

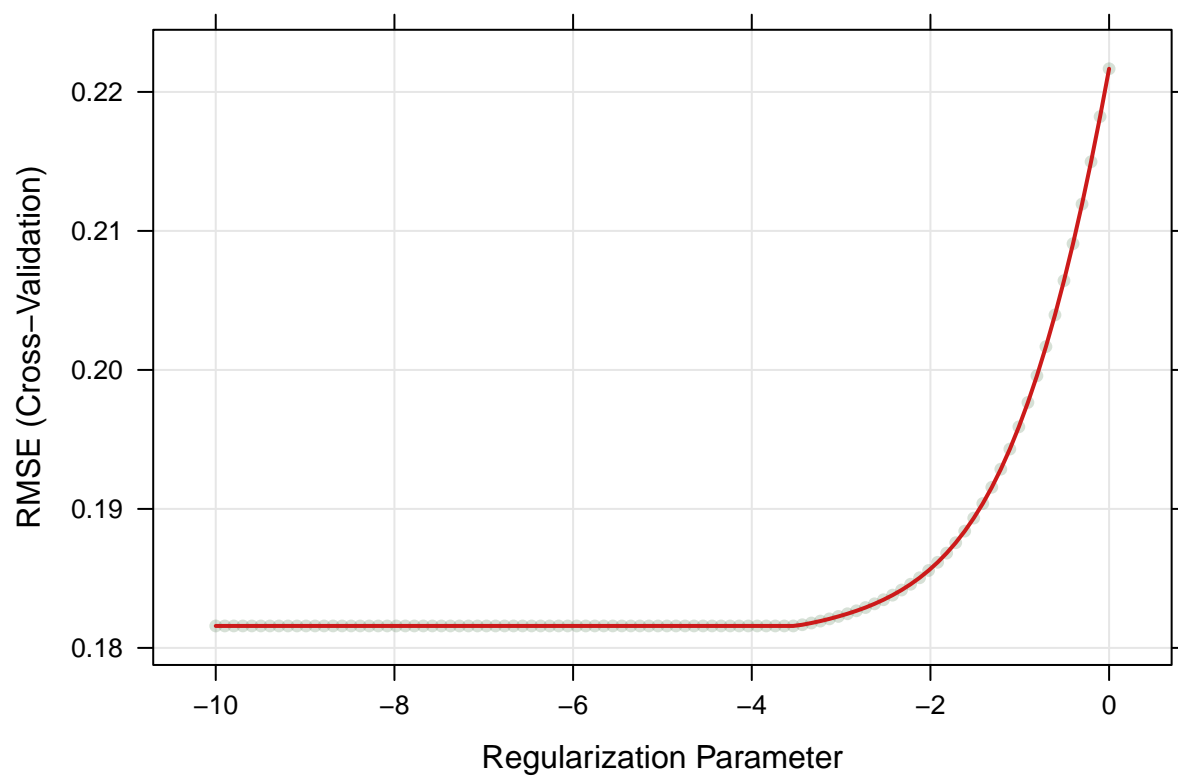
model_building_I

Yun He

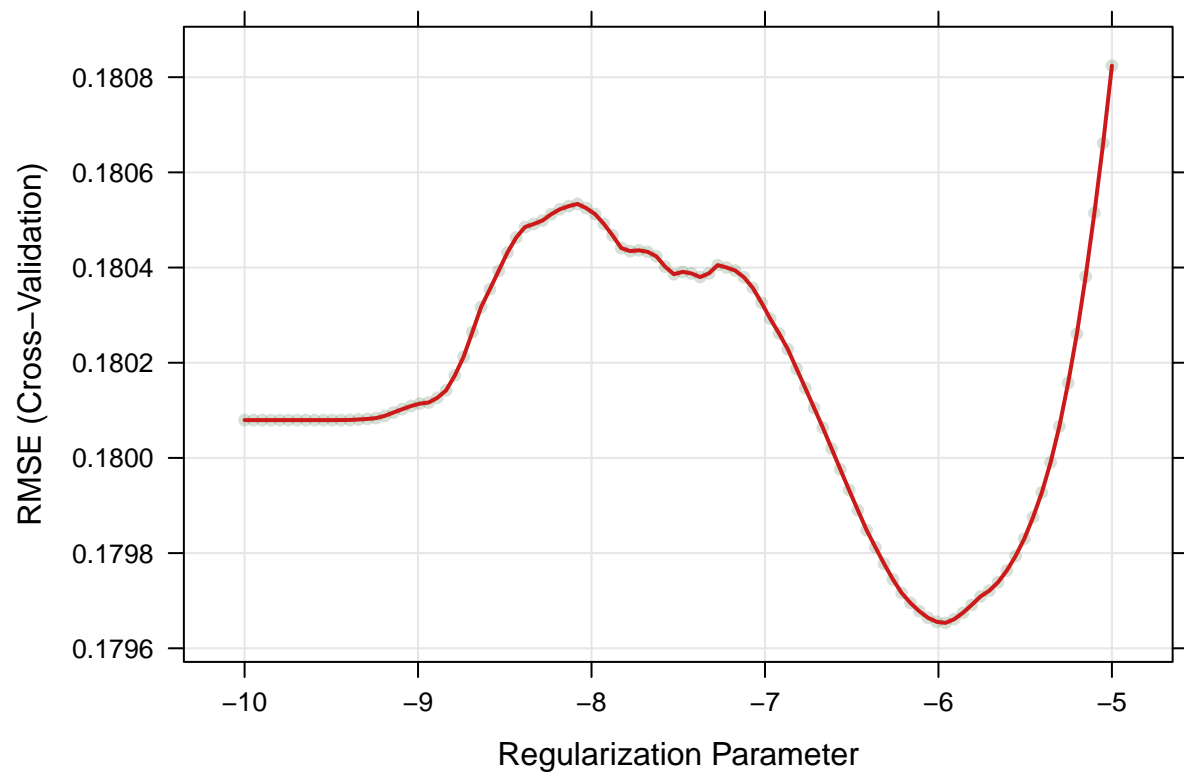
April 2, 2019

linear model

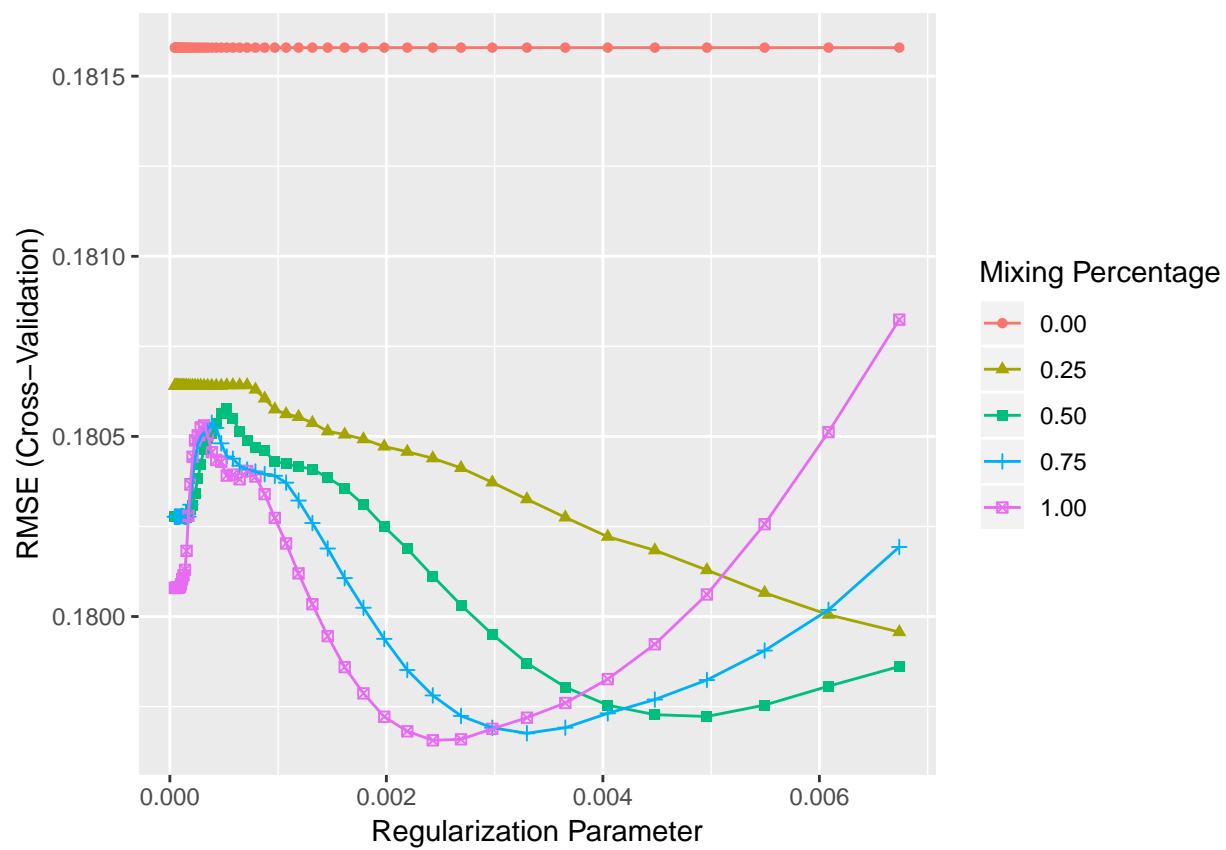
ridge model



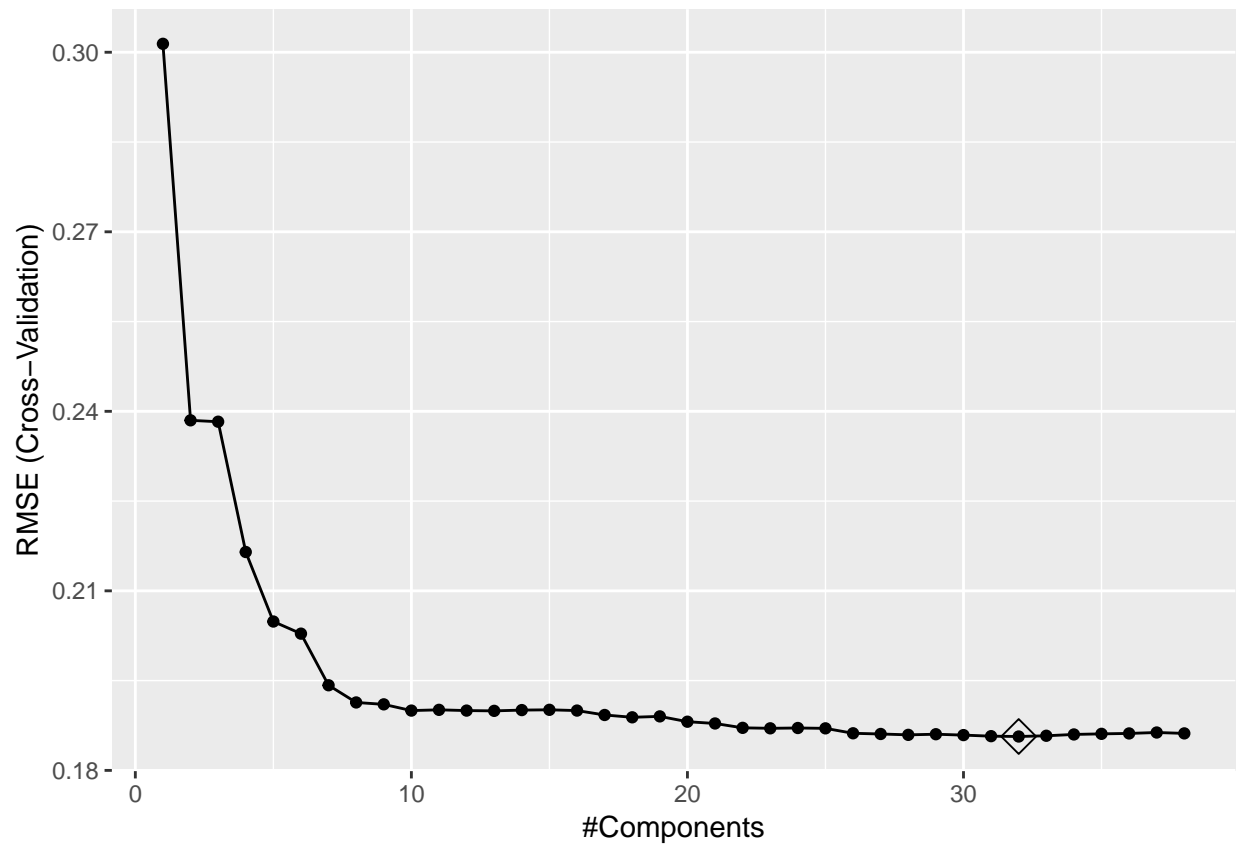
lasso model



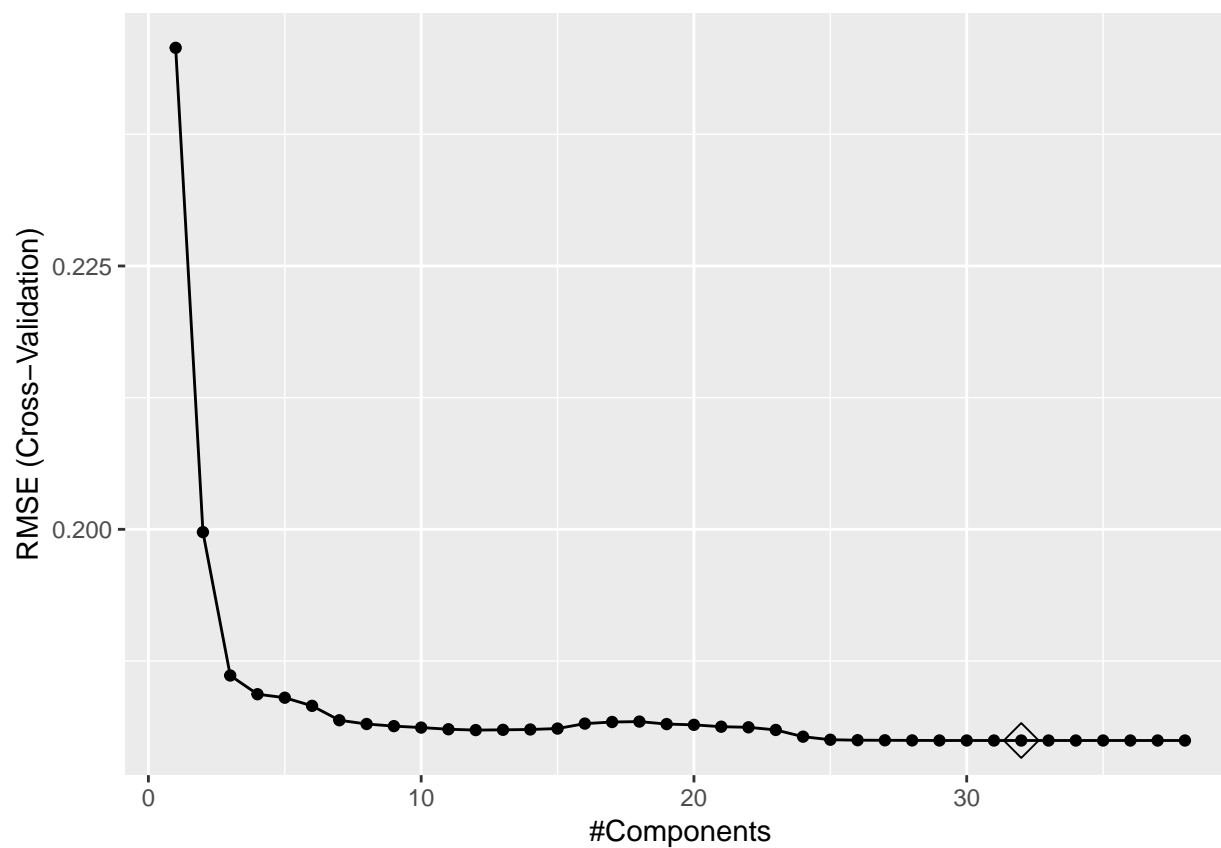
Elastic net



pcr model



pls model



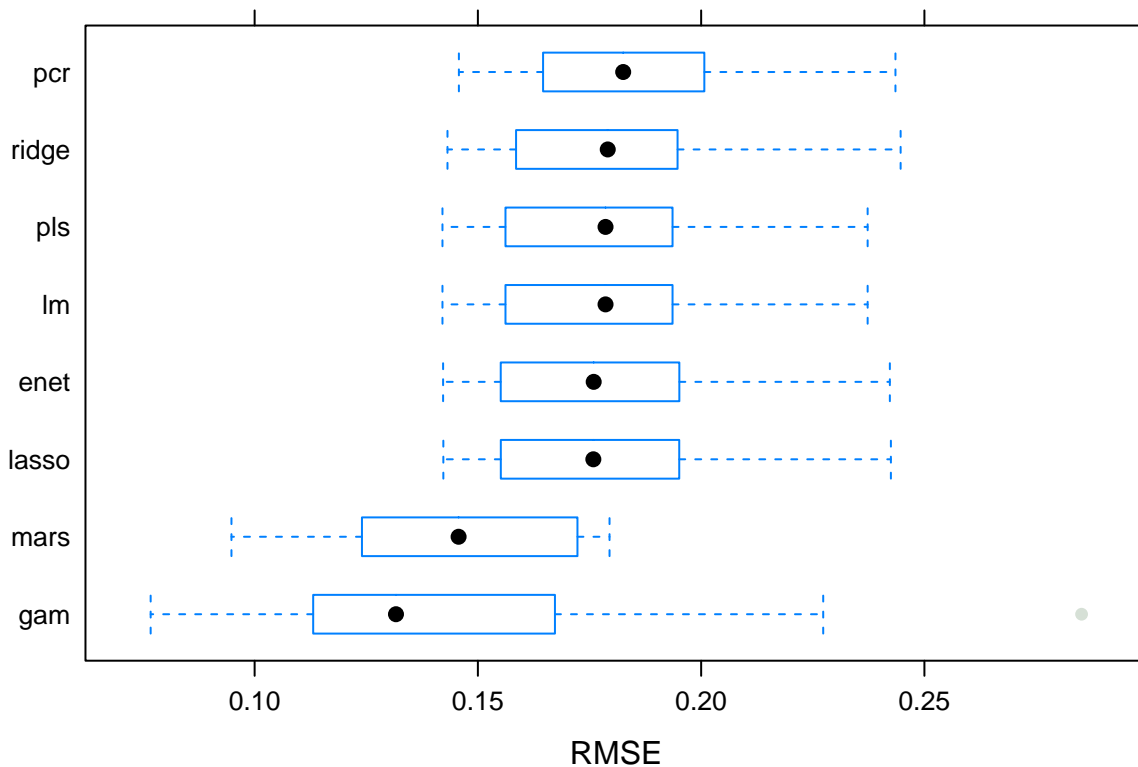
summarize

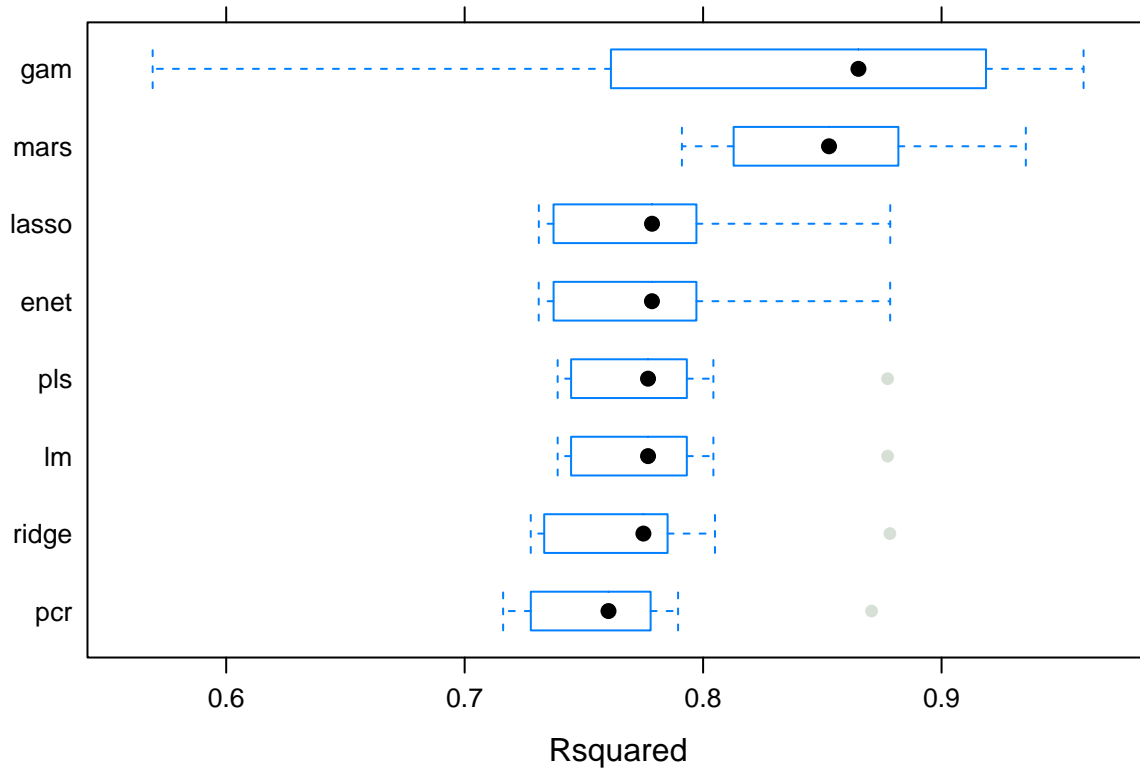
```
