Untitled

Yue Lai

5/15/2020

import data

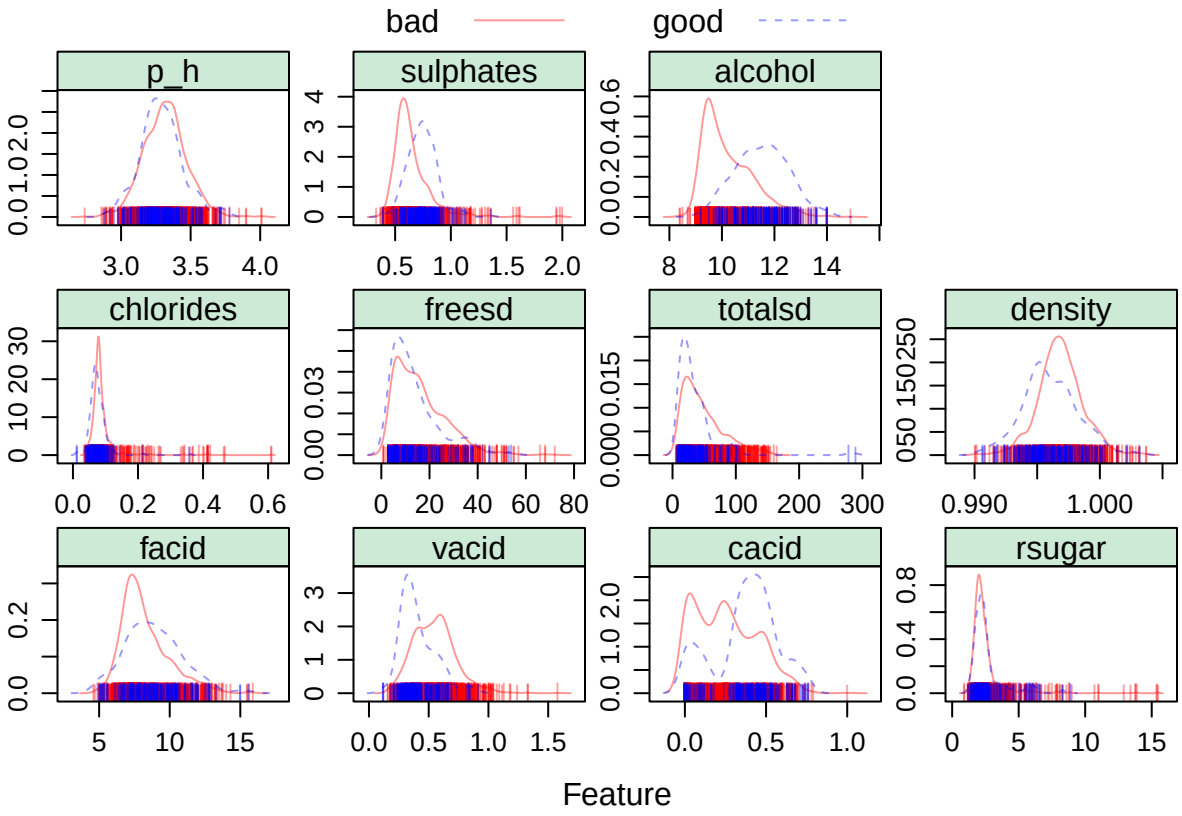
```
red = read_excel(path = "./data/wine.xlsx", sheet = "red") %>%
  janitor::clean_names()
```

```
## Warning in FUN(X[[i]], ...): strings not representable in native encoding will
## be translated to UTF-8
```

```
white = read_excel(path = "./data/wine.xlsx", sheet = "white") %>%
  janitor::clean_names()

wine = data.frame(rbind(red, white))

wine = red %>%
  mutate(quality = as.factor(ifelse(quality > 6.5, "good", "bad")))
```

The data contains 6497 observations and 11 variables. The outcome is the binary variable category. We start from some simple visualization of the data.

```
theme1 = transparentTheme(trans = .4)
theme1$strip.background$col = rgb(.0, .6, .2, .2)
trellis.par.set(theme1)

featurePlot(x = wine[,1:11],
            y = wine$quality,
            scales = list(x = list(relation = "free"),
                          y = list(relation = "free")),
            plot = "density", pch = "|",
            auto.key = list(columns = 2))
```



