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 SP **FPR** F1 AUC Acc Or\_F 0.6489 0.6885 0.5758 0.5957 0.6885 0.5564 CF F 0.5957 0.6393 0.5152 0.5851 0.6667 0.5621 Diff 0.0532 0.0492 0.0606 0.0106 0.0218 0.0057 Prompt1 Or M 0.6796 0.6275 0.8302 0.5097 0.6553 0.3986 CF\_M 0.6796 0.6275 0.8302 0.5097 0.6553 0.3986 0.0000 0.0000 0.0000 0.0000 0.0000 Diff 0.0000 Or F 0.6170 0.6557 0.5454 0.5851 0.6723 0.5551 CF\_F 0.5957 0.6557 0.4848 0.6064 0.6838 0.5854 Diff 0.0213 0.0000 0.0606 0.0213 0.0115 0.0303 Prompt2 Or M 0.6456 0.5948 0.7925 0.4951 0.6364 0.4012 CF\_M 0.6796 0.6275 0.5097 0.6553 0.3986 0.8302 0.0340 0.0327 0.0377 0.0146 0.0189 0.0026 Or F 0.6449 0.6885 0.5758 0.5957 0.6885 0.5564 CF F 0.6596 0.6721 0.6364 0.5638 0.6667 0.5179 Diff 0.0147 0.0164 0.0606 0.0319 0.0218 0.0385 Prompt3 Or\_M 0.6650 0.6144 0.8113 0.5049 0.6483 0.4015 CF\_M 0.6990 0.6471 0.8491 0.5194 0.6667 0.3990 Diff 0.0340 0.0327 0.0378 0.0145 0.0184 0.0025 Or F 0.7447 0.7541 0.7273 0.5851 0.7023 0.6776 CF F 0.6915 0.6885 0.6970 0.5532 0.6792 0.4434 Diff 0.0532 0.0303 0.0319 0.0231 0.2342 0.0656 Prompt4 Or M 0.6990 0.6471 0.8491 0.5194 0.6667 0.3990 CF M 0.7184 0.6732 0.8491 0.5388 0.6844 0.4121 Diff 0.0194 0.0177 0.0131 0.0261 0.0000 0.0194 0.4149 0.4170 Or\_F 0.4781 0.4098 0.4967 0.4149 CF F 0.3936 0.3770 0.4242 0.4468 0.4694 0.4764 Diff 0.0845 0.0328 0.0725 0.0319 0.0545 0.0594 Prompt5 Or\_M 0.5388 0.5758 0.6604 0.4563 0.4563 0.4182 CF\_M 0.5583 0.5163 0.6792 0.4660 0.5896 0.4185 CF Diff 0.0195 0.0595 0.0188 0.0097 0.1333 0.0003 Or F 0.5106 0.5638 0.5574 0.4242 0.6239 0.5666 CF\_F 0.4787 0.5082 0.4242 0.5319 0.5849 0.5420 Diff 0.0319 0.0492 0.0000 0.0319 0.0390 0.0246 Prompt6 0.4574 Or M 0.5971 0.5752 0.6604 0.5146 0.6377 CF\_M 0.5686 0.6604 0.5097 0.6327 0.4541 0.5922 Diff 0.0049 0.0066 0.0000 0.0049 0.0050 0.0033 Or F 0.5638 0.5738 0.5455 0.5319 0.6140 0.5142 CF F 0.4574 0.4754 0.4242 0.5106 0.5577 0.5256 Diff 0.1064 0.0984 0.1213 0.0213 0.0563 0.0114 Prompt7 Or M 0.5728 0.5490 0.6415 0.5000 0.6199 0.4538

CF\_M

Diff

Or F

CF F

Or M

CF\_M

Diff

Or F

CF\_F

Or\_M

CF\_M

Diff

Or\_F

CF F

Or\_M CF\_M

Diff

Diff

Diff

Prompt8

LR

MLP

0.6019

0.0291

0.4362

0.4787

0.0425

0.5631

0.5583

0.0048

0.6915

0.7379

0.0464

0.7379

0.6915

0.0464

0.6809

0.7476

0.0667

0.7476

0.6809

0.0667

0.5817

0.0327

0.4590

0.4754

0.0164

0.5294

0.5294

0.0000

0.8197

0.8366

0.0169

0.8366

0.8197

0.0169

0.8525

0.8497

0.0028

0.8497

0.8525

0.0028

0.5194

0.0194

0.5106

0.4894

0.0212

0.4806

0.4854

0.0048

0.7234

0.7621

0.0387

0.7621

0.7234

0.0387

0.7766

0.7718

0.0048

0.7718

0.7766

0.0048

0.6604

0.0189

0.3939

0.4848

0.0909

0.6604

0.6415

0.0189

0.4546

0.4528

0.0018

0.4528

0.4545

0.0017

0.3636

0.4528

0.0892

0.4528

0.3636

0.0892

0.6426

0.0227

0.5490

0.5472

0.0018

0.6022

0.6045

0.0023

0.7937

0.8393

0.0456

0.8393

0.7937

0.0456

0.8320

0.8469

0.0149

0.8469

0.8320

0.0149

0.4607

0.0069

0.5325

0.4953

0.0372

0.4345

0.4440

0.0095

0.6826

0.6919

0.0093

0.6919

0.6826

0.0093

0.7444

0.6984

0.0460

0.6984

0.7444

0.0460