# Without Unknown Integrators or Submitters

### Base MODEL ###################################

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.233e+00 1.774e-02 125.838 < 2e-16 \*\*\*

repo\_pr\_tenure\_mnth 1.047e-02 6.326e-03 1.655 0.09800 .

repo\_pr\_popularity 0.000e+00 9.869e-03 0.000 1.00000

repo\_pr\_team\_size 1.282e-02 9.924e-03 1.292 0.19627

perc\_external\_contribs -2.677e-02 5.027e-03 -5.326 1.00e-07 \*\*\*

prs\_succ\_rate 1.813e-01 3.905e-03 46.423 < 2e-16 \*\*\*

pr\_files\_changed -3.560e-04 2.459e-05 -14.476 < 2e-16 \*\*\*

prs\_main\_team\_member1 1.619e-01 2.625e-02 6.166 7.00e-10 \*\*\*

prs\_popularity 8.210e-02 5.662e-03 14.500 < 2e-16 \*\*\*

prs\_watched\_repo1 7.142e-02 7.996e-03 8.932 < 2e-16 \*\*\*

prs\_followed\_pri1 1.724e-01 1.050e-02 16.417 < 2e-16 \*\*\*

prs\_tenure\_mnth 3.389e-02 4.750e-03 7.135 9.68e-13 \*\*\*

pr\_comments\_counts 1.236e-03 2.877e-03 0.430 0.66738

pr\_num\_commits -2.113e-01 2.914e-03 -72.491 < 2e-16 \*\*\*

prs\_experience -6.888e-02 8.206e-03 -8.394 < 2e-16 \*\*\*

pr\_nth 4.976e-01 7.878e-03 63.167 < 2e-16 \*\*\*

prs\_continentAsia -1.151e-01 1.712e-02 -6.722 1.79e-11 \*\*\*

prs\_continentAfrica -1.784e-01 6.099e-02 -2.926 0.00344 \*\*

prs\_continentSouth America -8.319e-02 3.346e-02 -2.486 0.01291 \*

prs\_continentAntarctica 1.798e-01 8.683e-01 0.207 0.83594

prs\_continentUnknown 8.442e-02 1.438e-02 5.871 4.34e-09 \*\*\*

prs\_continentEurope 7.639e-02 1.167e-02 6.545 5.96e-11 \*\*\*

prs\_continentOceania 5.276e-02 2.769e-02 1.905 0.05675 .

prs\_pri\_same\_nationalityDifferent -2.015e-01 1.056e-02 -19.090 < 2e-16 \*\*\*

prs\_pri\_same\_nationalityUnknown -1.959e-01 1.308e-02 -14.977 < 2e-16 \*\*\*

intra\_branch1 2.945e-01 1.537e-02 19.152 < 2e-16 \*\*\*

### MODEL Submitter\_08 #######################

### All Ethnicities (threshold 0.8) , No Same ethnicity ######################

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.244e+00 1.781e-02 126.028 < 2e-16 \*\*\*

repo\_pr\_tenure\_mnth 1.115e-02 6.327e-03 1.763 0.07792 .

