

Posterior Summary

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1 Diagnostics

Model is loaded from an RDS object in the repository, so you dont have to wait a long time for it to run.

1.1 Convergence and Efficiency

```
## Family: bernoulli
## Links: mu = logit
## Formula: latestage ~ age + sex + raceth + grade + size_z + year_z + marry
+ (1 | patientid) + (1 | regionid)
## Data: seer_df2 (Number of observations: 3031)
## Draws: 4 chains, each with iter = 3000; warmup = 1500; thin = 1;
##         total post-warmup draws = 6000
##
## Multilevel Hyperparameters:
## ~patientid (Number of levels: 3026)
##             Estimate Est.Error l-95% CI u-95% CI Rhat Bulk_ESS Tail_ESS
## sd(Intercept)    9.11     1.85     5.69    13.01 1.01      494     593
##
## ~regionid (Number of levels: 3)
##             Estimate Est.Error l-95% CI u-95% CI Rhat Bulk_ESS Tail_ESS
## sd(Intercept)    0.79     0.89     0.02     3.23 1.00     2931    3694
##
## Regression Coefficients:
##             Estimate Est.Error l-95% CI u-95% CI Rhat Bulk_ESS Tail_ESS
## Intercept      -4.32     1.36    -7.17   -1.75 1.00     1677    2623
## age01M04years   -0.34     1.89    -4.05    3.32 1.00     9072    5229
## age05M09years   -1.17     1.92    -4.82    2.58 1.00     9688    5284
## age10M14years    0.09     1.88    -3.47    3.91 1.00     8516    4916
## age15M19years    0.07     1.90    -3.65    3.87 1.00    10007    4664
## age20M24years   -1.28     1.83    -4.95    2.31 1.00     7836    4698
## age25M29years   -0.24     1.67    -3.52    3.03 1.00     6268    4781
## age30M34years    1.14     1.46    -1.81    4.08 1.00     4090    4215
## age35M39years    0.49     1.26    -2.05    2.92 1.00     3444    4116
## age40M44years    0.45     1.09    -1.69    2.63 1.00     3134    4143
## age45M49years    0.38     0.93    -1.44    2.19 1.00     2876    3588
## age50M54years    0.98     0.89    -0.73    2.76 1.00     2511    3412
## age55M59years   -0.12     0.84    -1.78    1.48 1.00     2555    3562
## age60M64years   -0.38     0.81    -1.99    1.16 1.00     2093    3913
## age65M69years    0.36     0.80    -1.22    1.93 1.00     2668    3376
## age70M74years   -0.23     0.82    -1.82    1.38 1.00     2305    3031
## age75M79years    1.42     0.86    -0.24    3.12 1.00     2719    3650
## age80M84years   -0.58     0.94    -2.49    1.24 1.00     2326    3739
## age85M89years   -0.05     1.04    -2.10    2.00 1.00     2787    3505
## age90Pyears     -0.62     1.18    -2.99    1.66 1.00     3452    4375
## sexMale          0.58     0.45    -0.28    1.51 1.00     2666    3249
## raceth0          1.79     0.81     0.29    3.43 1.00     1990    3574
## racethw          -0.03     0.67    -1.37    1.25 1.00     2804    3382
```

```

## gradeStart      6.06     1.13     3.96    8.41 1.01      635     881
## size_z         1.22     0.30     0.69    1.87 1.01      793    1682
## year_z        -0.02     0.21    -0.44    0.39 1.00     2784    3506
## marryUnmarried 0.47     0.46    -0.40    1.41 1.00     2780    2985
##
## Draws were sampled using sample(hmc). For each parameter, Bulk_ESS
## and Tail_ESS are effective sample size measures, and Rhat is the potential
## scale reduction factor on split chains (at convergence, Rhat = 1).

```

We see no scale reduction ($\text{Rhat}=1.0$ in all cases) and ESS are all sufficiently large, and 1 divergent transition, but its small enough to be due to chance.

1.2 VIF

We check VIF, and confirm all values are reasonable.

```

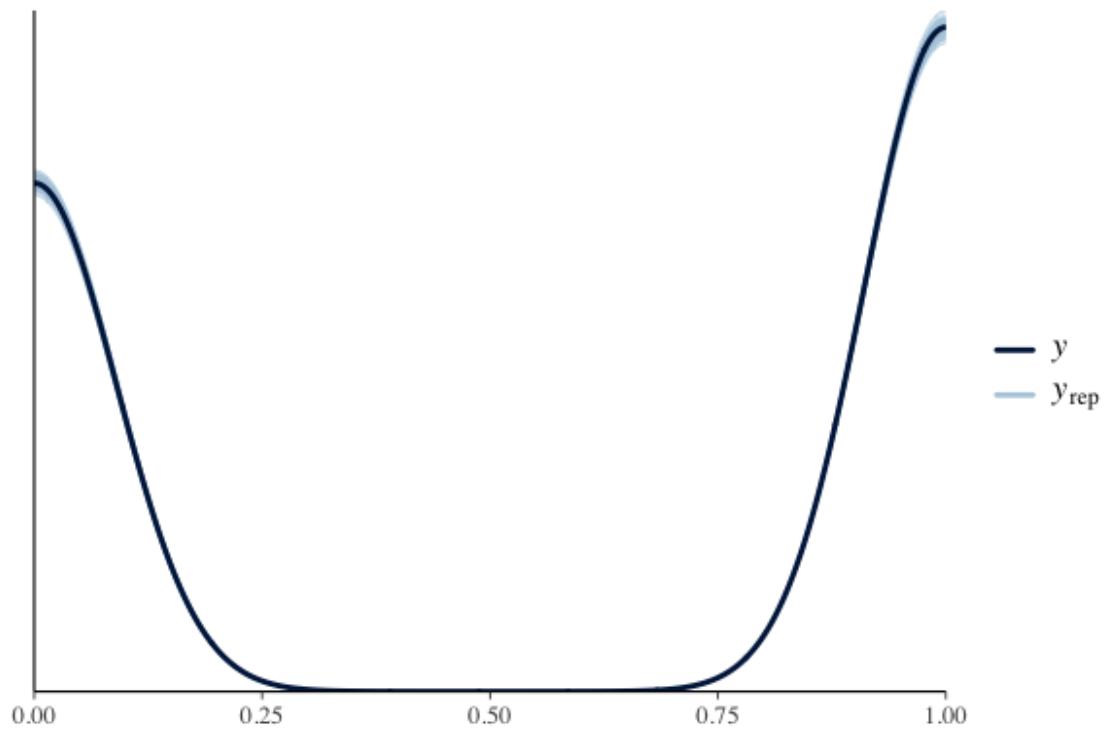
##          GVIF Df GVIF^(1/(2*Df))
## age     1.139013 19   1.003431
## sex     1.103208  1   1.050337
## raceth  1.058497  2   1.014314
## grade   1.053411  1   1.026358
## size_z  1.043417  1   1.021478
## year_z  1.006218  1   1.003104
## marry   1.093198  1   1.045561

```

1.3 Posterior Draws

Checking Posterior Draws

```
pp_check(breast, ndraws = 100)
```



Posterior draws look Ok as well.