Lab 9

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11:59PM May 10, 2021

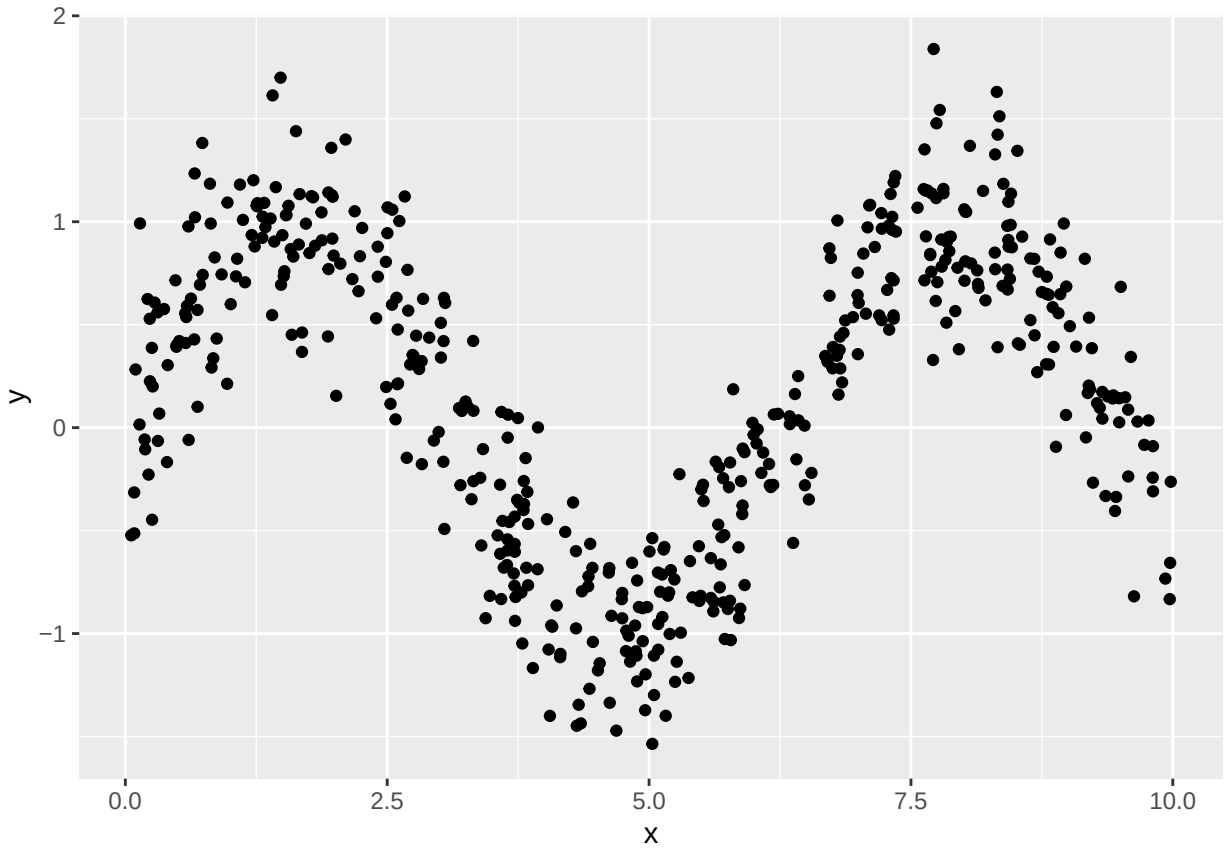
Here we will learn about trees, bagged trees and random forests. You can use the `YARF` package if it works, otherwise, use the `randomForest` package (the standard).

Let's take a look at the simulated sine curve data from practice lecture 12. Below is the code for the data generating process:

```
rm(list = ls())
n = 500
sigma = 0.3
x_min = 0
x_max = 10
f_x = function(x){sin(x)}
y_x = function(x, sigma){f_x(x) + rnorm(n, 0, sigma)}
x_train = runif(n, x_min, x_max)
y_train = y_x(x_train, sigma)
```

Plot an example dataset of size 500: plot the training data of size 500

```
pacman::p_load(ggplot2)
ggplot(data.frame(x = x_train, y = y_train))+
  geom_point(aes(x = x, y = y))
```




```
#TO-DO
```

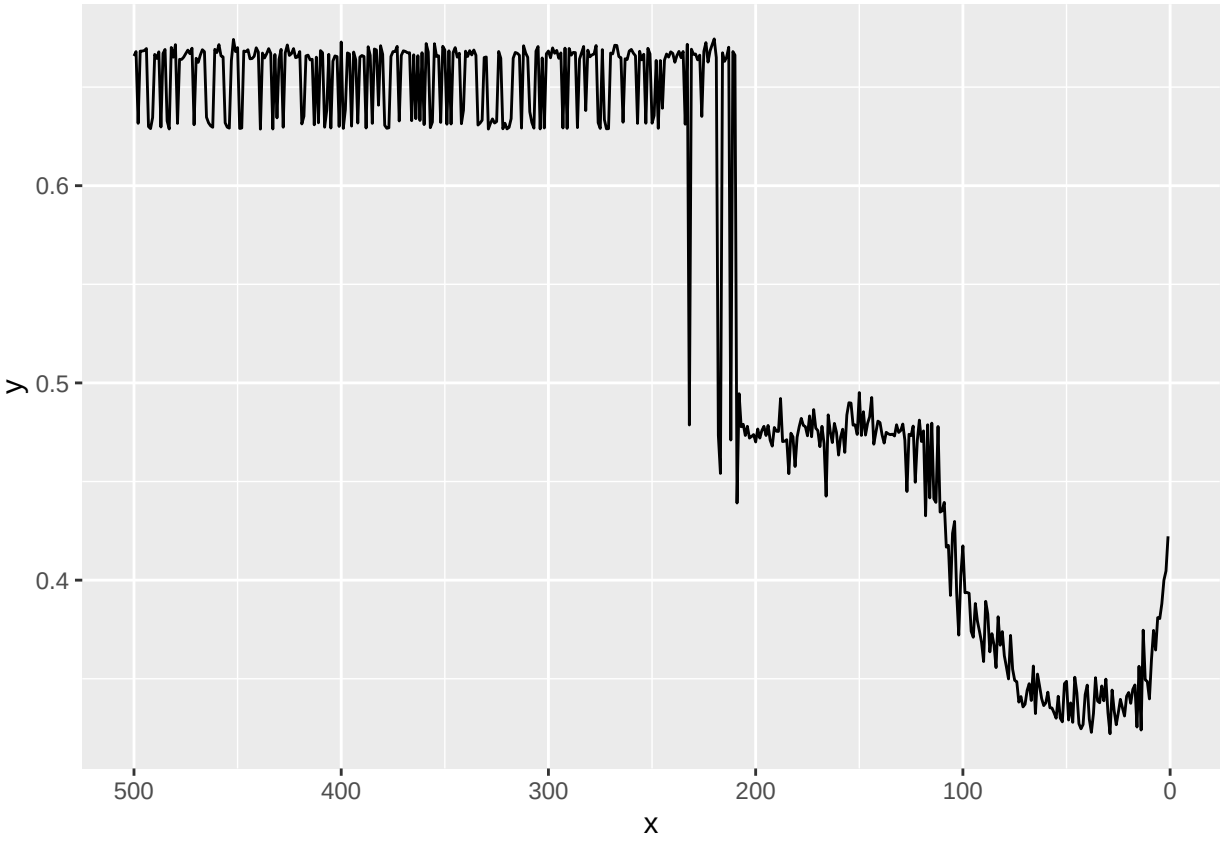
Create a test set of size 500 as well

```
#TO-DO
x_test =runif(n, x_min, x_max)
y_test =y_x(x_test, sigma) #has to be the y for those x
```

Locate the optimal node size hyperparameter for the regression tree model. I believe you can use `randomForest` here by setting `ntree = 1`, `replace = FALSE`, `sampsize = n` (`mtry` is already set to be 1 because there is only one feature) and then you can set `nodesize`. plot node size by out of sample se

```
#TO-DO
pacman::p_load(randomForest)
#what do we want we want an array of node sizes which equal to n<- oberfit ?? n=1 overfit undfit is 500

node_sizes= 1:n

se_by_node_sizes = array(NA,length(node_sizes))
for(i in 1:length(node_sizes)){
  #we need se for node sizes
  #here no def between bag tree and random forest
  rf_mod = randomForest( data.frame(x =x_train),y= y_train, ntree = 1, replace = FALSE , samplesize =n,
  y_hat_test = predict(rf_mod, data.frame(x = x_test)) #going backward^
  se_by_node_sizes[i] = sd(y_test - y_hat_test)
}
```

```
ggplot(data.frame(x =node_sizes, y = se_by_node_sizes))+
  geom_line(aes(x = x , y = y))+
scale_x_reverse()
```

