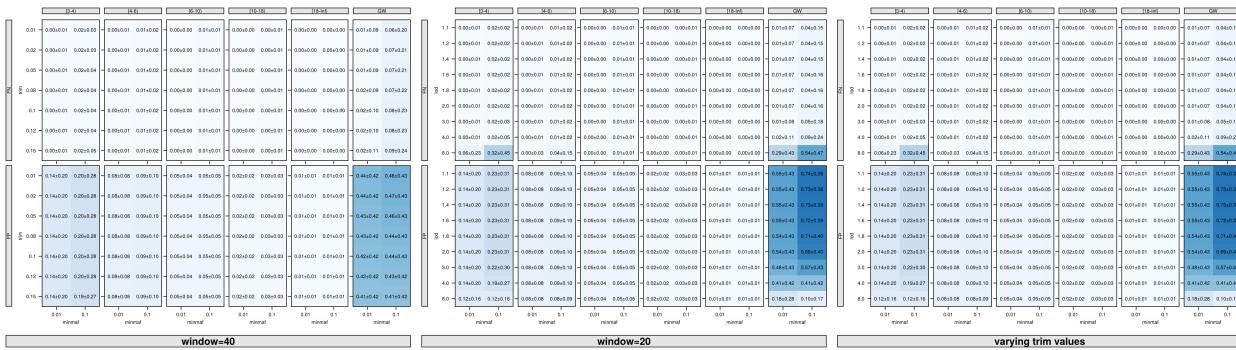
1, Refined IBD, multiple population model, Pf recombination rate (simulation set 1).



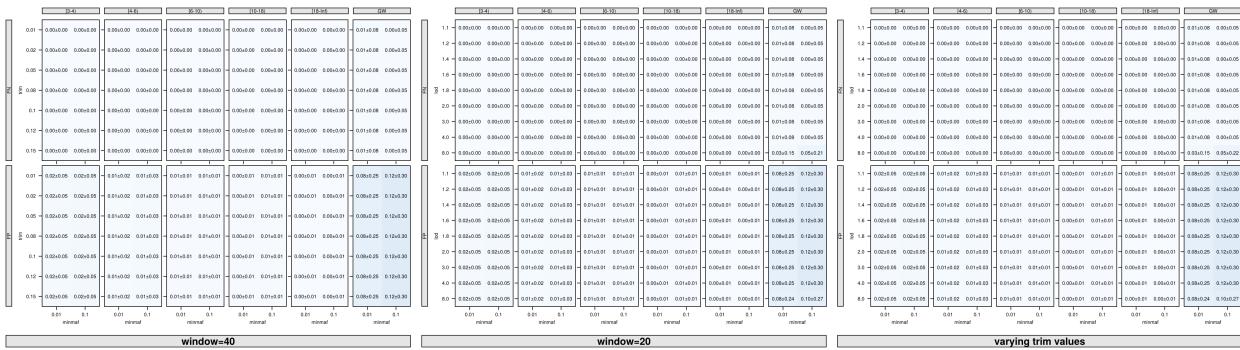
1, Refined IBD, multiple population model, Pf recombination rate (simulation set 2).



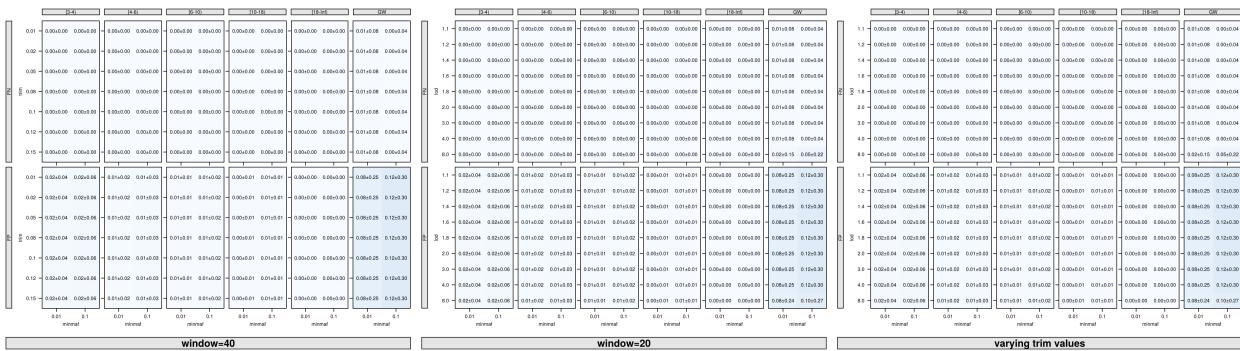
1, Refined IBD, multiple population model, Pf recombination rate (simulation set 3).