Divide the data into two part (training and test)

```
rowtrain = createDataPartition(y = wine$quality,
                               p = 2/3,
                               list = FALSE)

ctrl = trainControl(method = "repeatedcv",
                    repeats = 5,
                    summaryFunction = twoClassSummary,
                    classProbs = TRUE)
```

glm

```
set.seed(666)
model.glm = train(x = wine[rowtrain, 1:11],
                  y = wine$quality[rowtrain],
                  method = "glm",
                  metric = "ROC",
                  trControl = ctrl)
```

```
## Warning: The `i` argument of ``[`()` can't be a matrix as of tibble 3.0.0.
## Convert to a vector.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_warnings()` to see where this warning was generated.
```

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

glmn

```
set.seed(666)
glmngrid = expand.grid(.alpha = seq(0,1,length = 6),
```

```
                        .lambda = exp(seq(-8,-2, length = 20)))

model.glmn = train(x = wine[rowtrain, 1:11],
                   y = wine$quality[rowtrain],
                   method = "glmnet",
                   metric = "ROC",
                   tuneGrid = glmngrid,
                   trControl = ctrl)
```

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

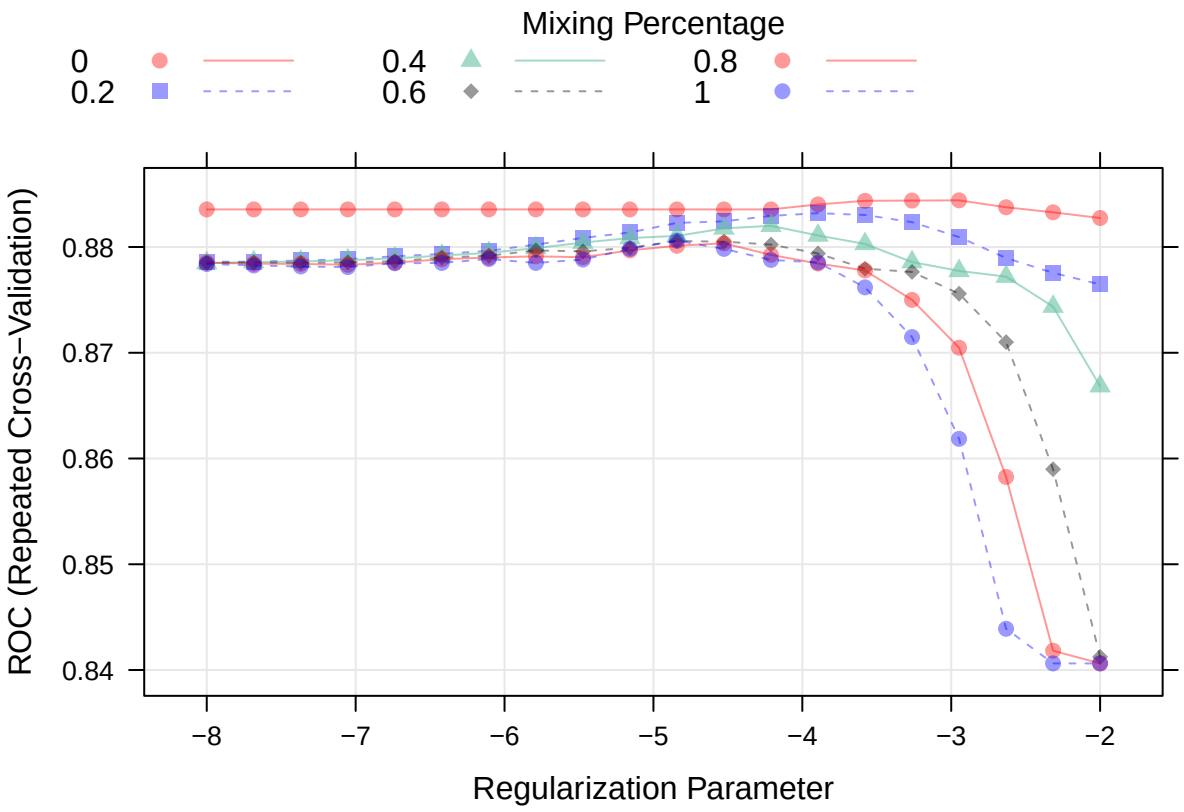
```
## Warning: Setting row names on a tibble is deprecated.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

```
plot(model.glmn, xTrans = function(x) log(x))
```




```
model.glmn$bestTune
```

```
##    alpha     lambda
## 17     0 0.05247762
```

LDA

```
set.seed(666)
model.lda = train(x = wine[rowtrain, 1:11],
                  y = wine$quality[rowtrain],
                  method = "lda",
                  metric = "ROC",
                  trControl = ctrl)
```

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

QDA

```
set.seed(666)
model.qda = train(x = wine[rowtrain, 1:11],
                  y = wine$quality[rowtrain],
                  method = "qda",
                  metric = "ROC",
                  trControl = ctrl)
```

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Naive Bayes

KNN