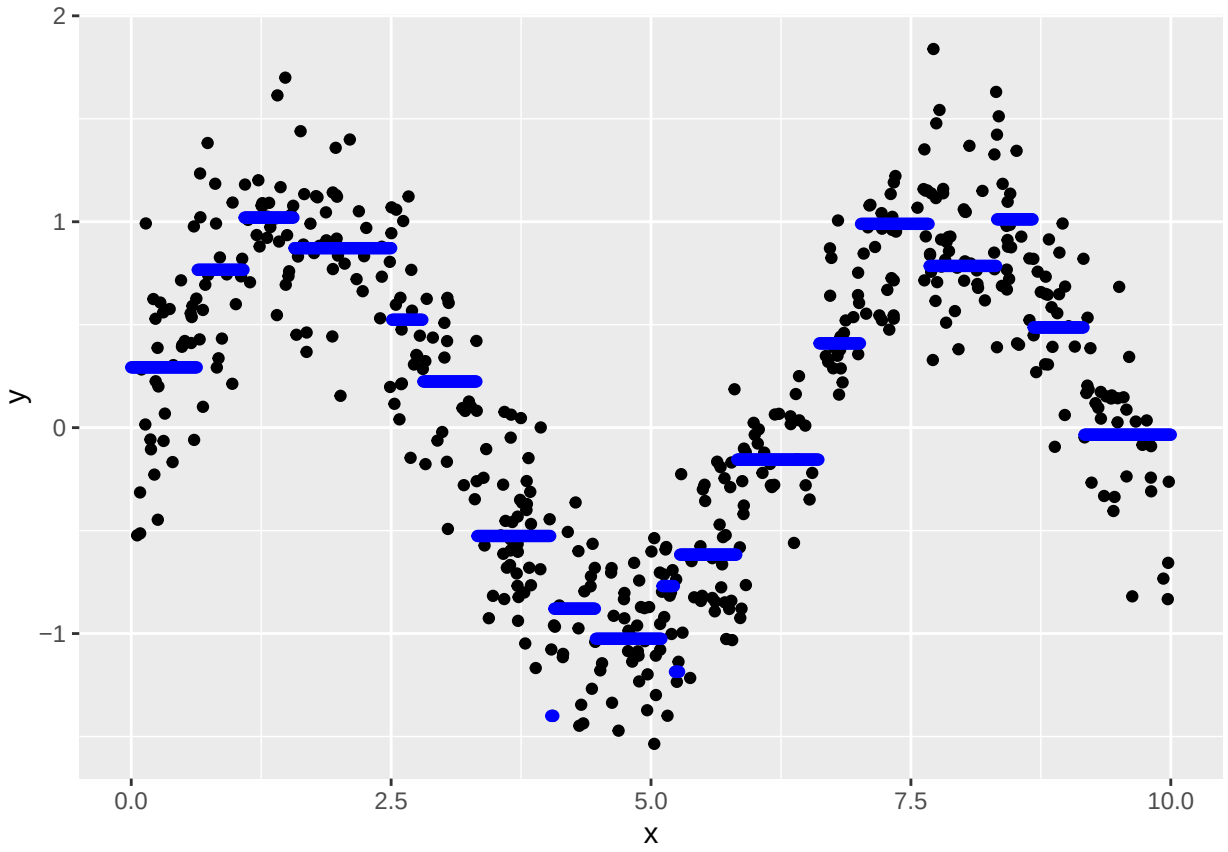



```
which.min(se_by_node_sizes)
```

```
## [1] 29
```

Plot the regression tree model with the optimal node size.

```
#TO-DO
#optimal model by node size
 rf_mod = randomForest( data.frame(x =x_train),y= y_train, ntree = 1, replace = FALSE , samplesize =n, 
#we want to plot it we are ploting g(x) need to make it look continous we will look at all spaces....

resolution = 0.01
x_grid = seq(from = x_min, to =x_max, by = resolution)
#we want tg of x grid
g_x = predict(rf_mod, data.frame(x = x_grid)) #this will print out (trace out g(x) for the input space 

ggplot(data.frame(x = x_grid , y = g_x))+
  aes(x = x , y = y)+
  # we want to over lay the data
  geom_point(data = data.frame(x = x_train, y = y_train))+
 geom_point( color = "blue")
```

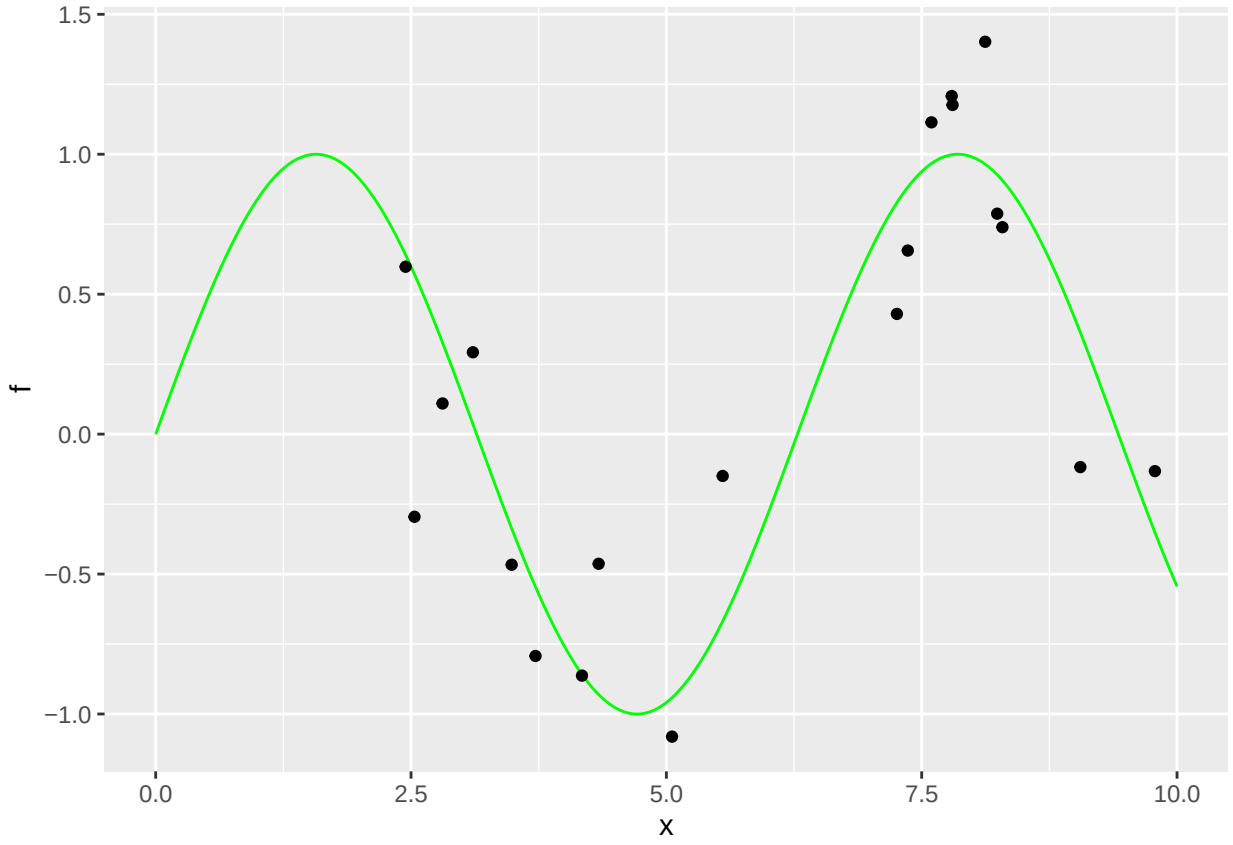



```
#this is the optimal tree model basedon tee node size it's overfitttitng the dot and undefititng the cur
```

