

Everything

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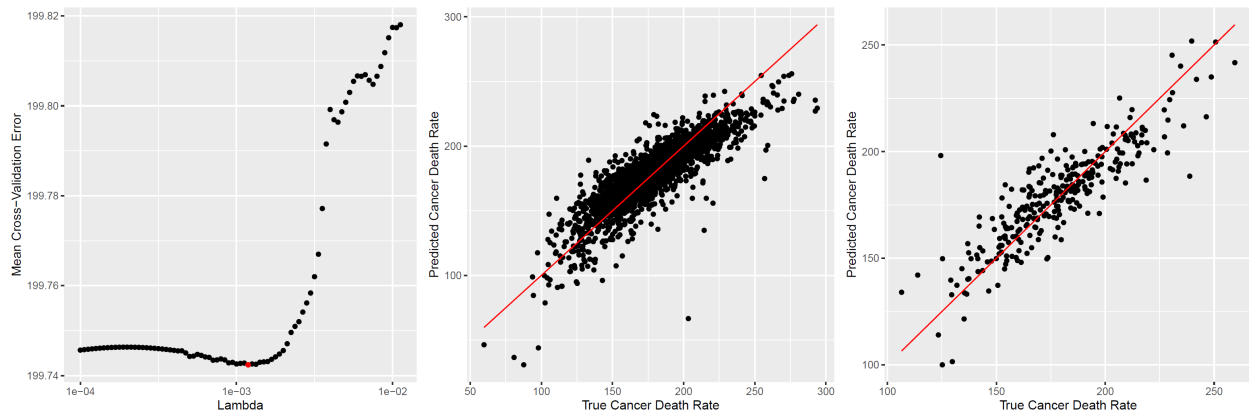


Figure 1: Caption for the picture.

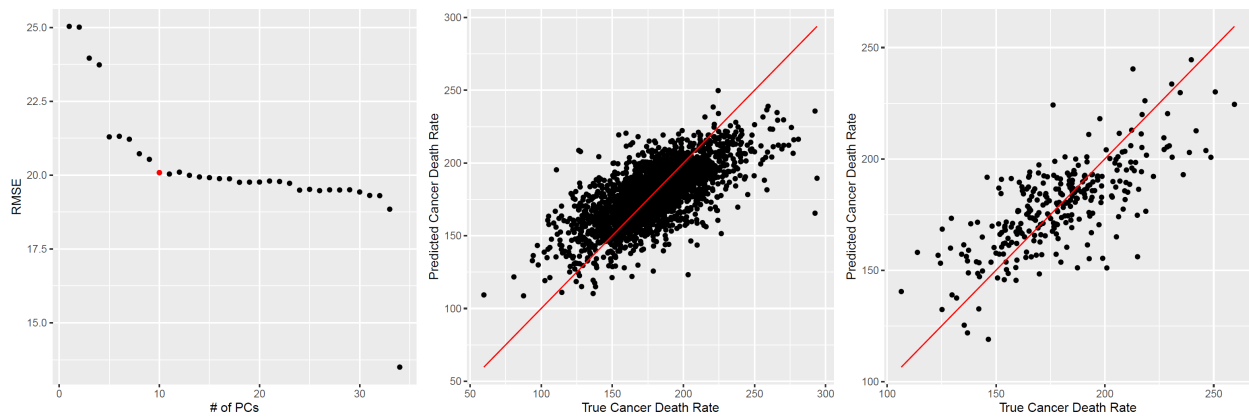


Figure 2: Caption for the picture.

Heatmap

Display these

```
train_metrics
```

```
##               Lasso      PCA      Stepwise
## R_squared_train 0.8664342 0.6892268 0.8769632
```