```
set.seed(666)
model.knn = train(x = wine[rowtrain, 1:11],
                  y = wine$quality[rowtrain],
                  method = "knn",
                  preProcess = c("center", "scale"),
                  tuneGrid = data.frame(k = seq(1, 200, by = 5)),
                  trControl = ctrl)
```

```
## Warning in train.default(x = wine[rowtrain, 1:11], y = wine$quality[rowtrain], :
## The metric "Accuracy" was not in the result set. ROC will be used instead.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

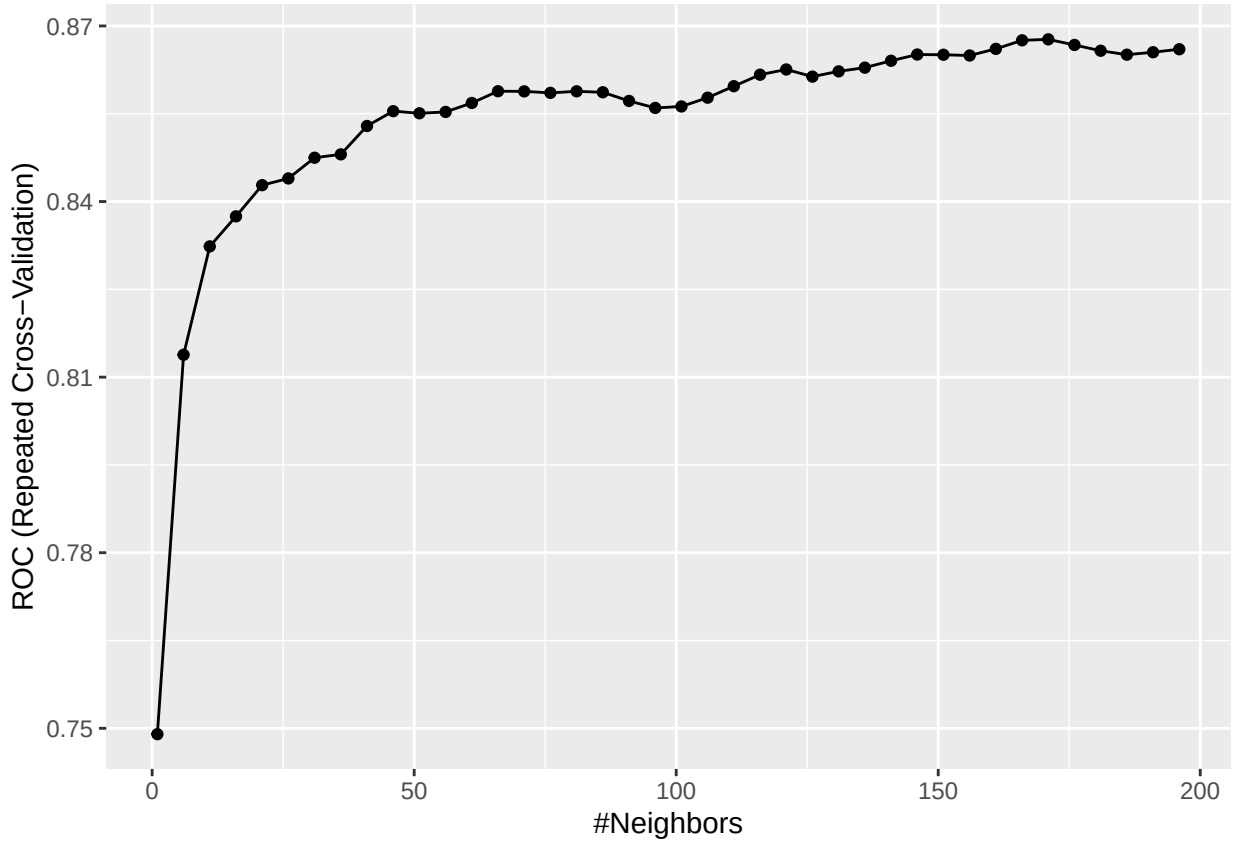
```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.

## Warning: Setting row names on a tibble is deprecated.
```

```
ggplot(model.knn)
```