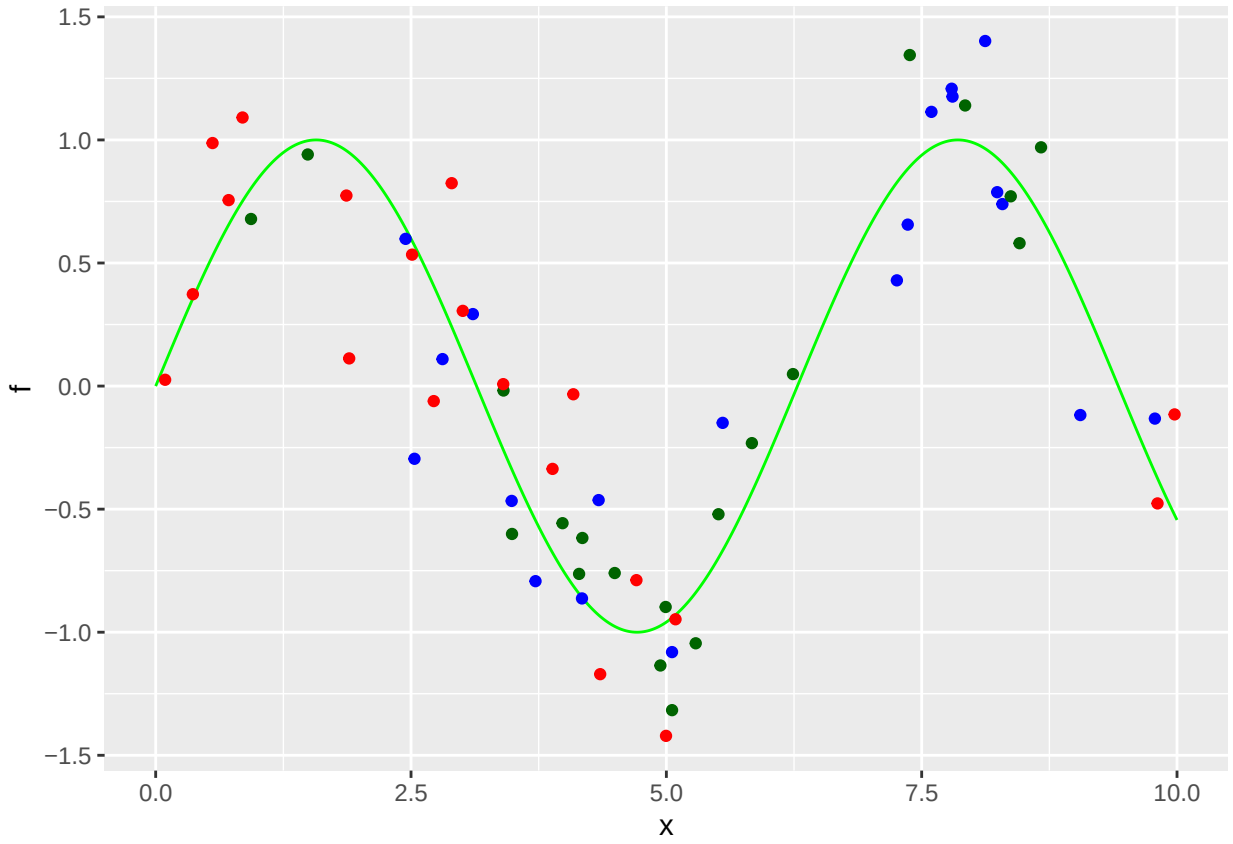
Provide the bias-variance decomposition of this DGP fit with this model. It is a lot of code, but it is in the practice lectures. If your three numbers don't add up within two significant digits, increase your resolution.

```
n_train = 20
n_test = 1000
Nsim = 1000

training_gs = matrix(NA, nrow = Nsim, ncol = 2)
x_trains = matrix(NA, nrow = Nsim, ncol = n_train)
y_trains = matrix(NA, nrow = Nsim, ncol = n_train)
all_oos_residuals = matrix(NA, nrow = Nsim, ncol = n_test)
for (nsim in 1 : Nsim){
  #simulate dataset $\mathbb{D}$
  x_train = runif(n_train, x_min, x_max)
  delta_train = rnorm(n_train, 0, sigma) #Assumption I: mean zero and Assumption II: homoskedastic
  y_train = f_x(x_train) + delta_train
  x_trains[nsim, ] = x_train
  y_trains[nsim, ] = y_train

  #fit a model g | x's, delta's and save it
  g_model = lm(y_train ~ ., data.frame(x = x_train))
  training_gs[nsim, ] = coef(g_model)

  #generate oos dataset according to the same data generating process (DGP)
```

```
  x_test = runif(n_test, x_min, x_max)
  delta_test = rnorm(n_test, 0, sigma)
  y_test = f_x(x_test) + delta_test
  #predict oos using the model and save the oos residuals
  y_hat_test = predict(g_model, data.frame(x = x_test))
  all_oos_residuals[nsim, ] = y_test - y_hat_test
}

pacman::p_load(ggplot2)
resolution = 10000
x = seq(x_min, x_max, length.out = resolution)
f_x_df = data.frame(x = x, f = f_x(x))
ggplot(f_x_df, aes(x, f)) +
  geom_line(col = "green") +
  geom_point(aes(x, y), data = data.frame(x = x_trains[1, ], y = y_trains[1, ]))
```



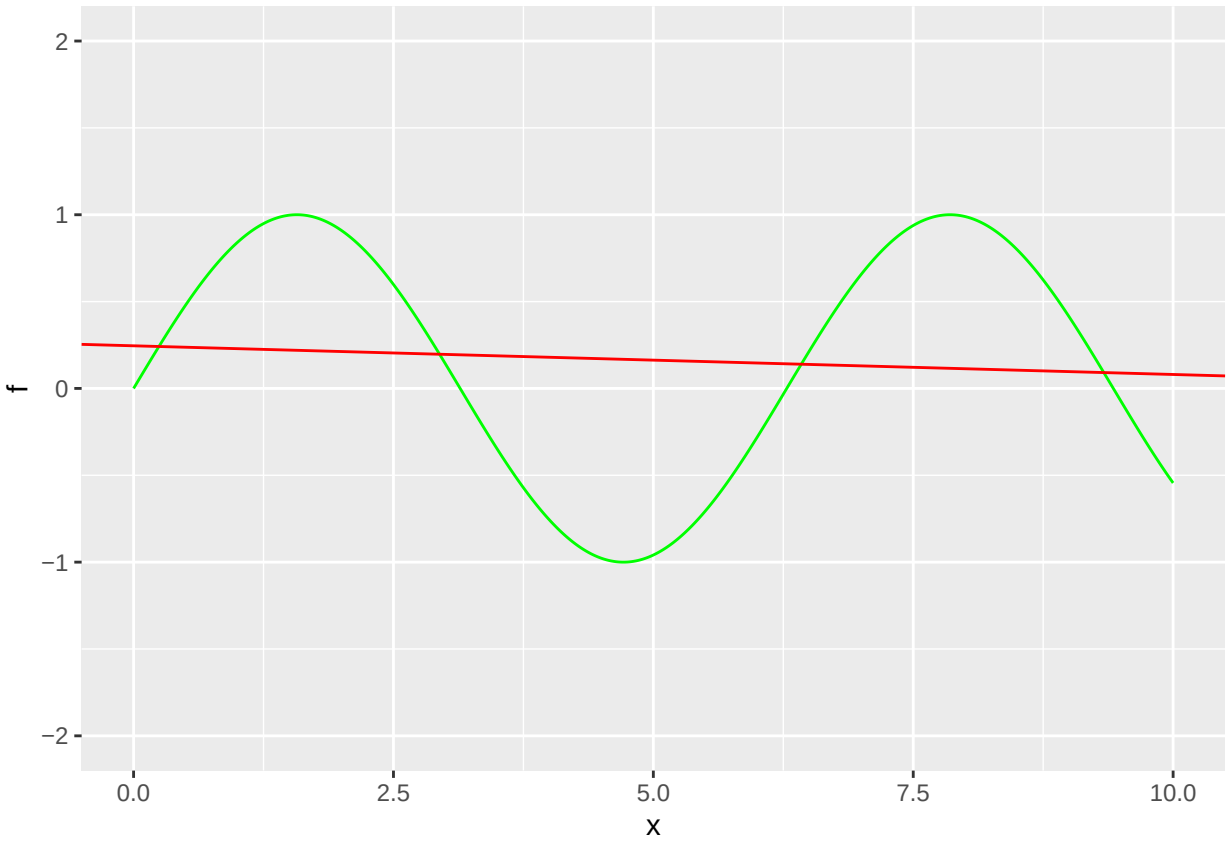

```
ggplot(f_x_df, aes(x, f)) +
  geom_line(col = "green") +
  geom_point(aes(x, y), data = data.frame(x = x_trains[1, ], y = y_trains[1, ]), col = "blue") +
  geom_point(aes(x, y), data = data.frame(x = x_trains[2, ], y = y_trains[2, ]), col = "darkgreen") +
  geom_point(aes(x, y), data = data.frame(x = x_trains[3, ], y = y_trains[3, ]), col = "red")
```




```
mse = mean(c(all_oos_residuals)^2)
mse
```

```
## [1] 0.5825492
```

```
g_average = colMeans(training_gs)
ggplot(f_x_df, aes(x, f)) +
  geom_line(col = "green") +
  geom_abline(intercept = g_average[1], slope = g_average[2], col = "red") +
  ylim(-2, 2)
```