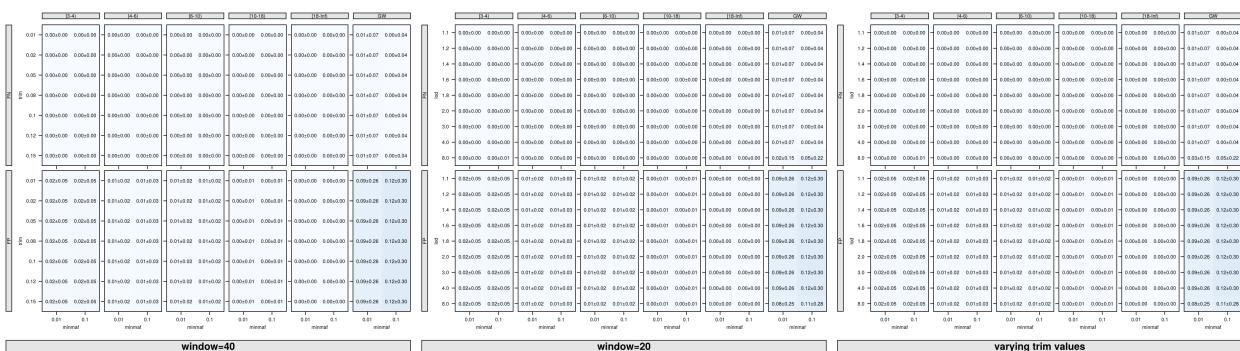
m, Refined IBD, UK human population model, Human recombination rate (simulation set 1).



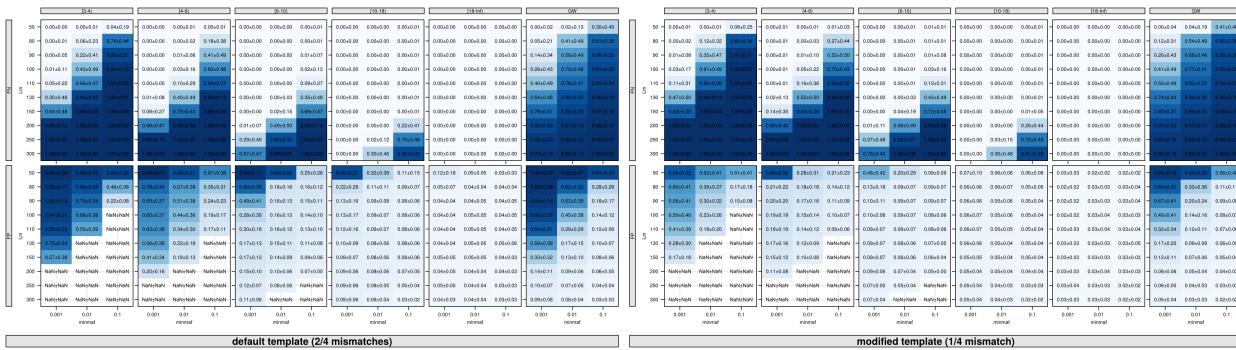
m, Refined IBD, UK human population model, Human recombination rate (simulation set 2).