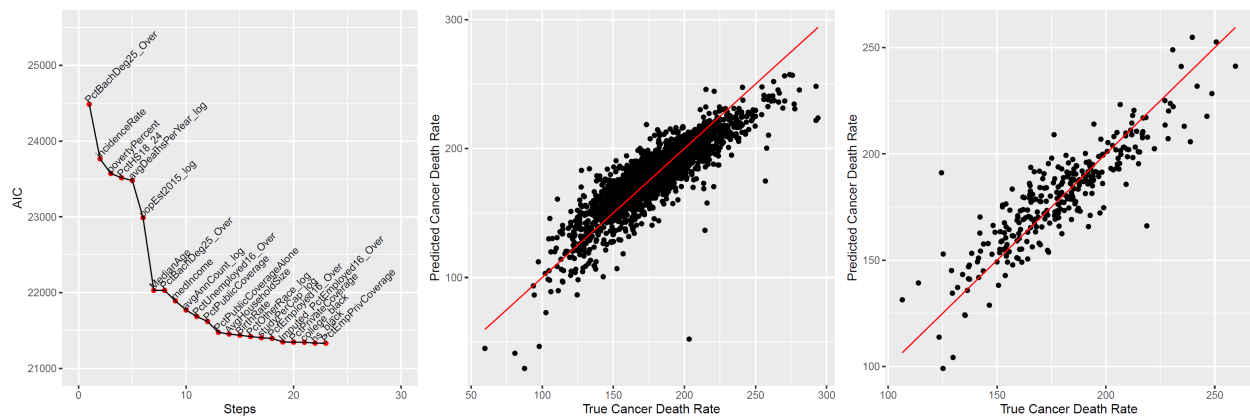


Figure 3: Caption for the picture.

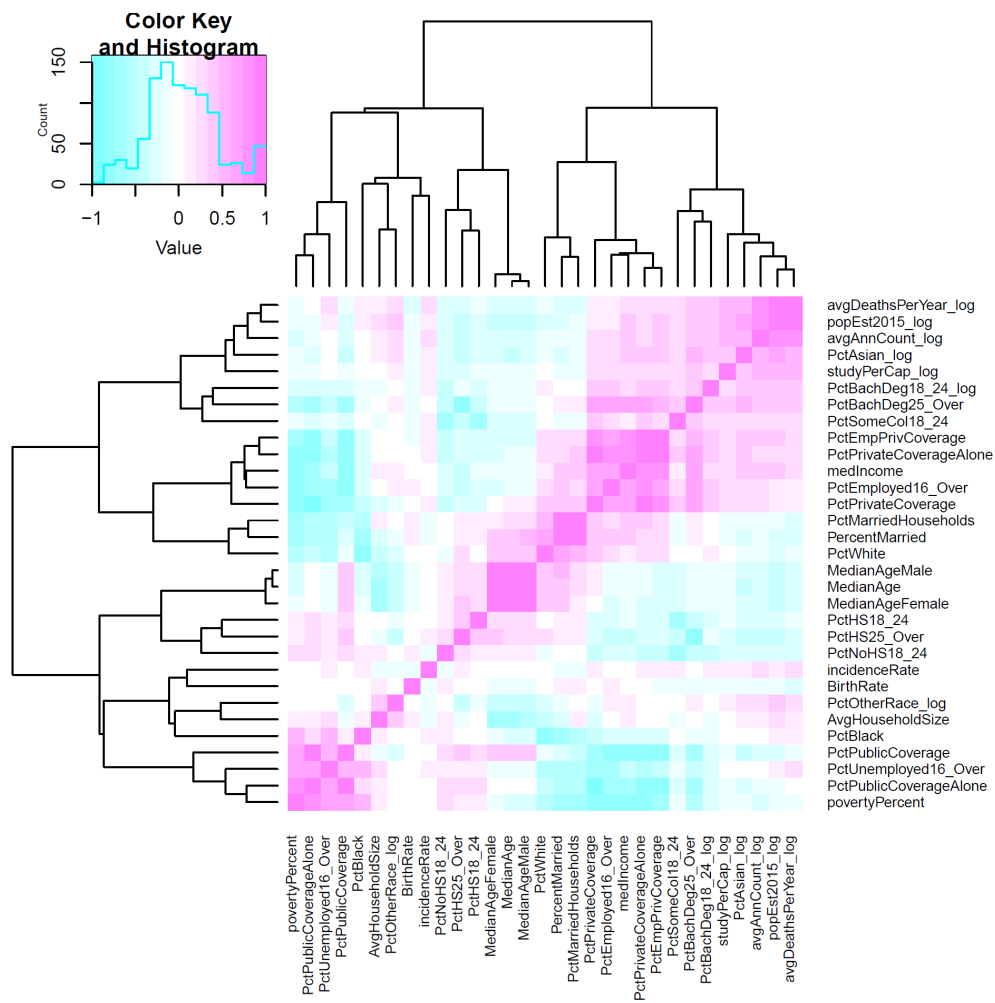


Figure 4: Caption for the picture.

```
## RMSE_train      13.7961626 20.0200150 13.2783463
```

```
test_metrics
```