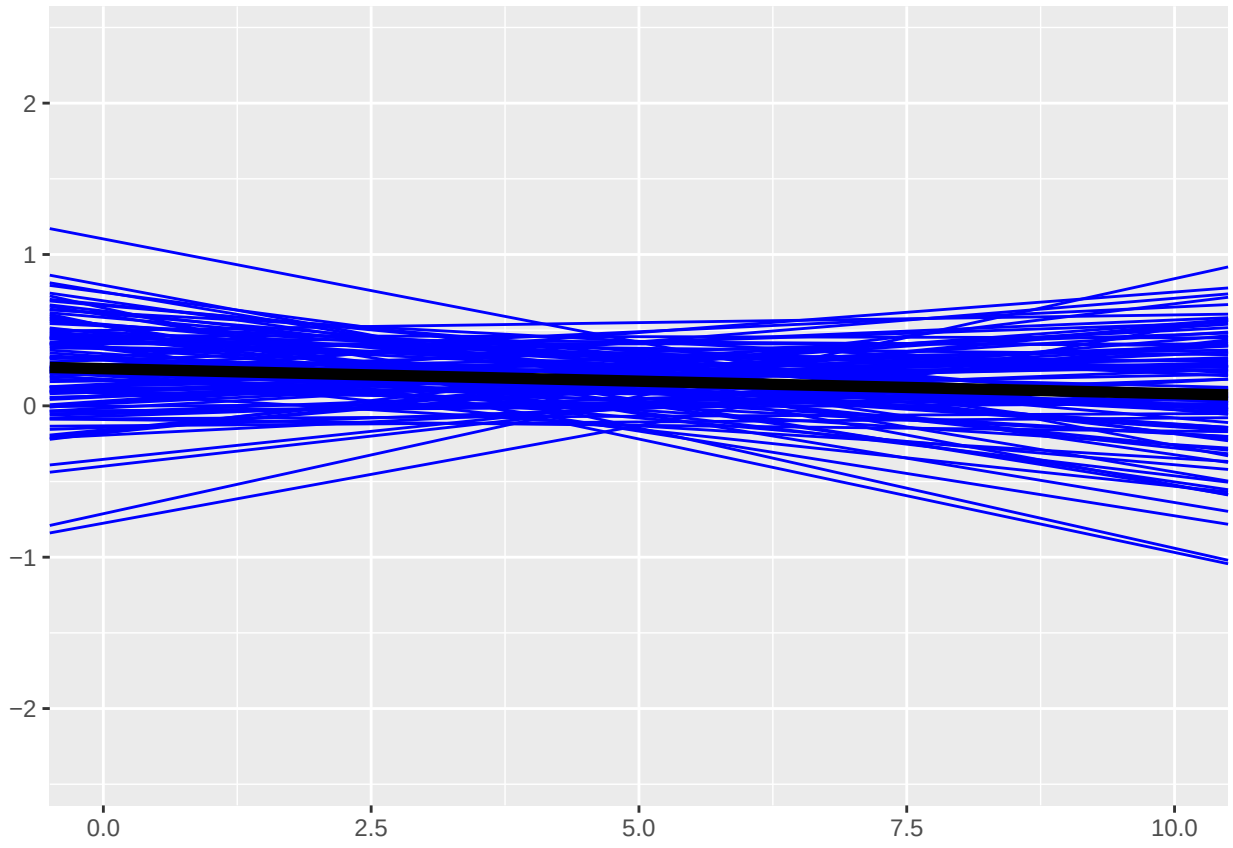



```
x = seq(x_min, x_max, length.out = resolution)
g_avg_x = g_average[1] + g_average[2] * x
f = sin(x)
biases = f - g_avg_x
expe_bias_g_sq = mean(biases^2)
expe_bias_g_sq
```

```
## [1] 0.4415932
```

```
plot_obj = ggplot() +
  xlim(x_min, x_max) + ylim(x_min^2, x_max^2)
for (nsim in 1 : min(Nsim, 100)){ #otherwise takes too long
  plot_obj = plot_obj + geom_abline(intercept = training_gs[nsim, 1], slope = training_gs[nsim, 2], col
}
plot_obj +
  geom_abline(intercept = g_average[1], slope = g_average[2], col = "black", lwd = 2) +
  ylim(-2.4, 2.4)
```

```
## Scale for 'y' is already present. Adding another scale for 'y', which will
## replace the existing scale.
```




```
  # geom_line(data = f_x_df, aes(x, f), col = "green", size = 1)

x = seq(x_min, x_max, length.out = resolution)
expe_g_x = g_average[1] + g_average[2] * x
var_x_s = array(NA, Nsim)
for (nsim in 1 : Nsim){
  g_x = training_gs[nsim, 1] + training_gs[nsim, 2] * x
  var_x_s[nsim] = mean((g_x - expe_g_x)^2)
}
expe_var_g = mean(var_x_s)
expe_var_g
```

```
## [1] 0.0514521
```

```
mse
```

```
## [1] 0.5825492
```

```
sigma^2
```

```
## [1] 0.09
```

```
expe_bias_g_sq
```

```
## [1] 0.4415932
```

```
expe_var_g
```

```
## [1] 0.0514521
```

```
sigma^2 + expe_bias_g_sq + expe_var_g
```

```
## [1] 0.5830453
```

```
rm(list = ls())
```

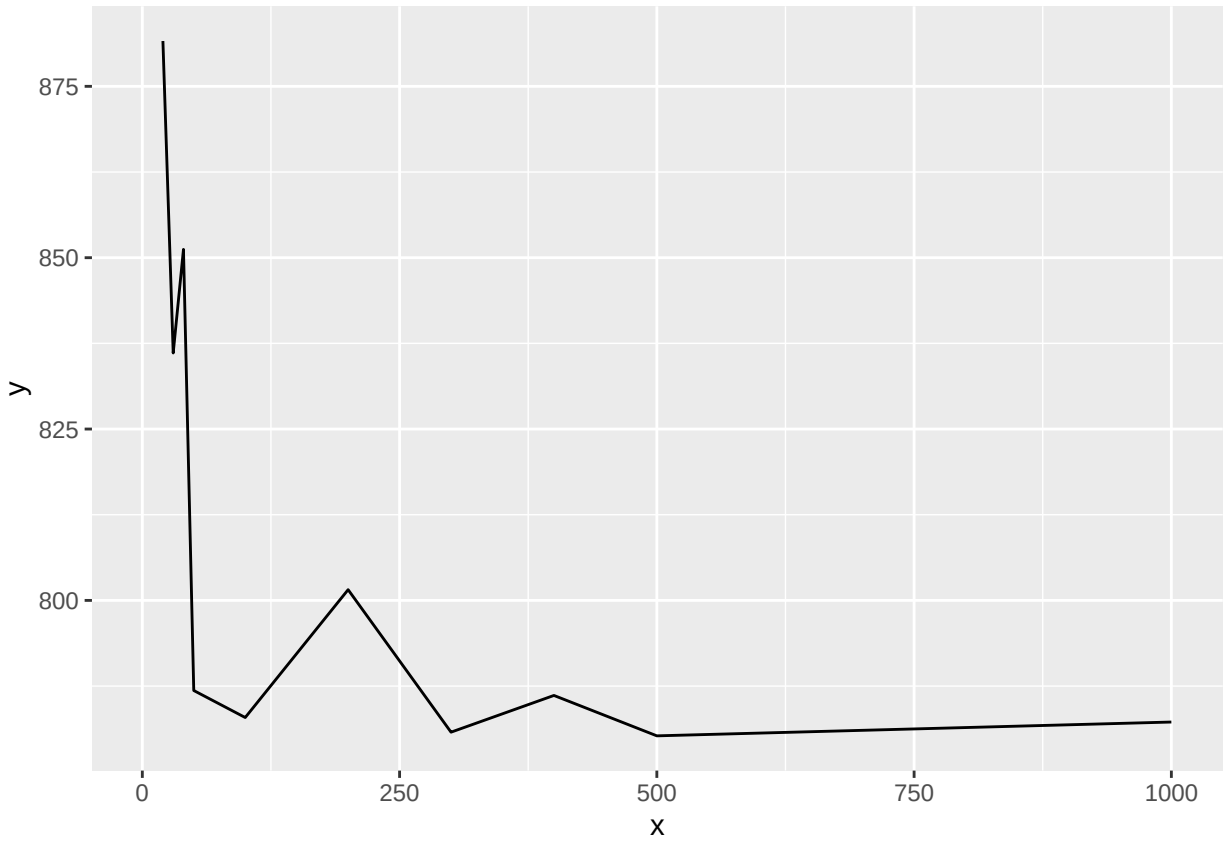
Take a sample of n = 2000 observations from the diamonds data.

```
#TO-DO
pacman::p_load(dplyr)
diamonds_samp = diamonds%>%
  sample_n(2000)
```

find the oob s_e for a RF model using 1, 2, 5, 10, 20, 30, 40, 50, 100, 200, 300, 400, 500, 1000 trees. If you are using the `randomForest` package, you can calculate oob residuals via `e_oob = y_train - rf_mod$predicted`. REPLACE BOOTSTRAP WITH OOB

```
#TO-DO
# we want that^ many trees go to lec 24 or lec 23.. as a number of trees go up the out of bag error goe
num_trees = c(1, 2, 5, 10, 20, 30, 40, 50, 100, 200, 300, 400, 500, 1000 )
oob_se_by_num_trees = array(NA, length(num_trees))
  for(i in 1:length(num_trees)){
    rf_mod =randomForest(price ~., data = diamonds_samp, ntree = num_trees[i]) #now say how many trees
    #we want the out of bag error
    oob_se_by_num_trees[i] = sd(diamonds_samp$price - rf_mod$predicted )

  }
ggplot(data.frame( x = num_trees, y =oob_se_by_num_trees))+
  geom_line(aes(x =x , y=y))
```