repo\_pr\_popularity 0.000e+00 9.871e-03 0.000 1.00000

repo\_pr\_team\_size 1.397e-02 9.926e-03 1.407 0.15931

perc\_external\_contribs -2.672e-02 5.027e-03 -5.315 1.06e-07 \*\*\*

prs\_succ\_rate 1.810e-01 3.905e-03 46.358 < 2e-16 \*\*\*

pr\_files\_changed -3.558e-04 2.459e-05 -14.468 < 2e-16 \*\*\*

prs\_main\_team\_member1 1.609e-01 2.625e-02 6.130 8.81e-10 \*\*\*

prs\_popularity 8.320e-02 5.663e-03 14.691 < 2e-16 \*\*\*

prs\_watched\_repo1 7.134e-02 7.996e-03 8.922 < 2e-16 \*\*\*

prs\_followed\_pri1 1.741e-01 1.050e-02 16.578 < 2e-16 \*\*\*

prs\_tenure\_mnth 3.237e-02 4.756e-03 6.806 1.00e-11 \*\*\*

pr\_comments\_counts 1.268e-03 2.877e-03 0.441 0.65931

pr\_num\_commits -2.112e-01 2.915e-03 -72.454 < 2e-16 \*\*\*

**prs\_eth\_8Black -5.498e-02 9.627e-02 -0.571 0.56793**

**prs\_eth\_8API -1.093e-01 1.521e-02 -7.182 6.89e-13 \*\*\***

**prs\_eth\_8Hispanic -6.831e-02 2.226e-02 -3.068 0.00215 \*\***

prs\_experience -7.051e-02 8.209e-03 -8.589 < 2e-16 \*\*\*

pr\_nth 4.983e-01 7.878e-03 63.248 < 2e-16 \*\*\*

prs\_continentAsia -7.518e-02 1.810e-02 -4.153 3.28e-05 \*\*\*

prs\_continentAfrica -1.817e-01 6.147e-02 -2.956 0.00312 \*\*

prs\_continentSouth America -6.040e-02 3.485e-02 -1.733 0.08311 .

prs\_continentAntarctica 1.758e-01 8.670e-01 0.203 0.83932

prs\_continentUnknown 8.721e-02 1.439e-02 6.062 1.35e-09 \*\*\*

prs\_continentEurope 7.107e-02 1.170e-02 6.075 1.24e-09 \*\*\*

prs\_continentOceania 5.147e-02 2.770e-02 1.858 0.06314 .

prs\_pri\_same\_nationalityDifferent -2.011e-01 1.056e-02 -19.047 < 2e-16 \*\*\*

prs\_pri\_same\_nationalityUnknown -1.955e-01 1.308e-02 -14.946 < 2e-16 \*\*\*

intra\_branch1 2.944e-01 1.538e-02 19.147 < 2e-16 \*\*\*

**Comparing submitter model with same and no same ethnicity variable.**

Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)

model\_base\_EU 28 964931 965271 -482438 964875

**model\_submitter\_EU 31 964876 965253 -482407 964814 60.814 3 3.939e-13 \*\*\***

### MODEL Submitter\_08 NO association ###################

### All Ethnicities (threshold 0.8), No Same ethnicity, no association ##################

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.273e+00 1.773e-02 128.207 < 2e-16 \*\*\*