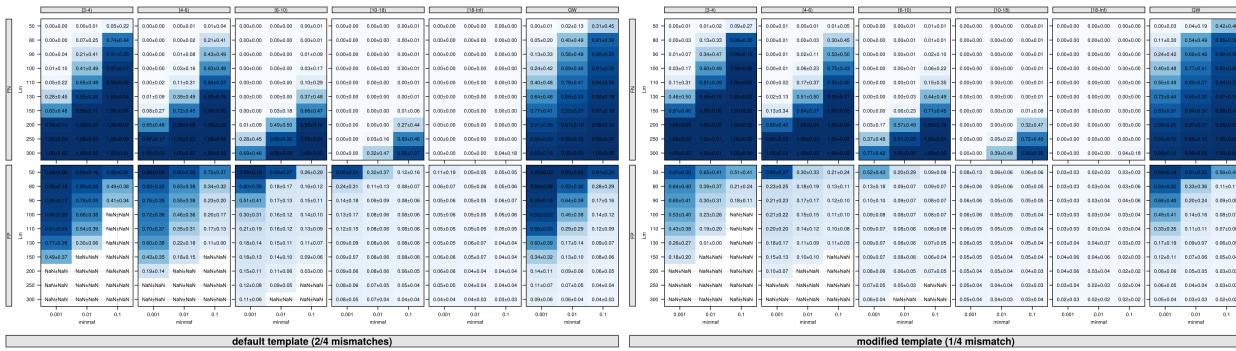
m, Refined IBD, UK human population model, Human recombination rate (simulation set 3).



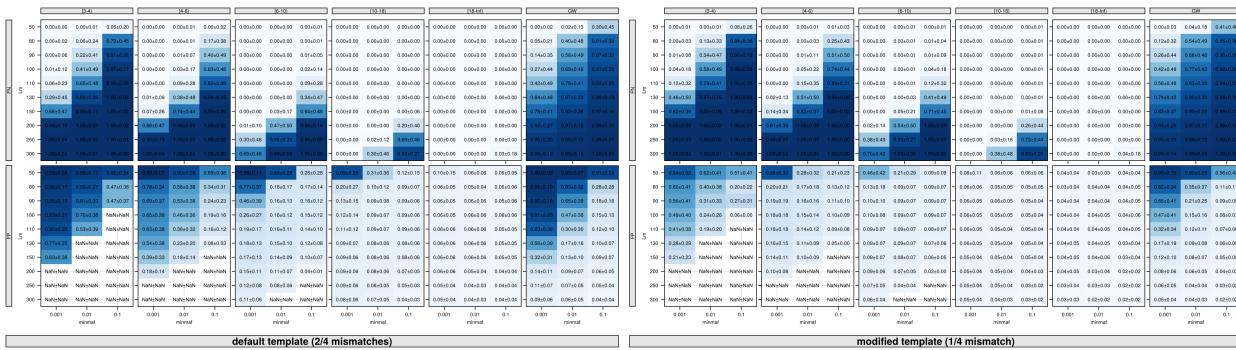
n, Refined IBD, UK human population model, Pf recombination rate (simulation set 1).



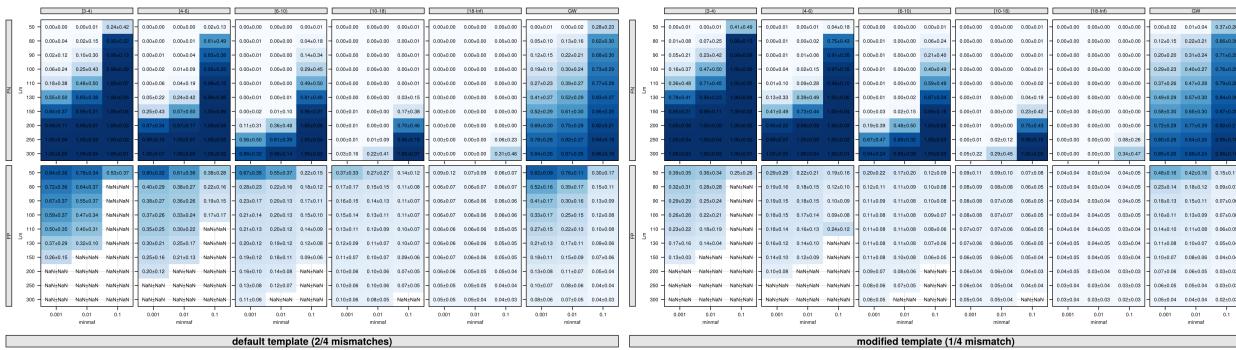
n, Refined IBD, UK human population model, Pf recombination rate (simulation set 2).