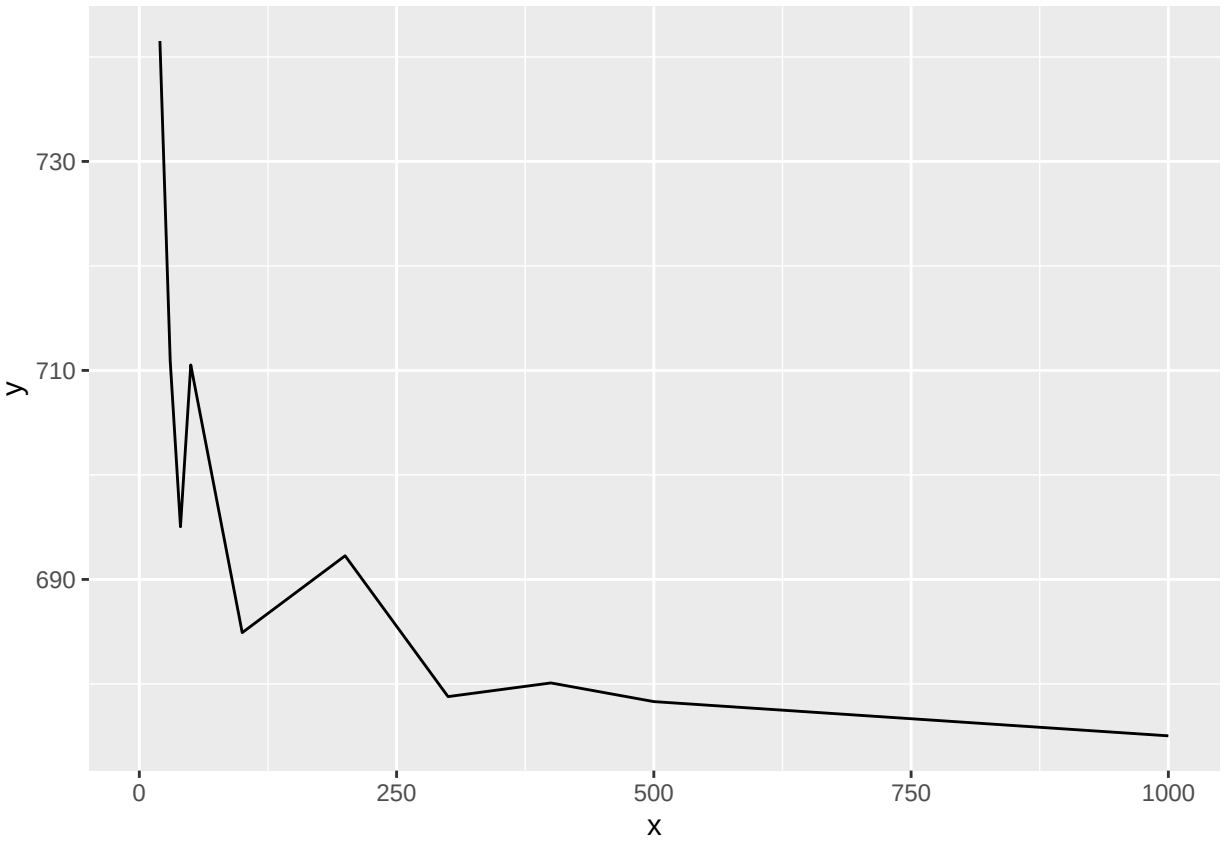
```
## Warning: Removed 4 row(s) containing missing values (geom_path).
```



Using the diamonds data, find the oob s_e for a bagged-tree model using 1, 2, 5, 10, 20, 30, 40, 50, 100, 200, 300, 400, 500, 1000 trees. If you are using the `randomForest` package, you can create the bagged tree model via setting an argument within the RF constructor function.

```
#TO-DO
#more features to search over thus it will atke loger
num_trees = c(1, 2, 5, 10, 20, 30, 40, 50, 100, 200, 300, 400, 500, 1000 )
oob_se_by_num_trees_bag = array(NA, length(num_trees))
  for(i in 1:length(num_trees)){
    rf_mod =randomForest(price ~., data = diamonds_samp, ntree = num_trees[i], mtry = ncol(diamonds_samp
    #we want the out of bag error
    oob_se_by_num_trees_bag[i] = sd(diamonds_samp$price - rf_mod$predicted )

  }
ggplot(data.frame( x = num_trees, y =oob_se_by_num_trees_bag))+
  geom_line(aes(x =x , y=y))
```

```
## Warning: Removed 4 row(s) containing missing values (geom_path).
```



What is the percentage gain / loss in performance of the RF model vs bagged trees model?

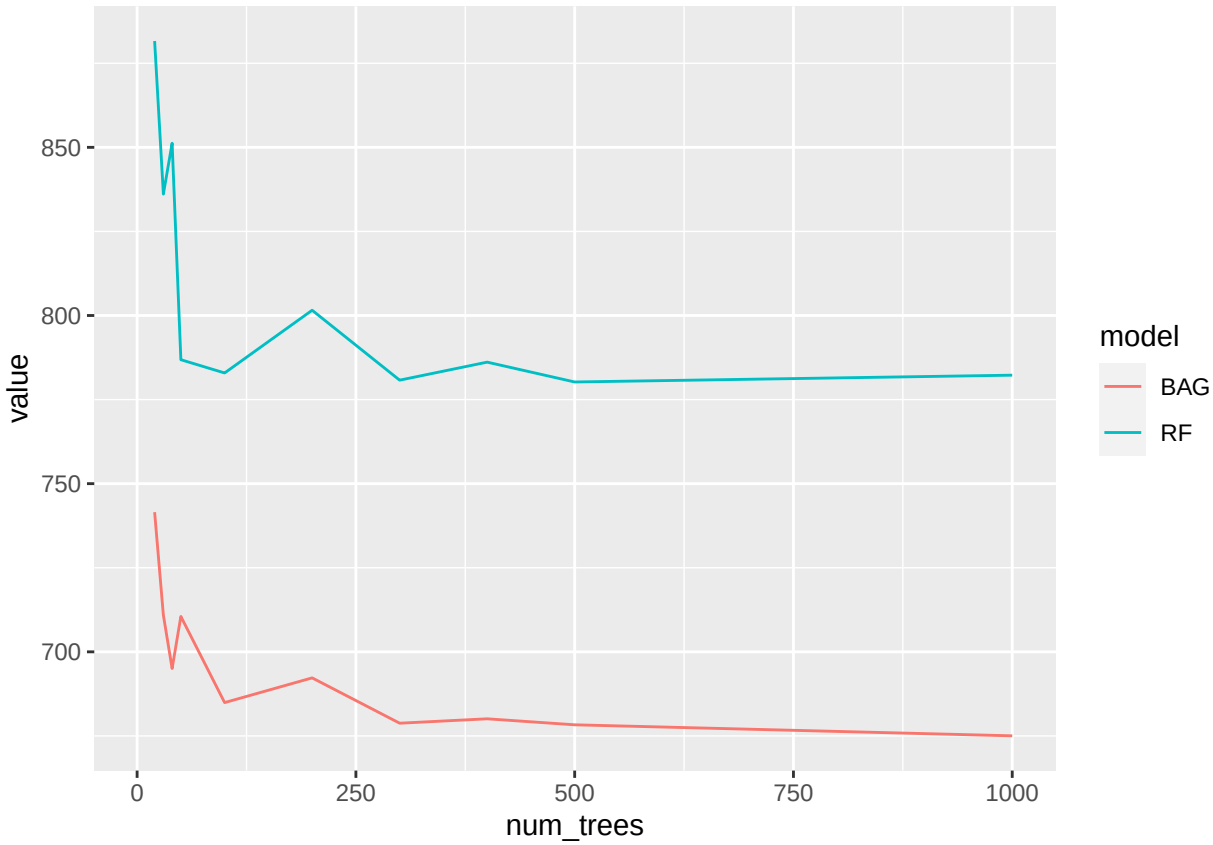
```
#TO-DO
((oob_se_by_num_trees - oob_se_by_num_trees_bag)/oob_se_by_num_trees_bag)*100 #all na that's bad
```

```
##  [1]       NA       NA       NA       NA 18.89190 17.60771 22.46875 10.74218
##  [9] 14.30914 15.78936 15.02623 15.59250 15.02746 15.88472
```