repo\_pr\_tenure\_mnth 8.872e-03 6.324e-03 1.403 0.160673

repo\_pr\_popularity 0.000e+00 9.866e-03 0.000 1.000000

repo\_pr\_team\_size 1.434e-02 9.924e-03 1.445 0.148415

perc\_external\_contribs -2.608e-02 5.026e-03 -5.190 2.11e-07 \*\*\*

prs\_succ\_rate 1.820e-01 3.905e-03 46.623 < 2e-16 \*\*\*

pr\_files\_changed -3.552e-04 2.455e-05 -14.469 < 2e-16 \*\*\*

prs\_main\_team\_member1 1.671e-01 2.624e-02 6.368 1.92e-10 \*\*\*

prs\_popularity 9.346e-02 5.634e-03 16.589 < 2e-16 \*\*\*

prs\_watched\_repo1 8.225e-02 7.972e-03 10.318 < 2e-16 \*\*\*

prs\_tenure\_mnth 2.960e-02 4.755e-03 6.225 4.82e-10 \*\*\*

pr\_comments\_counts 1.313e-03 2.877e-03 0.456 0.648125

pr\_num\_commits -2.104e-01 2.914e-03 -72.229 < 2e-16 \*\*\*

**prs\_eth\_8Black -4.986e-02 9.633e-02 -0.518 0.604737**

**prs\_eth\_8API -1.042e-01 1.522e-02 -6.845 7.67e-12 \*\*\***

**prs\_eth\_8Hispanic -6.522e-02 2.227e-02 -2.928 0.003408 \*\***

prs\_experience -7.492e-02 8.207e-03 -9.129 < 2e-16 \*\*\*

pr\_nth 5.102e-01 7.847e-03 65.018 < 2e-16 \*\*\*

prs\_continentAsia -6.780e-02 1.811e-02 -3.744 0.000181 \*\*\*

prs\_continentAfrica -1.702e-01 6.150e-02 -2.767 0.005649 \*\*

prs\_continentSouth America -5.146e-02 3.486e-02 -1.476 0.139946

prs\_continentAntarctica 2.056e-01 8.703e-01 0.236 0.813285

prs\_continentUnknown 8.799e-02 1.439e-02 6.114 9.75e-10 \*\*\*

prs\_continentEurope 7.514e-02 1.170e-02 6.422 1.34e-10 \*\*\*

prs\_continentOceania 5.285e-02 2.771e-02 1.907 0.056495 .

prs\_pri\_same\_nationalityDifferent -2.105e-01 1.055e-02 -19.958 < 2e-16 \*\*\*

prs\_pri\_same\_nationalityUnknown -2.045e-01 1.308e-02 -15.641 < 2e-16 \*\*\*

intra\_branch1 2.998e-01 1.537e-02 19.512 < 2e-16 \*\*\*

**Comparing submitter model with association and without association variable.**

Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)

model\_submitter\_EU\_NoAss. 30 965170 965535 -482555 965110

**model\_submitter\_EU 31 964876 965253 -482407 964814 296.11 1 < 2.2e-16 \*\*\***

### MODEL Submitter\_08 Interaction prs\*pri ######################

### All Ethnicities (threshold 0.8), No Same ethnicity, no association ######################

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.236e+00 1.787e-02 125.084 < 2e-16 \*\*\*

repo\_pr\_tenure\_mnth 1.149e-02 6.327e-03 1.816 0.069382 .

repo\_pr\_popularity 0.000e+00 9.870e-03 0.000 1.000000

repo\_pr\_team\_size 1.364e-02 9.927e-03 1.374 0.169595

perc\_external\_contribs -2.652e-02 5.028e-03 -5.275 1.32e-07 \*\*\*

prs\_succ\_rate 1.810e-01 3.906e-03 46.347 < 2e-16 \*\*\*

pr\_files\_changed -3.553e-04 2.457e-05 -14.462 < 2e-16 \*\*\*

prs\_main\_team\_member1 1.600e-01 2.625e-02 6.096 1.09e-09 \*\*\*

prs\_popularity 8.342e-02 5.664e-03 14.728 < 2e-16 \*\*\*

prs\_watched\_repo1 7.175e-02 7.997e-03 8.972 < 2e-16 \*\*\*

prs\_followed\_pri1 1.731e-01 1.051e-02 16.474 < 2e-16 \*\*\*

prs\_tenure\_mnth 3.239e-02 4.757e-03 6.809 9.83e-12 \*\*\*

pr\_comments\_counts 1.138e-03 2.877e-03 0.395 0.692558

pr\_num\_commits -2.114e-01 2.915e-03 -72.517 < 2e-16 \*\*\*

**prs\_eth\_8Black -8.211e-02 9.989e-02 -0.822 0.411100**

**prs\_eth\_8API -1.449e-01 1.595e-02 -9.084 < 2e-16 \*\*\***

**prs\_eth\_8Hispanic -8.687e-02 2.323e-02 -3.740 0.000184 \*\*\***

**pri\_eth\_8Black 2.682e-01 2.044e-01 1.312 0.189456**

**pri\_eth\_8API 4.959e-02 2.087e-02 2.376 0.017516 \***

**pri\_eth\_8Hispanic -1.267e-01 2.124e-02 -5.965 2.45e-09 \*\*\***

prs\_experience -7.097e-02 8.210e-03 -8.645 < 2e-16 \*\*\*

pr\_nth 4.980e-01 7.880e-03 63.197 < 2e-16 \*\*\*

prs\_continentAsia -7.997e-02 1.811e-02 -4.414 1.01e-05 \*\*\*

prs\_continentAfrica -1.838e-01 6.150e-02 -2.989 0.002799 \*\*

prs\_continentSouth America -6.542e-02 3.487e-02 -1.876 0.060671 .