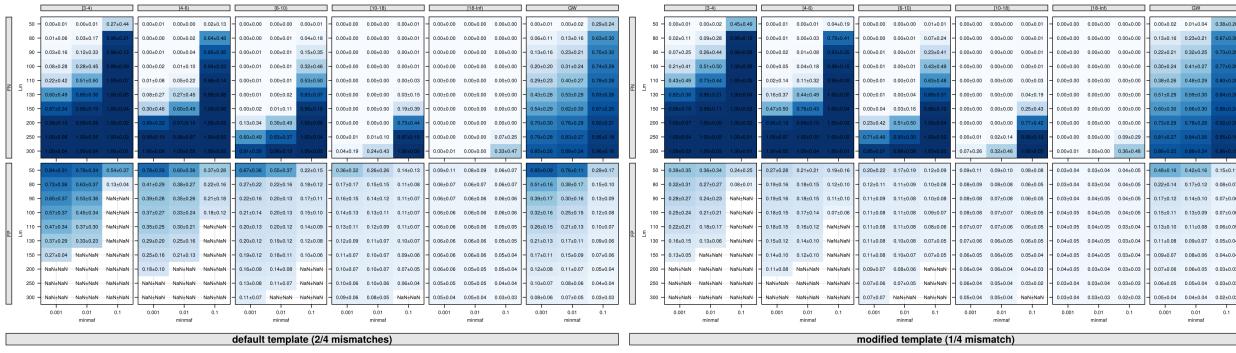
n, Refined IBD, UK human population model, Pf recombination rate (simulation set 3).



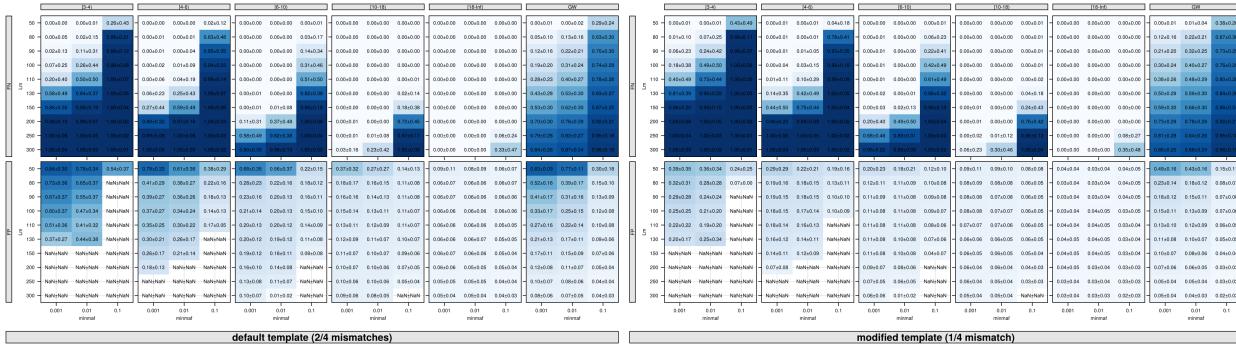
o, phased IBD, single population model, Pf recombination rate (simulation set 1).



