Tables

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```
#linear model
glm.fit = glm(chance_of_admit ~ gre.std + toefl.std + cgpa.std + uni.rating +
                  sop.strength + lor.strength + research, data = admit.data)

# create matrix
X = admit.data %>% select(gre.std:research)
fmt.X = model.matrix(~ gre.std + toefl.std + cgpa.std + uni.rating +
                  sop.strength + lor.strength + research, X)
y = admit.data$chance_of_admit


# lasso model
lasso.cv = cv.glmnet(fmt.X[,-1], y, alpha = 1, type.measure = "mse")
lasso.fit = glmnet(fmt.X[,-1], y, alpha = 1, lambda = lasso.cv$lambda.min)


# ridge model

ridge.cv = cv.glmnet(fmt.X[,-1], y, alpha = 0, type.measure = "mse",
                       lambda = exp(seq(-1, 10, length=100)))
ridge.fit = glmnet(fmt.X[,-1], y, alpha = 0, lambda = ridge.cv$lambda.min)


# gamma model
gam.fit =  gam(chance_of_admit ~ gre.std + s(toefl.std) + s(cgpa.std) +
                  uni.rating + sop.strength + lor.strength + research, data = admit.data)


# mars model
tuning_grid = expand.grid(
  degree = 1:3,
  nprune = seq(2, 50, length.out = 10) %>% floor()
  )

mars.fit = train(
    x = X,
    y = y,
    method = "earth",
    trControl = trainControl(method = "cv", number = 10),
    tuneGrid = tuning_grid
)
```

Make Table

```
Predictor = row.names(as.tibble(coef(glm.fit)))

glm.coef = as.tibble(coef(glm.fit)) %>%
  rownames_to_column() %>%
  select("Predictor" = rowname, "Linear" = value)

lasso.coef = as.tibble(coef(lasso.fit)[,1]) %>%
  rownames_to_column() %>%
  select("Predictor" = rowname, "LASSO" = value)

ridge.coef = as.tibble(coef(ridge.fit)[,1]) %>%
  rownames_to_column() %>%
  select("Predictor" = rowname, "Ridge" = value)

gam.coef = as.tibble(coef(gam.fit)[1:6]) %>%
  rownames_to_column() %>%
  select("Predictor" = rowname, "GAM" = value)

glm_lasso = full_join(glm.coef, lasso.coef, by = "Predictor")

coef.table = full_join(glm_lasso, ridge.coef, by = "Predictor") %>%
  column_to_rownames(var = "Predictor")
```

```
## Warning: Setting row names on a tibble is deprecated.
```

print tables

```
library(kableExtra)
```

```
## Warning: package 'kableExtra' was built under R version 3.5.2
```

```
options(knitr.kable.NA = '*')

coef.table %>%
kable("latex", booktabs = T, linesep = "", escape = F, digits = 4,
      caption = "Coefficient estimates of the three linear models") %>%
  kable_styling(latex_options = c("striped", "hold_position")) %>%
  add_header_above(c(" " = 1, "Coefficient Estimates" = 3), bold = T) %>%
  column_spec(-1, width = "6em")
```

Table 1: Coefficient estimates of the three linear models

	Coefficient Estimates		
	Linear	LASSO	Ridge
(Intercept)	0.6255	0.6281	0.5930
gre.std	0.0210	0.0209	0.0163
toefl.std	0.0169	0.0166	0.0156
cgpa.std	0.0716	0.0717	0.0191
uni.rating	0.0059	0.0058	0.0105
sop.strength	0.0016	0.0014	0.0118
lor.strength	0.0169	0.0165	0.0129
research	0.0243	0.0235	0.0204