prs\_continentAntarctica 1.721e-01 8.666e-01 0.199 0.842583

prs\_continentUnknown 8.187e-02 1.440e-02 5.685 1.31e-08 \*\*\*

prs\_continentEurope 6.835e-02 1.170e-02 5.840 5.22e-09 \*\*\*

prs\_continentOceania 4.900e-02 2.770e-02 1.769 0.076939 .

prs\_pri\_same\_nationalityDifferent -1.916e-01 1.060e-02 -18.071 < 2e-16 \*\*\*

prs\_pri\_same\_nationalityUnknown -1.846e-01 1.312e-02 -14.066 < 2e-16 \*\*\*

intra\_branch1 2.935e-01 1.538e-02 19.081 < 2e-16 \*\*\*

**prs\_eth\_8Black:pri\_eth\_8Black 1.700e+00 1.123e+00 1.514 0.129933**

**prs\_eth\_8API:pri\_eth\_8Black -7.917e-01 5.522e-01 -1.434 0.151646**

**prs\_eth\_8Hispanic:pri\_eth\_8Black 8.431e-02 6.276e-01 0.134 0.893128**

**prs\_eth\_8Black:pri\_eth\_8API 6.395e-01 3.834e-01 1.668 0.095310 .**

**prs\_eth\_8API:pri\_eth\_8API 2.267e-01 3.685e-02 6.152 7.63e-10 \*\*\***

**prs\_eth\_8Hispanic:pri\_eth\_8API -5.519e-01 7.476e-02 -7.383 1.55e-13 \*\*\***

**prs\_eth\_8Black:pri\_eth\_8Hispanic -5.944e-01 3.594e-01 -1.654 0.098128 .**

**prs\_eth\_8API:pri\_eth\_8Hispanic 1.453e-01 5.098e-02 2.850 0.004376 \*\***

**prs\_eth\_8Hispanic:pri\_eth\_8Hispanic 5.480e-01 6.218e-02 8.812 < 2e-16 \*\*\***

**Comparing submitter model with interaction and without interaction prs\*pri.**

Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)

model\_submitter\_EU 31 964876 965253 -482407 964814

**model\_submitter\_EU\_Inter. 43 964631 965154 -482273 964545 269.1112 < 2.2e-16 \*\*\***

### MODEL Submitter\_07. ######################

### All Ethnicities (threshold 0.7) and No Same ethnicity ######################

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.310e+00 1.651e-02 139.908 < 2e-16 \*\*\*