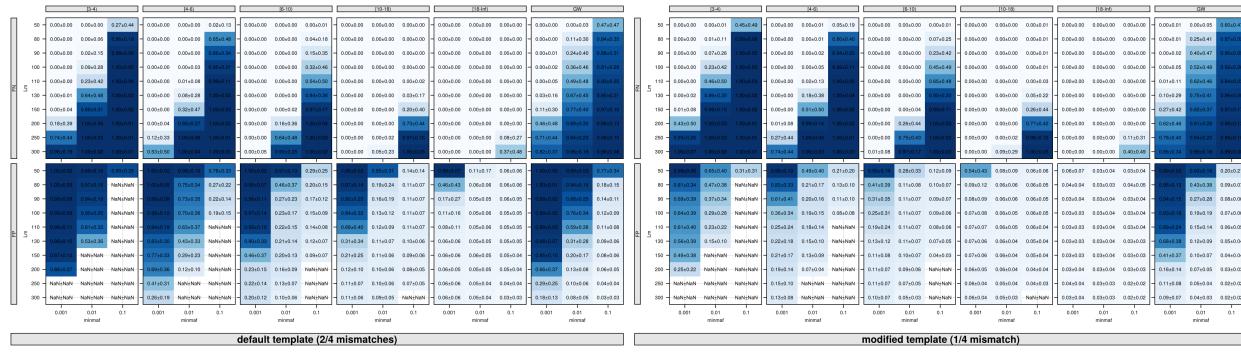
o, phased IBD, single population model, Pf recombination rate (simulation set 2).



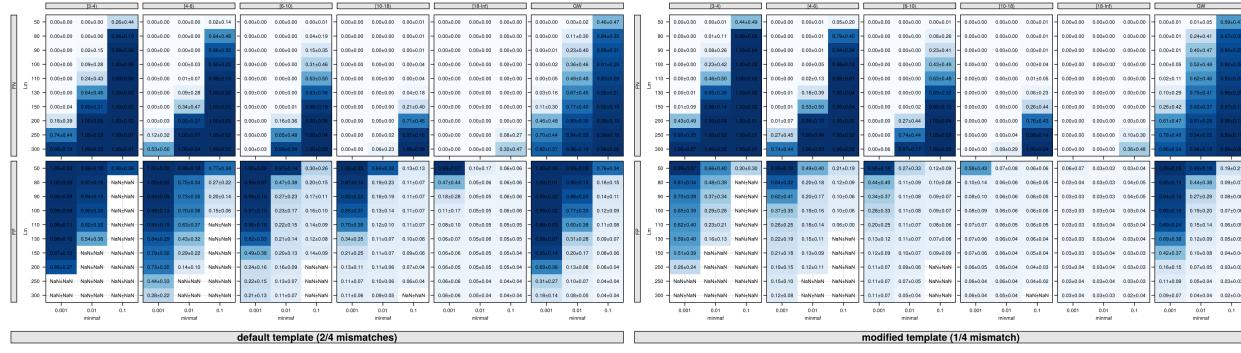
o, phased IBD, single population model, Pf recombination rate (simulation set 3).



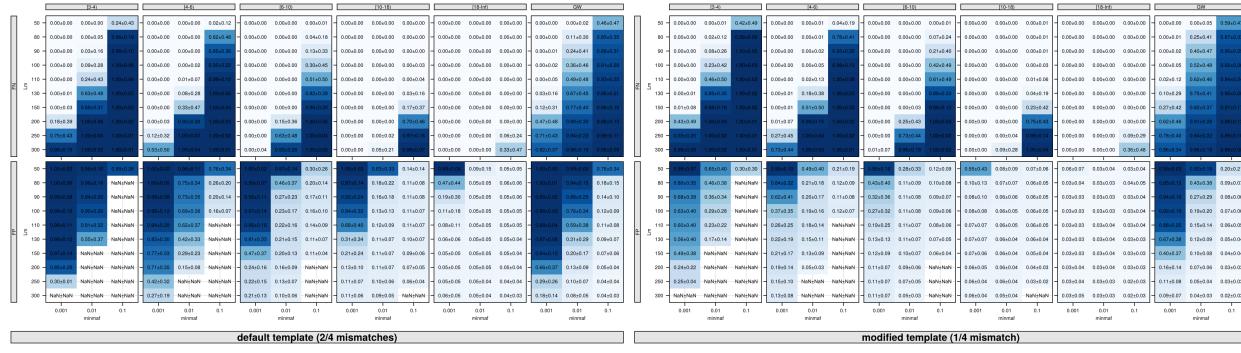
p, phased IBD, multiple population model, Pf recombination rate (simulation set 1).