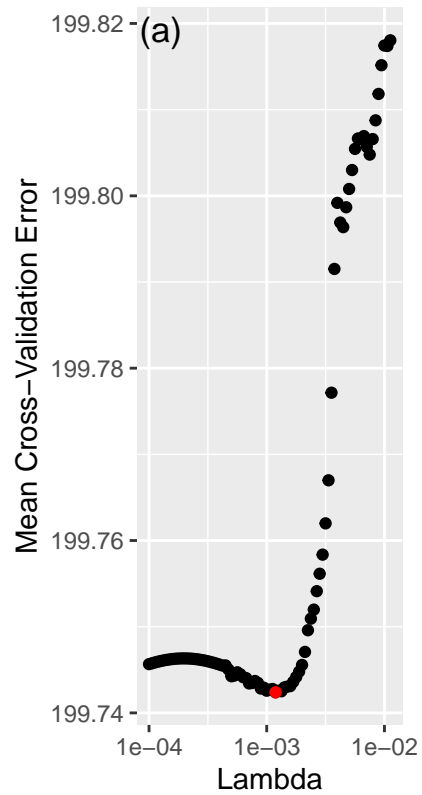
```
##              Lasso      PCA    Stepwise
## R_squared_test 0.871858 0.7281111 0.8794552
## RMSE_test      12.842426 17.9551337 12.4945712
```

```
final_coeffs
```

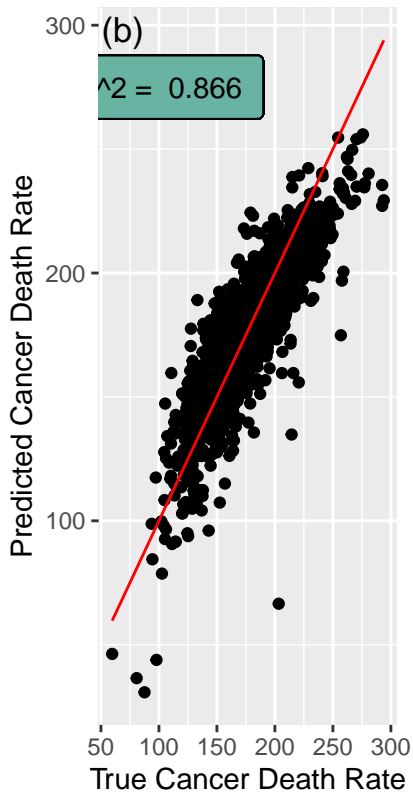
```
##              step_coeffs  lasso_coeffs
## (Intercept)      8.982813e+02      NA
## avgAnnCount_log  -2.755781e+00 -1.914430e+00
## avgDeathsPerYear_log  1.039750e+02  1.121735e+02
## AvgHouseholdSize  4.653770e+00  6.639897e+00
## BirthRate        -4.772253e-01 -6.828285e-01
## college_black    1.823608e-02  1.490543e-02
## hs_black          NA -2.201629e-02
## hs_white          NA -1.898820e-02
## Imputed_PctEmployed16_Over -4.832461e-01 -6.286077e-01
## Imputed_PctPrivateCoverageAlone NA -2.531996e-02
## incidenceRate     9.508184e-02      NA
## MedianAge        -2.559524e+00 -2.872336e+00
## medIncome         3.834720e-04  5.224504e-04
## PctAsian_log      NA  3.642454e-01
## PctBachDeg18_24_log NA  1.415853e-02
## PctBachDeg25_Over -1.529700e-01 -1.637155e-01
## PctBlack          -1.887251e-01  6.371510e-01
## PctEmployed16_Over -5.092996e-01 -6.566720e-01
## PctEmpPrivCoverage  1.053615e-01  1.436310e-01
## PctHS18_24        3.614372e-01  4.166293e-01
## PctHS25_Over      NA  1.865748e+00
## PctMarriedHouseholds NA -4.685820e-01
## PctNoHS18_24      -6.260260e-02 -4.481827e-02
## PctOtherRace_log  -9.016052e-01 -1.265590e+00
## PctPrivateCoverage -2.662975e-01 -5.540287e-02
## PctPrivateCoverageAlone NA -2.523838e-02
## PctPublicCoverage -2.148296e+00 -2.366866e+00
## PctPublicCoverageAlone  1.644217e+00  2.046082e+00
## PctSomeCol18_24   NA  4.212474e-02
## PctUnemployed16_Over  8.859463e-01  9.699252e-01
## PctWhite          NA  6.649455e-01
## PercentMarried    NA  4.895686e-01
## popEst2015_log    -1.010836e+02 -1.093631e+02
## povertyPercent     3.958523e-01  5.106701e-01
## studyPerCap_log   -4.043149e-01 -3.224617e-01
```

```
grid.arrange(g_lasso_hyper,g_lasso_train,g_lasso_test, layout_matrix = lay1)
```

