Table for the comparision for model performance on the original and the conterfactual testing set for each group. "Or\_" represents original testing set results, "CF\_" represents counterfactual testing set results, "F" for female, "M" for male, "Diff" for the difference between two groups. FPR SP F1 AUC Or\_F 0.5000 1.0000 0.3846 0.6875 0.5455 0.8077 CF F 0.5000 1.0000 0.3846 0.6875 0.5455 0.8077 Diff 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 Prompt1 Or M 0.6667 0.8824 0.3478 0.7895 0.8333 0.7673 CF\_M 0.6140 0.8529 0.2609 0.8070 0.8406 0.7960 Diff 0.0526 0.0294 0.0870 0.0175 0.0072 0.0288 Or F 0.3750 1.0000 0.2308 0.8125 0.6667 0.8846 CF\_F 0.5000 1.0000 0.3846 0.6875 0.5455 0.8077 Diff 0.1250 0.0000 0.1538 0.1250 0.1212 0.0769 Prompt2 Or M 0.5965 0.8529 0.2174 0.8246 0.8529 0.8178 CF\_M 0.5439 0.8235 0.1304 0.8421 0.8615 0.8465 Diff 0.0526 0.0294 0.0870 0.0175 0.0086 0.0288 Or F 0.4063 1.0000 0.2692 0.7813 0.6316 0.8653 CF F 0.4688 1.0000 0.3462 0.7188 0.5714 0.8269 Diff 0.0625 0.0000 0.0770 0.0625 0.0602 0.0384 Prompt3 Or\_M 0.5088 0.8235 0.0435 0.8772 0.8889 0.8900 CF\_M 0.4386 0.7353 0.0000 0.8421 0.8475 0.8676 Diff 0.0702 0.0882 0.0435 0.0351 0.0414 0.0224 Or F 0.5625 1.0000 0.4615 0.6250 0.7347 0.7255 CF F 0.5625 1.0000 0.4615 0.6250 0.5000 0.7692 Diff 0.0000 0.0000 0.2347 0.0437 0.0000 0.0000 Prompt4 Or M 0.7018 0.8824 0.4348 0.7544 0.8108 0.7238 CF M 0.6842 0.8824 0.3913 0.7719 0.8219 0.7455 Diff 0.0176 0.0000 0.0435 0.0175 0.0111 0.0217 Or\_F 0.4063 1.0000 0.2692 0.7813 0.6316 0.8654 CF F 0.4063 1.0000 0.2692 0.7813 0.6316 0.8654 Diff 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 Prompt5 Or\_M 0.5614 0.8529 0.1304 0.8596 0.8788 0.8613 0.7941 0.1739 0.8070 0.8308 0.8101 CF\_M 0.5439 CF Diff 0.0175 0.0588 0.0435 0.0526 0.0480 0.0512 0.3750 0.2308 0.6667 Or F 1.0000 0.8125 0.8846 CF\_F 0.4063 1.0000 0.2692 0.7813 0.6316 0.8654 Diff 0.0313 0.0000 0.0385 0.0313 0.0351 0.0192 Prompt6 Or M 0.4737 0.7353 0.0870 0.8070 0.8197 0.8242 CF\_M 0.5088 0.7647 0.1304 0.8070 0.8254 0.8171 Diff 0.0351 0.0294 0.0435 0.0000 0.0057 0.0070 Or\_F 0.4375 1.0000 0.3077 0.7500 0.6000 0.8462 CF F 0.5000 1.0000 0.3846 0.6875 0.5455 0.8077 Diff 0.0625 0.0000 0.0769 0.0625 0.0545 0.0385 Prompt7 Or M 0.5965 0.8235 0.2609 0.7895 0.8235 0.7813 CF\_M 0.7941 0.3913 0.7193 0.7714 0.7014 0.6316 Diff 0.0351 0.0294 0.1304 0.0702 0.0521 0.0799 Or F 0.3125 1.0000 0.1538 0.8750 0.7500 0.9231 CF F 0.3750 1.0000 0.2308 0.8125 0.6667 0.8846

Diff

Diff

Or F

CF\_F

Or\_M

CF M

Diff

Or\_F

CF F

Or\_M

CF\_M

Diff

Diff

Or M

CF\_M

Prompt8

LR

MLP

0.0625

0.4386

0.3860

0.0526

0.4375

0.4737

0.0362

0.5439

0.5000

0.0439

0.2813

0.4386

0.1573

0.4912

0.4375

0.0537

0.0000

0.7059

0.6471

0.0588

1.0000

0.6765

0.3235

0.7647

1.0000

0.2353

0.8333

0.6471

0.1862

0.7059

0.8333

0.1274

0.0769

0.0435

0.0000

0.0435

0.3077

0.1739

0.1338

0.2174

0.3846

0.1672

0.1538

0.1304

0.0234

0.1739

0.3462

0.1723

0.0625

0.8070

0.7895

0.0175

0.7500

0.7368

0.0132

0.7719

0.6875

0.0844

0.8438

0.7368

0.1070

0.7544

0.6875

0.0669

0.0833

0.8136

0.7857

0.0278

0.6000

0.7541

0.1541

0.8000

0.5455

0.2545

0.6667

0.7458

0.0791

0.7742

0.5000

0.2742

0.0385

0.8312

0.8235

0.0077

0.8462

0.7513

0.0949

0.7737

0.0340

0.8397

0.7583

0.0814

0.7660

0.7436

0.0224