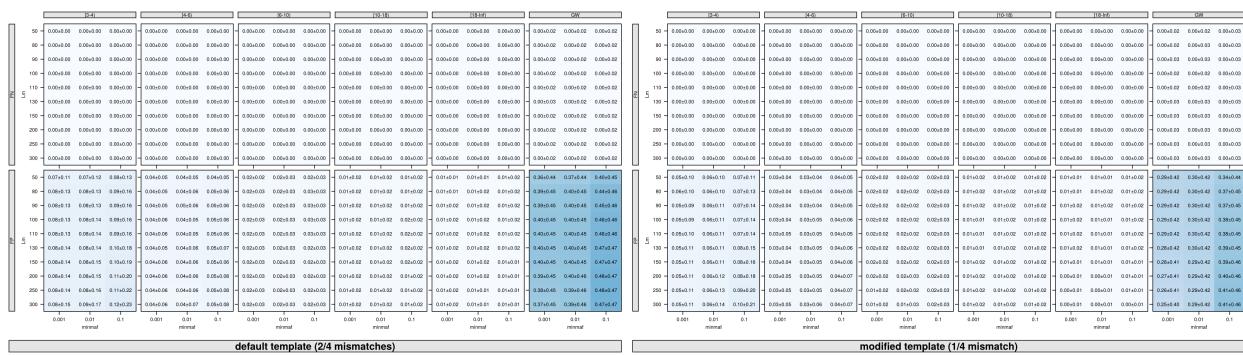
p, phased IBD, multiple population model, Pf recombination rate (simulation set 2).



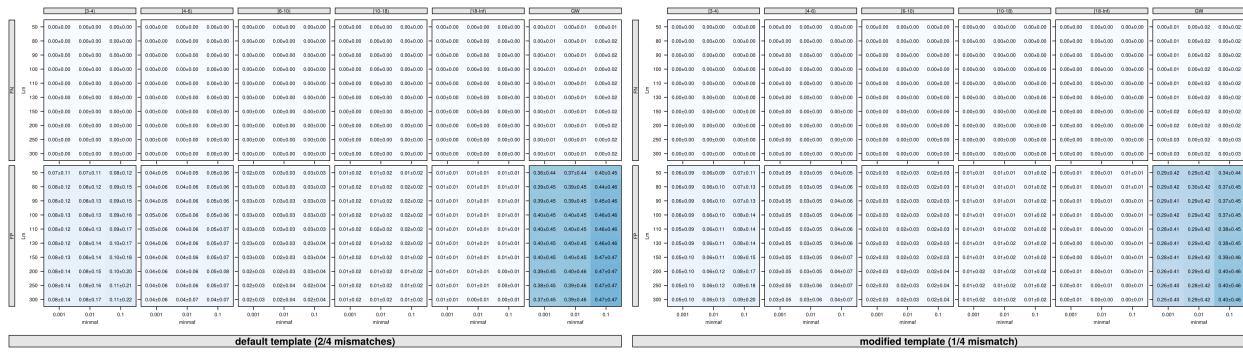
p, phased IBD, multiple population model, Pf recombination rate (simulation set 3).



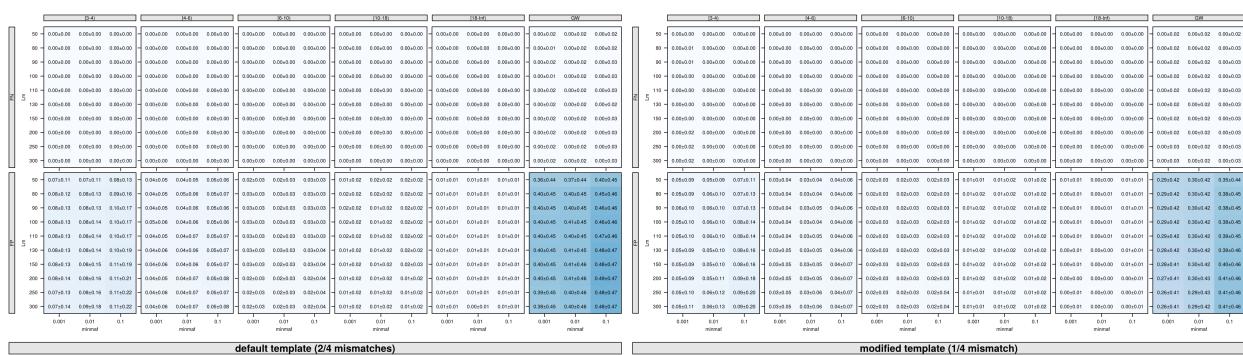
q, phased IBD, UK human population model, Human recombination rate (simulation set 1).