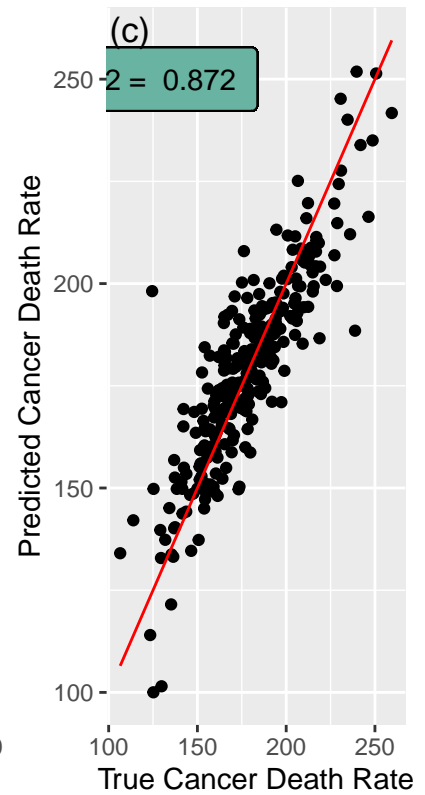
Selection of Lambda Hyperp



Lasso Train Prediction

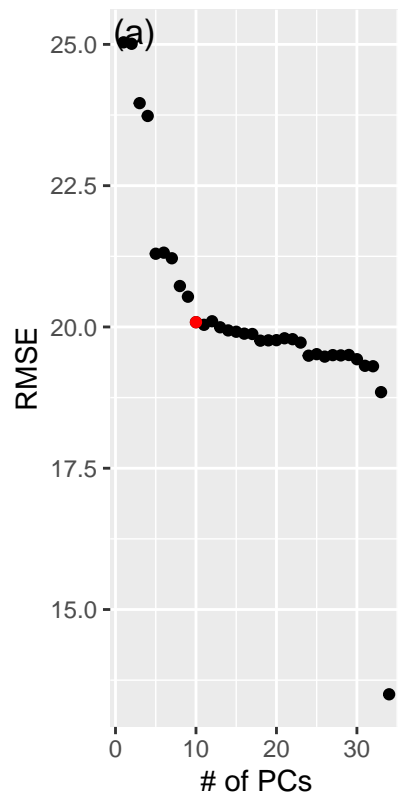


Lasso Test Prediction

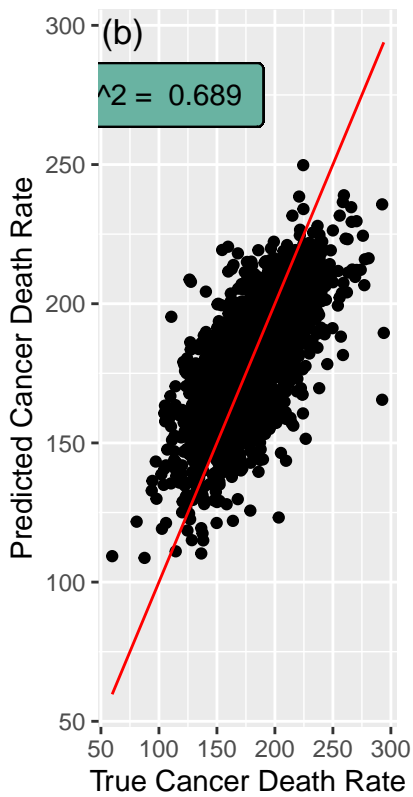


```
grid.arrange(g_pca_hyper, g_pca_train, g_pca_test, layout_matrix = lay1)
```

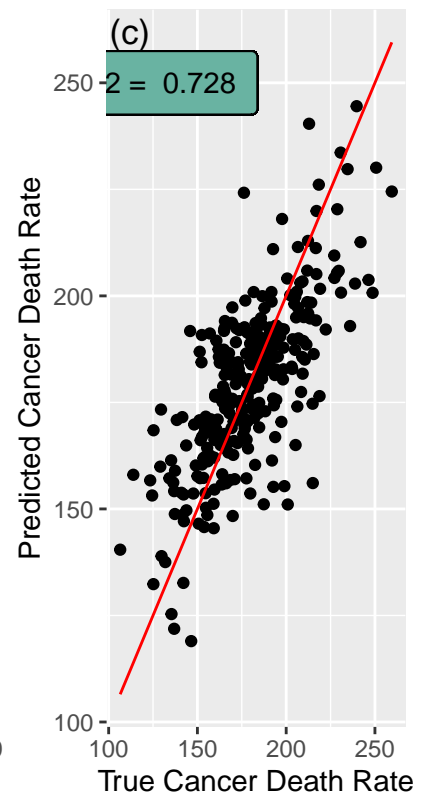
Plotting Number of Principal Components



PCA Train Prediction



PCA Test Prediction



```
grid.arrange(g_step_hyper, g_step_train, g_step_test, layout_matrix = lay1)
```

Forward and Backward Stepwise Selection Train Predictions Stepwise Selection Test Predictions