Plot oob s_e by number of trees for both RF and bagged trees.

```
#TO-DO
#oob_se_by_num_trees_long = num_trees
ggplot (rbind(data.frame(num_trees = num_trees, value  = oob_se_by_num_trees, model = "RF"),data.frame(
  geom_line(aes(x =num_trees , y = value , color = model)) #6:24
```

```
## Warning: Removed 8 row(s) containing missing values (geom_path).
```

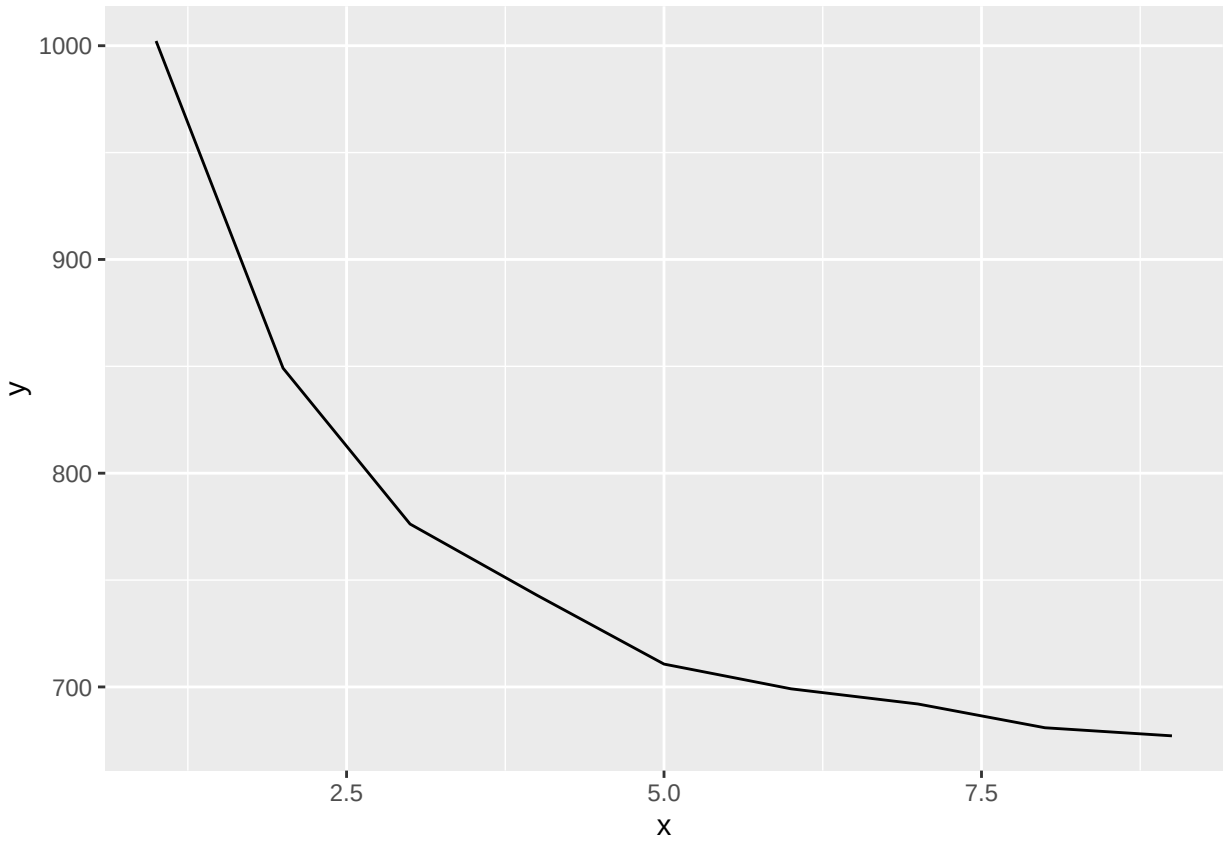


Build RF models for 500 trees using different `mtry` values: 1, 2, ... the maximum. That maximum will be the number of features assuming that we do not binarize categorical features if you are using `randomForest` or the number of features assuming binarization of the categorical features if you are using `YARF`. Calculate oob s_e for all mtry values.

```
#TO-DO

mtry = 1:(ncol(diamonds_samp)-1)
oob_se_by_mtry = array(NA, length(mtry))
  for(i in 1:length(mtry)){
    rf_mod =randomForest(price ~., data = diamonds_samp,  mtry = mtry[i]) #now say how many ntry.. tree
    #we want the out of bag error
  oob_se_by_mtry[i] = sd(diamonds_samp$price - rf_mod$predicted)

  }
```

Plot oob s_e by mtry.

```
#TO-DO
#mtry really matters its a hyper peramter it matters

ggplot(data.frame( x = mtry, y =oob_se_by_mtry))+
  geom_line(aes(x =x , y=y))
```




```
rm(list = ls())
```

Take a sample of n = 2000 observations from the adult data.

```
#TO-DO
pacman::p_load_gh("coatless/ucidata")
data(adult)
adult = na.omit(adult) #kill any observations with missingness

adults_samp = adult%>%
  sample_n(2000)
```

Using the adult data, find the oob misclassification error for an RF model using 1, 2, 5, 10, 20, 30, 40, 50, 100, 200, 300, 400, 500, 1000 trees.

```
#TO-DO

num_trees = c(1, 2, 5, 10, 20, 30, 40, 50, 100, 200, 300, 400, 500, 1000 )
oob_me_by_num_trees = array(NA, length(num_trees))
  for(i in 1:length(num_trees)){
    rf_mod =randomForest(income ~., data = adults_samp, ntree = num_trees[i]) #now say how many trees
    #we want the out of bag error
    oob_me_by_num_trees[i] = mean(adults_samp$income != rf_mod$predicted)

  }

num_trees
```

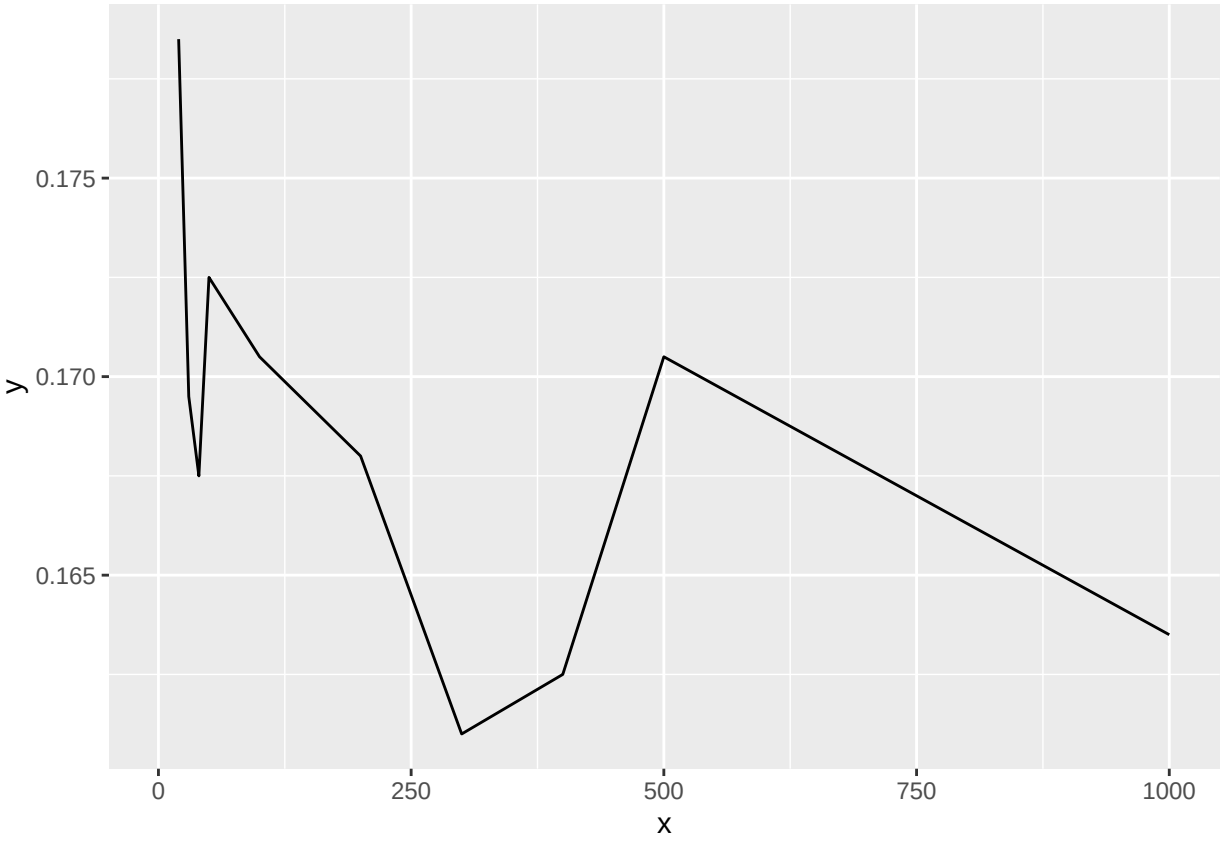
```
##  [1]    1    2    5   10   20   30   40   50  100  200  300  400  500 1000
```

```
oob_me_by_num_trees
```

```
##  [1]     NA     NA     NA     NA 0.1785 0.1695 0.1675 0.1725 0.1705 0.1680
## [11] 0.1610 0.1625 0.1705 0.1635
```

```
ggplot(data.frame( x = num_trees, y =oob_me_by_num_trees))+
  geom_line(aes(x =x , y=y))
```