summary

```
res = resamples(list(GLM = model.glm,
                     GLMNET = model.glmn,
                     LDA = model.lda,
                     DQA = model.qda,
#                     NB = model.nb,
                     KNN = model.knn))
summary(res)
```

```
##
## Call:
## summary.resamples(object = res)
##
## Models: GLM, GLMNET, LDA, DQA, KNN
## Number of resamples: 50
##
## ROC
##              Min.   1st Qu.    Median      Mean   3rd Qu.      Max. NA's
## GLM    0.7775362 0.8446217 0.8740942 0.8779923 0.9168608 0.9829193    0
## GLMNET 0.8028986 0.8493221 0.8834627 0.8844142 0.9183931 0.9767081    0
## LDA    0.7884058 0.8485866 0.8815994 0.8839543 0.9170290 0.9836957    0
## DQA    0.7521739 0.8164855 0.8509834 0.8537102 0.8938923 0.9518634    0
```

```
## KNN    0.7734255 0.8393778 0.8716846 0.8677096 0.9028533 0.9491460    0
##
## Sens
##             Min.   1st Qu.    Median      Mean   3rd Qu.      Max. NA's
## GLM    0.9239130 0.9565217 0.9673913 0.9648527 0.9782609 1.0000000    0
## GLMNET 0.9569892 0.9891304 0.9946237 0.9913230 1.0000000 1.0000000    0
## LDA    0.9021739 0.9380259 0.9565217 0.9522768 0.9673913 0.9784946    0
## DQA    0.8172043 0.8807562 0.9189458 0.9121388 0.9347826 0.9784946    0
## KNN    1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000    0
##
## Spec
##             Min.   1st Qu.    Median      Mean   3rd Qu.      Max. NA's
## GLM    0.1428571 0.2666667 0.3571429 0.3725714 0.4666667 0.7857143    0
## GLMNET 0.0000000 0.1333333 0.2000000 0.1910476 0.2666667 0.5000000    0
## LDA    0.1428571 0.3571429 0.4285714 0.4362857 0.5333333 0.7857143    0
## DQA    0.1428571 0.3571429 0.4666667 0.4527619 0.5333333 0.7142857    0
## KNN    0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000    0
```

test set performance

```
glm.pred = predict(model.glm, newdata = wine[-rowtrain,], type = "prob")[,2]
glmn.pred = predict(model.glmn, newdata = wine[-rowtrain,], type = "prob")[,2]
lda.pred = predict(model.lda, newdata = wine[-rowtrain,], type = "prob")[,2]
qda.pred = predict(model.qda, newdata = wine[-rowtrain,], type = "prob")[,2]
#nb.pred = predict(model.nb, newdata = wine[-rowtrain,], type = "prob")[,2]
knn.pred = predict(model.knn, newdata = wine[-rowtrain,], type = "prob")[,2]

roc.glm = roc(wine$quality[-rowtrain], glm.pred)
```

```
## Setting levels: control = bad, case = good

## Setting direction: controls < cases
```

```
roc.glmn = roc(wine$quality[-rowtrain], glmn.pred)
```

```
## Setting levels: control = bad, case = good
## Setting direction: controls < cases
```

```
roc.lda = roc(wine$quality[-rowtrain], lda.pred)
```

```
## Setting levels: control = bad, case = good
## Setting direction: controls < cases
```