##
## Call:
## summary.resamples(object = resamp)
##
## Models: lasso, ridge, enet, pcr, pls, lm, gam, mars
## Number of resamples: 10
##
## MAE
##      Min.    1st Qu.    Median      Mean   3rd Qu.      Max.
## lasso 0.09719222 0.10129245 0.10590401 0.10956587 0.11255805 0.13502906
## ridge 0.09765152 0.10304667 0.10684230 0.11134534 0.11391107 0.13559869
## enet  0.09724934 0.10137448 0.10598078 0.10966325 0.11269508 0.13507619
## pcr   0.10107108 0.10906116 0.11408949 0.11637942 0.12054945 0.13650323
## pls   0.09835892 0.10207320 0.10887506 0.11137731 0.11487307 0.13469098
## lm     0.09835898 0.10207339 0.10887487 0.11137730 0.11487300 0.13469094
## gam    0.05668337 0.06203842 0.07195778 0.07242399 0.08033341 0.09352210
## mars   0.06070972 0.06560657 0.06925750 0.06864674 0.07180254 0.07405092
##      NA's
## lasso    0
## ridge    0
## enet     0
## pcr      0
```

```

## pls      0
## lm       0
## gam      0
## mars     0
##
## RMSE
##          Min.    1st Qu.    Median      Mean   3rd Qu.      