repo\_pr\_tenure\_mnth -7.904e-03 5.648e-03 -1.399 0.1617

repo\_pr\_popularity 9.081e-02 8.887e-03 10.219 < 2e-16 \*\*\*

repo\_pr\_team\_size 0.000e+00 8.960e-03 0.000 1.0000

perc\_external\_contribs -4.696e-02 4.469e-03 -10.508 < 2e-16 \*\*\*

prs\_succ\_rate 1.876e-01 3.391e-03 55.324 < 2e-16 \*\*\*

pr\_files\_changed -3.569e-04 1.971e-05 -18.108 < 2e-16 \*\*\*

prs\_main\_team\_member1 1.436e-01 2.357e-02 6.095 1.10e-09 \*\*\*

prs\_popularity 8.744e-02 4.953e-03 17.653 < 2e-16 \*\*\*

prs\_watched\_repo1 7.768e-02 6.985e-03 11.122 < 2e-16 \*\*\*

prs\_followed\_pri1 1.264e-01 9.188e-03 13.756 < 2e-16 \*\*\*

prs\_tenure\_mnth 5.508e-02 3.911e-03 14.081 < 2e-16 \*\*\*

pr\_comments\_counts -1.003e-03 2.470e-03 -0.406 0.6847

pr\_num\_commits -2.197e-01 2.499e-03 -87.896 < 2e-16 \*\*\*

**prs\_eth\_7Black -8.904e-02 5.187e-02 -1.717 0.0860 .**

**prs\_eth\_7API -8.775e-02 1.315e-02 -6.674 2.49e-11 \*\*\***

**prs\_eth\_7Hispanic -6.647e-02 1.910e-02 -3.481 0.0005 \*\*\***

prs\_experience -7.344e-02 7.258e-03 -10.118 < 2e-16 \*\*\*

pr\_nth 5.163e-01 6.915e-03 74.661 < 2e-16 \*\*\*

prs\_continentAsia -1.053e-01 1.525e-02 -6.906 4.99e-12 \*\*\*

prs\_continentAfrica -2.128e-01 5.174e-02 -4.113 3.91e-05 \*\*\*

prs\_continentSouth America -7.459e-02 2.933e-02 -2.543 0.0110 \*

prs\_continentAntarctica -6.099e-01 5.151e-01 -1.184 0.2364

prs\_continentUnknown -1.006e-01 1.227e-02 -8.193 2.55e-16 \*\*\*

prs\_continentEurope 7.475e-02 1.073e-02 6.967 3.24e-12 \*\*\*

prs\_continentOceania 5.374e-02 2.559e-02 2.100 0.0357 \*

prs\_pri\_same\_nationalityDifferent -1.995e-01 9.507e-03 -20.984 < 2e-16 \*\*\*

prs\_pri\_same\_nationalityUnknown 2.337e-03 1.109e-02 0.211 0.8331

intra\_branch1 2.524e-01 1.349e-02 18.713 < 2e-16 \*\*\*

### MODEL Submitter\_09 ######################

### All Ethnicities (threshold 0.9) and No Same ethnicity ######################

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.247e+00 1.878e-02 119.649 < 2e-16 \*\*\*

repo\_pr\_tenure\_mnth 2.292e-02 6.673e-03 3.435 0.000594 \*\*\*

repo\_pr\_popularity 8.206e-02 1.041e-02 7.884 3.16e-15 \*\*\*

repo\_pr\_team\_size 7.343e-18 1.057e-02 0.000 1.000000

perc\_external\_contribs -5.882e-02 5.378e-03 -10.937 < 2e-16 \*\*\*

prs\_succ\_rate 1.897e-01 4.110e-03 46.143 < 2e-16 \*\*\*

pr\_files\_changed -3.512e-04 2.446e-05 -14.362 < 2e-16 \*\*\*

prs\_main\_team\_member1 1.379e-01 2.775e-02 4.971 6.65e-07 \*\*\*

prs\_popularity 7.974e-02 5.941e-03 13.424 < 2e-16 \*\*\*

prs\_watched\_repo1 7.798e-02 8.442e-03 9.237 < 2e-16 \*\*\*

prs\_followed\_pri1 1.319e-01 1.112e-02 11.865 < 2e-16 \*\*\*

prs\_tenure\_mnth 4.737e-02 4.855e-03 9.755 < 2e-16 \*\*\*

pr\_comments\_counts -3.991e-04 2.994e-03 -0.133 0.893970

pr\_num\_commits -2.113e-01 3.043e-03 -69.432 < 2e-16 \*\*\*

**prs\_eth\_9Black -6.474e-02 1.010e-01 -0.641 0.521563**

**prs\_eth\_9API -1.059e-01 1.606e-02 -6.595 4.26e-11 \*\*\***

**prs\_eth\_9Hispanic -8.226e-02 2.594e-02 -3.171 0.001521 \*\***

prs\_experience -6.903e-02 8.640e-03 -7.990 1.35e-15 \*\*\*

pr\_nth 4.994e-01 8.267e-03 60.414 < 2e-16 \*\*\*

prs\_continentAsia -9.123e-02 1.875e-02 -4.865 1.15e-06 \*\*\*

prs\_continentAfrica -1.999e-01 6.774e-02 -2.952 0.003159 \*\*

prs\_continentSouth America -2.165e-02 4.269e-02 -0.507 0.612041

prs\_continentAntarctica -1.084e+00 5.929e-01 -1.828 0.067614 .