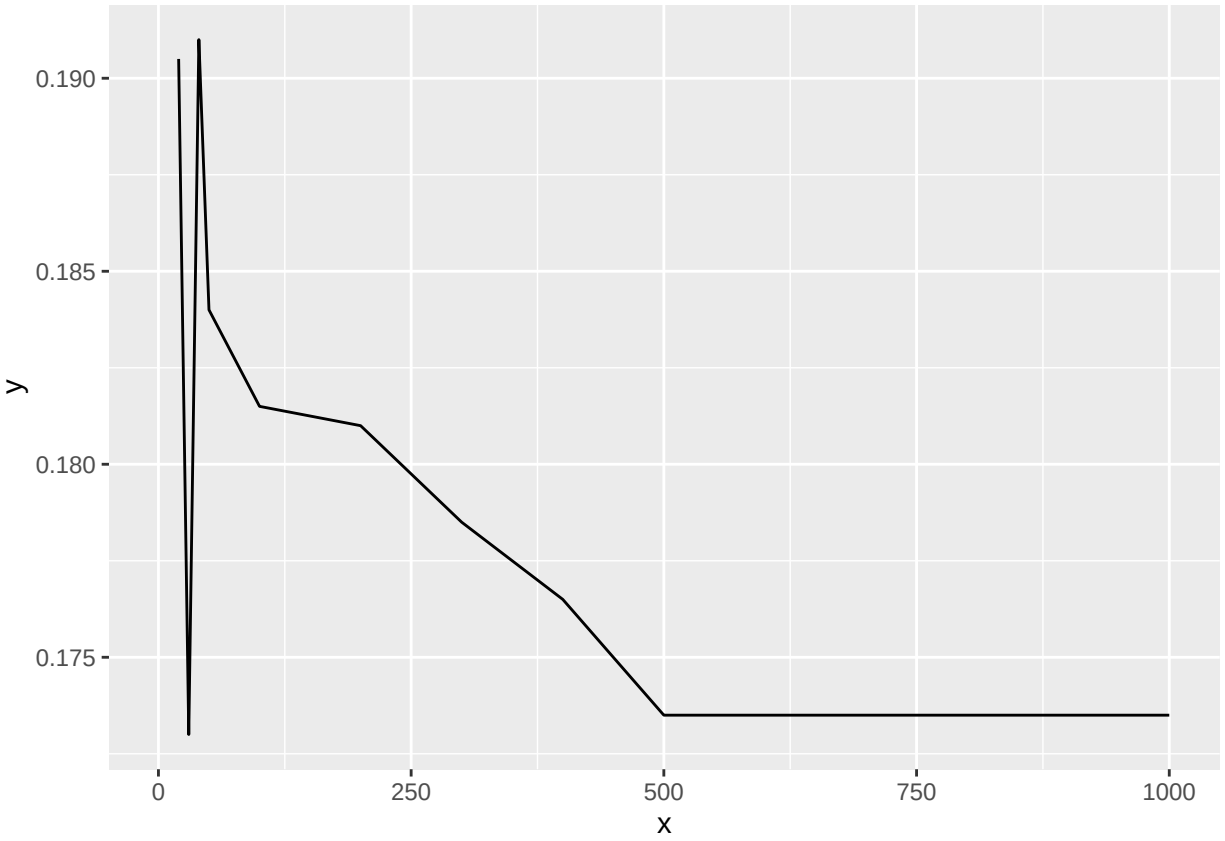
```
## Warning: Removed 4 row(s) containing missing values (geom_path).
```



Using the adult data, find the oob misclassification error for a bagged-tree model using 1, 2, 5, 10, 20, 30, 40, 50, 100, 200, 300, 400, 500, 1000 trees. ntree = num_trees[i] ,

```
#TO-DO


oob_me_by_num_trees_bag = array(NA, length(num_trees))
  for(i in 1:length(num_trees)){
    rf_mod =randomForest(income ~., data = adults_samp, ntree = num_trees[i] , mtry = ncol(adult)-1) #n
    #we want the out of bag error
    oob_me_by_num_trees_bag[i] = mean(adults_samp$income != rf_mod$predicted)

  }
ggplot(data.frame( x = num_trees, y =oob_me_by_num_trees_bag))+
  geom_line(aes(x =x , y=y))
```

```
## Warning: Removed 4 row(s) containing missing values (geom_path).
```



What is the percentage gain / loss in performance of the RF model vs bagged trees model?

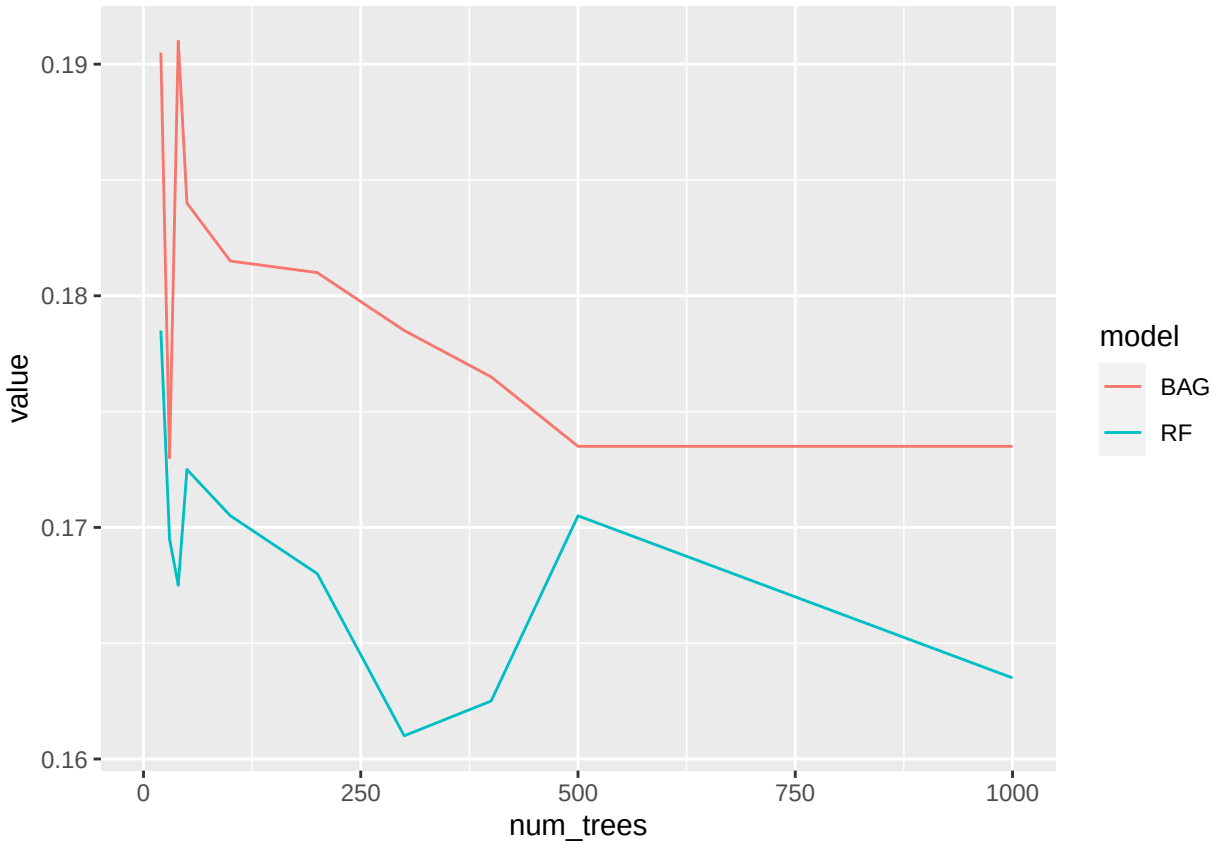
```
#TO-DO for the adult data
((oob_me_by_num_trees - oob_me_by_num_trees_bag)/oob_me_by_num_trees_bag)*100
```

```
##  [1]         NA         NA         NA         NA  -6.299213  -2.023121
##  [7] -12.303665  -6.250000  -6.060606  -7.182320  -9.803922  -7.932011
## [13]  -1.729107  -5.763689
```

Plot oob misclassification error by number of trees for both RF and bagged trees.