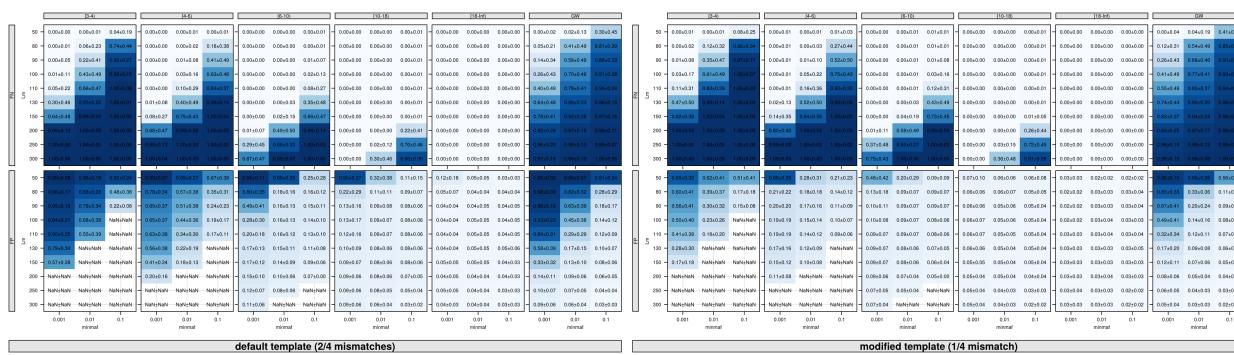
q, phased IBD, UK human population model, Human recombination rate (simulation set 2).



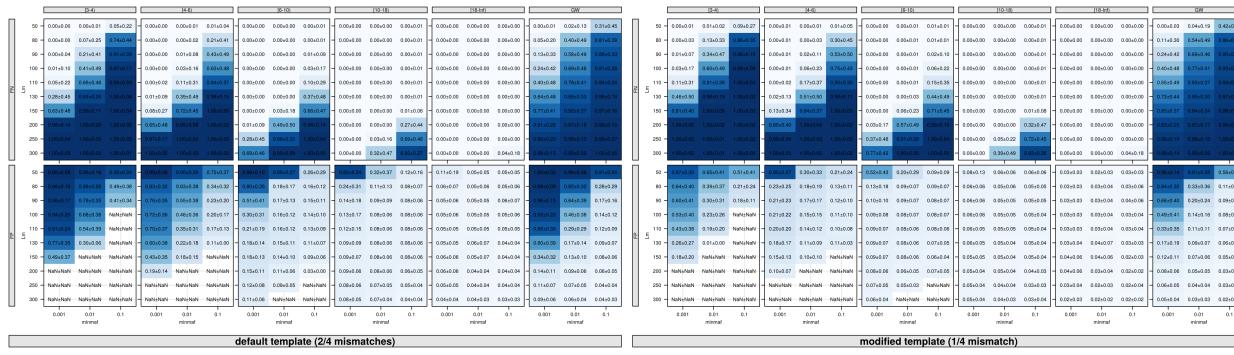
q, phased IBD, UK human population model, Human recombination rate (simulation set 3).



r, phased IBD, UK human population model, Pf recombination rate (simulation set 1).



r, phased IBD, UK human population model, Pf recombination rate (simulation set 2).



r, phased IBD, UK human population model, Pf recombination rate (simulation set 3).