prs\_continentUnknown -1.096e-01 1.490e-02 -7.354 1.92e-13 \*\*\*

prs\_continentEurope 6.715e-02 1.251e-02 5.366 8.05e-08 \*\*\*

prs\_continentOceania 6.321e-02 3.018e-02 2.094 0.036244 \*

prs\_pri\_same\_nationalityDifferent -1.981e-01 1.131e-02 -17.515 < 2e-16 \*\*\*

prs\_pri\_same\_nationalityUnknown 2.262e-02 1.352e-02 1.673 0.094419 .

intra\_branch1 2.788e-01 1.614e-02 17.277 < 2e-16 \*\*\*

## \*\*\*\* Effect Size for MODEL Submitter\_08

## 

Analysis of Variance Table. 22707.8

Df Sum Sq Mean Sq F value

repo\_pr\_tenure\_mnth 1 600.2 600.2 600.1593

repo\_pr\_popularity 1 31.9 31.9 31.9431

repo\_pr\_team\_size 1 33.6 33.6 33.5870

perc\_external\_contribs 1 8.4 8.4 8.3764

prs\_succ\_rate 1 7099.8 7099.8 7099.7718

pr\_files\_changed 1 598.1 598.1 598.1082

prs\_main\_team\_member 1 370.1 370.1 370.0536

prs\_popularity 1 803.5 803.5 803.4834

prs\_watched\_repo 1 618.1 618.1 618.1232

prs\_followed\_pri 1 538.3 538.3 538.2600

prs\_tenure\_mnth 1 154.9 154.9 154.9019

pr\_comments\_counts 1 179.9 179.9 179.9479

pr\_num\_commits 1 4711.9 4711.9 4711.9010

prs\_eth\_8 3 150.9 50.3 50.3132

prs\_experience 1 1489.2 1489.2 1489.2190

pr\_nth 1 4412.1 4412.1 4412.0801

prs\_continent 7 118.1 16.9 16.8683

prs\_pri\_same\_nationality 2 422.5 211.2 211.2476

intra\_branch 1 366.6 366.6 366.5911

## \*\*\*\* Effect Size for MODEL Submitter\_08 Interaction prs\*pri

Analysis of Variance Table 22307.7

Df Sum Sq Mean Sq F value

repo\_pr\_tenure\_mnth 1 601.1 601.1 601.0588

repo\_pr\_popularity 1 32.0 32.0 32.0416

repo\_pr\_team\_size 1 33.5 33.5 33.4686

perc\_external\_contribs 1 8.3 8.3 8.2944

prs\_succ\_rate 1 7094.9 7094.9 7094.9266

pr\_files\_changed 1 597.1 597.1 597.1434

prs\_main\_team\_member 1 370.2 370.2 370.1619

prs\_popularity 1 802.0 802.0 801.9642

prs\_watched\_repo 1 617.6 617.6 617.5506

prs\_followed\_pri 1 538.0 538.0 537.9889

prs\_tenure\_mnth 1 154.9 154.9 154.8713

pr\_comments\_counts 1 180.0 180.0 180.0481

pr\_num\_commits 1 4709.0 4709.0 4708.9978

prs\_eth\_8 3 154.8 51.6 51.6043

pri\_eth\_8 3 52.1 17.4 17.3831

prs\_experience 1 1483.4 1483.4 1483.3899

pr\_nth 1 4403.6 4403.6 4403.5919

prs\_continent 7 119.7 17.1 17.0966

prs\_pri\_same\_nationality 2 413.7 206.8 206.8485

intra\_branch 1 366.7 366.7 366.6836

prs\_eth\_8:pri\_eth\_8 9 203.6 22.6 22.6230