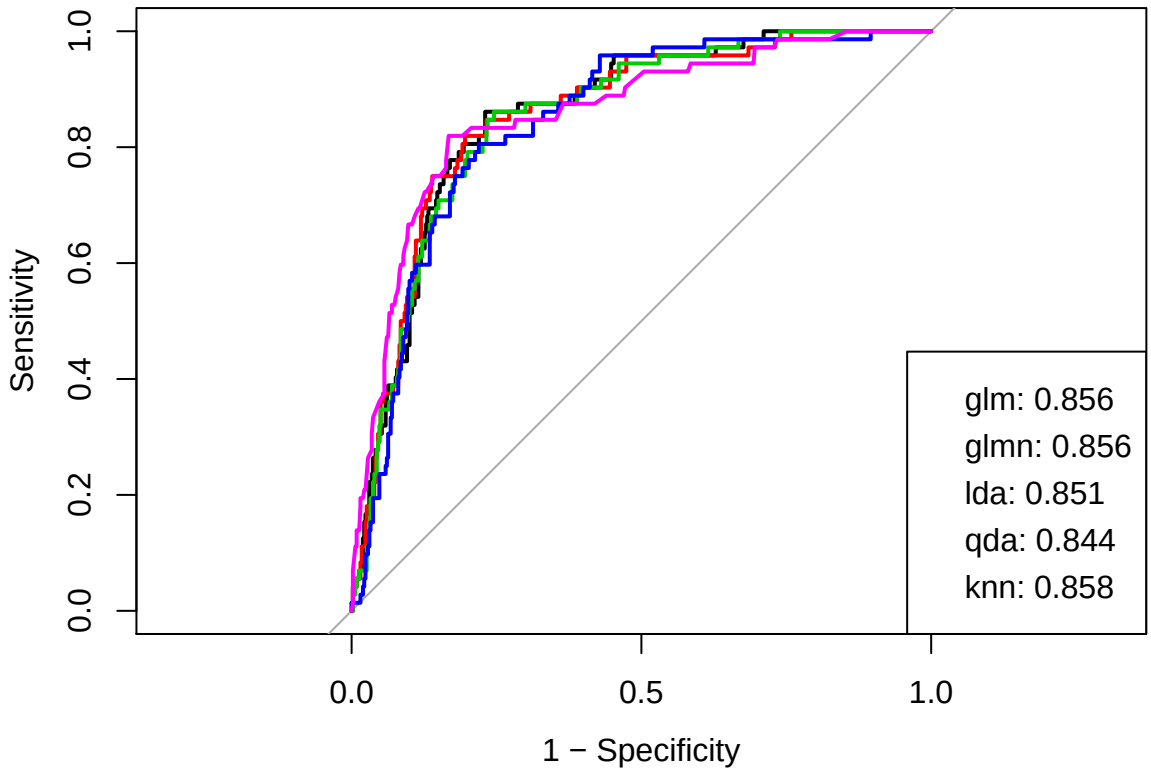
```
roc.qda = roc(wine$quality[-rowtrain], qda.pred)
```

```
## Setting levels: control = bad, case = good
## Setting direction: controls < cases
```

```
#roc.nb = roc(wine$quality[-rowtrain], nb.pred)
roc.knn = roc(wine$quality[-rowtrain], knn.pred)
```

```
## Setting levels: control = bad, case = good
## Setting direction: controls < cases
```

```
auc = c(roc.glm$auc[1], roc.glmn$auc[1], roc.lda$auc[1], roc.qda$auc[1],
#        roc.nb$auc[1],
        roc.knn$auc[1])

plot(roc.glm, legacy.axes = TRUE)
plot(roc.glmn, col = 2, add = TRUE)
plot(roc.lda, col = 3, add = TRUE)
plot(roc.qda, col = 4, add = TRUE)
#plot(roc.nb, col = 5, add = TRUE)
plot(roc.knn, col = 6, add = TRUE)
modelNames = c("glm", "glmn", "lda", "qda",
#               "nb",
               "knn")
legend("bottomright", legend = paste0(modelNames, ": ", round(auc, 3)))
```




```
glm=1-sum(predict(model.glm, newdata = wine[-rowtrain,]) %>% as.data.frame()==wine[-rowtrain,12])/nrow(
knn=1-sum(predict(model.knn, newdata = wine[-rowtrain,])%>% as.data.frame()==wine[-rowtrain,12])/nrow(w
glmn=1-sum(predict(model.glmn, newdata = wine[-rowtrain,])%>% as.data.frame()==wine[-rowtrain,12])/nrow
```

```
lda =1-sum(predict(model.lda, newdata = wine[-rowtrain,])%>% as.data.frame()==wine[-rowtrain,12])/nrow(
qda =1-sum(predict(model.qda, newdata = wine[-rowtrain,])%>% as.data.frame()==wine[-rowtrain,12])/nrow(

# test data misclassification rate
T1=data.frame(model=c("GLM","GLMN","LDA","QDA","KNN"),Error_rate=c(glm,glmn,lda,qda,knn)) %>% knitr::kab
T1
```

model	Error_rate
GLM	0.1372180
GLMN	0.1372180
LDA	0.1372180
QDA	0.1503759
KNN	0.1353383

```
# train data misclassification rate
glm1=1-sum(predict(model.glm, newdata = wine[rowtrain,]) %>% as.data.frame()==wine[rowtrain,12])/nrow(wi
knn1=1-sum(predict(model.knn, newdata = wine[rowtrain,])%>% as.data.frame()==wine[rowtrain,12])/nrow(wi
glmn1=1-sum(predict(model.glmn, newdata = wine[rowtrain,])%>% as.data.frame()==wine[rowtrain,12])/nrow(
lda1 =1-sum(predict(model.lda, newdata = wine[rowtrain,])%>% as.data.frame()==wine[rowtrain,12])/nrow(wi
qda1 =1-sum(predict(model.qda, newdata = wine[rowtrain,])%>% as.data.frame()==wine[rowtrain,12])/nrow(wi


T2=data.frame(model=c("GLM","GLMN","LDA","QDA","KNN"),Error_rate=c(glm1,glmn1,lda1,qda1,knn1)) %>% knit
T2
```

model	Error_rate
GLM	0.1096532
GLMN	0.1134021
LDA	0.1143393
QDA	0.1190253
KNN	0.1358950