Max. NA's
## lasso 0.14226260 0.1562634 0.1758557 0.1796533 0.1945172 0.2424922    0
## ridge 0.14318847 0.1600487 0.1790817 0.1815792 0.1937781 0.2446725    0
## enet  0.14220929 0.1562548 0.1759364 0.1796564 0.1945613 0.2422556    0
## pcr   0.14574380 0.1666581 0.1825369 0.1856613 0.1984917 0.2435124    0
## pls   0.14206567 0.1577992 0.1785876 0.1799509 0.1926953 0.2372858    0
## lm    0.14206597 0.1577995 0.1785876 0.1799510 0.1926953 0.2372858    0
## gam   0.07671379 0.1161527 0.1316582 0.1501811 0.1599001 0.2851988    0
## mars  0.09481377 0.1276158 0.1456808 0.1457794 0.1702043 0.1794824    0
##
## Rsquared
##          Min.    1st Qu.    Median      Mean   3rd Qu.      Max. NA's
## lasso 0.7310921 0.7429010 0.7785803 0.7795687 0.7956519 0.8784677    0
## ridge 0.7277164 0.7391545 0.7749554 0.7746877 0.7838059 0.8783238    0
## enet  0.7310657 0.7428786 0.7785426 0.7795444 0.7955673 0.8784539    0
## pcr   0.7161349 0.7340152 0.7603207 0.7644997 0.7751822 0.8706531    0
## pls   0.7390087 0.7468739 0.7768999 0.7789712 0.7905430 0.8773768    0
## lm    0.7390086 0.7468734 0.7768995 0.7789712 0.7905434 0.8773763    0
## gam   0.5691469 0.7800303 0.8651427 0.8284229 0.9178897 0.9595658    0
## mars  0.7911018 0.8133015 0.8528088 0.8516841 0.8787272 0.9353345    0

```





calculate the train and test error

model	train_error	test_error
linear	0.0306	0.0399
ridge	0.0317	0.0393
lasso	0.0315	0.0392
elastic net	0.0314	0.0392
PCR	0.0332	0.0401
PLS	0.0306	0.0399
MARS	0.0195	0.0260
GAM	0.0168	0.0272