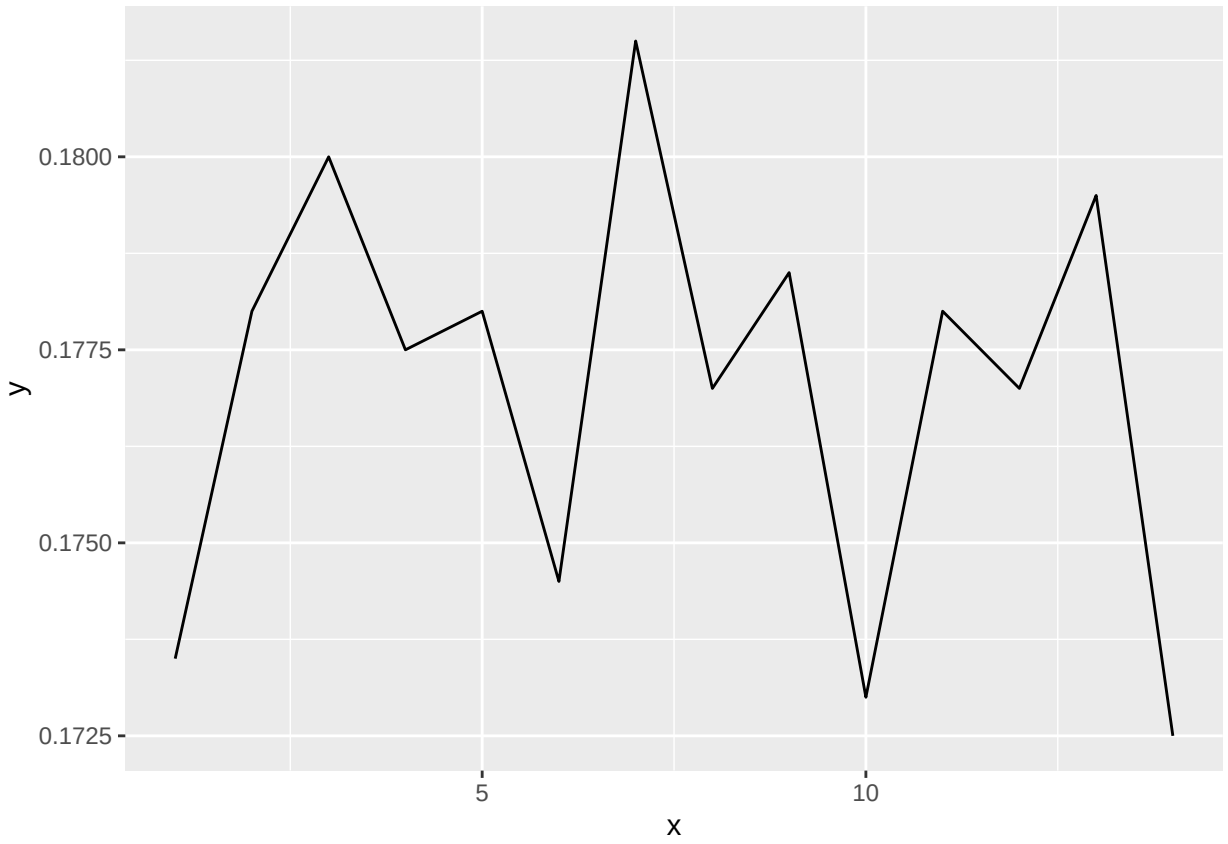
```
ggplot (rbind(data.frame(num_trees = num_trees, value  = oob_me_by_num_trees, model = "RF"),data.frame(
  geom_line(aes(x =num_trees , y = value , color = model))
```

```
## Warning: Removed 8 row(s) containing missing values (geom_path).
```



Plot oob misclassification error by `mtry`.

```
#TO-DO
mtry = 1:(ncol(adults_samp)-1)
oob_me_by_num_trees_bag = array(NA, length(mtry))
  for(i in 1:length(mtry)){
    rf_mod =randomForest(income ~., data = adults_samp, mtry = ncol(adult)-1) #now say how many trees
    #we want the out of bag error
    oob_me_by_num_trees_bag[i] = mean(adults_samp$income != rf_mod$predicted)

  }
ggplot(data.frame( x = mtry, y =oob_me_by_num_trees_bag))+
  geom_line(aes(x =x , y=y))
```




```
rm(list = ls())
```

Write a function `random_bagged_ols` which takes as its arguments `X` and `y` with further arguments `nm_uols_models` defaulted to 100 and `mtry` defaulted to NULL which then gets set within the function to be 50% of available features. This argument builds an OLS on a bootstrap sample of the data and uses only `mtry < p` of the available features. The function then returns all the `lm` models as a list with size `num_ols_models`.

```
#TO-DO
random_bagged_ols = function(X, Y, nm_uols_models = 100, mtry = NULL ){

n = 100

#mtry = 1:sample( ncol(X) - 1)

for(i in 1:nm_uols_models){

  for(i in 1:length(ncol(X))-1){
    mtry = i
  }

  test_indices = sample(1 :n , (1/5)*n)
  train_indices = setdiff(1:n , test_indices)

  X_train = X[train_indices, ]

  bootstrap_indices_t = sample(1 : X_train, replace = TRUE)
```

```
  X_test = X[test_indices, ]
  y_train = y[train_indices, ]
  y_test = y[test_indices, ]


  mod_boot_ols = lm(y = y_train[bootstrap_indices_t] ~ . +0,  x = data.frame(X_train[bootstrap_indices_
  boot_ols = list()
  boot_ols[] = mod_boot_ols


}

}
```

Load up the Boston Housing Data and separate into `X` and `y`.

```
#TO-DO
pacman:: p_load("MASS")
 data(Boston)
Y = Boston$medv
X = Boston
X$medv =NULL


#random_bagged_ols(X,Y)
```

Similar to lab 1, write a function that takes a matrix and punches holes (i.e. sets entries equal to `NA`) randomly with an argument `prob_missing`.

```
#TO-DO

punchholes = function(X, prob_missing){
  for(i in 1 : nrow(X)){
    for(j in 1 :  ncol(X)){
      if(runif(1) < prob_missing ){
        X[i,j] <- NA
      }
    }
  }

 X
}
```

Create a matrix `Xmiss` which is `X` but has missingness with probability of 10%.

```
#TO-DO

x = rbinom(n= 100, size =1 , 0.5)
x_matrix = matrix(x, 10, 10  )


nrow(x_matrix)
```

```
## [1] 10
```

```
ncol(x_matrix)
```

```
## [1] 10
```

```
Xmiss = punchholes(x_matrix[] , 0.7)

Xmiss
```

```
##       [,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10]
##  [1,]   NA   NA    1    1   NA   NA   NA    0   NA     0
##  [2,]   NA   NA   NA   NA   NA    1   NA   NA    0     0
##  [3,]    1   NA    0   NA   NA    0   NA   NA   NA     1
##  [4,]   NA   NA    0   NA    0   NA    1    1    1     0
##  [5,]   NA    1   NA   NA   NA   NA   NA   NA   NA    NA
##  [6,]    0   NA   NA    0   NA   NA   NA   NA   NA    NA
##  [7,]    0    0   NA    1   NA   NA   NA   NA    1    NA
##  [8,]   NA    0    0   NA   NA    1   NA   NA   NA    NA
##  [9,]   NA   NA   NA    0   NA   NA   NA   NA   NA     0
## [10,]   NA    0   NA    0    1   NA   NA   NA   NA    NA
```

Use a random forest modeling procedure to iteratively fill in the `NA`'s by predicting each feature of X using every other feature of X. You need to start by filling in the holes to use RF. So fill them in with the average of the feature.

```
#TO-DO
punchboston = punchholes(X  , 0.3)
pacman::p_load(missForest)

#punchboston

x= missForest(data.frame(X),maxiter =10,  ntree = 50, mtry =50, replace = TRUE)
```

```
##   missForest iteration 1 in progress...done!
##   missForest iteration 2 in progress...done!
```

```
 x
```

```
## $ximp
##         crim    zn indus chas    nox    rm   age     dis rad tax ptratio  black
## 1    0.00632  18.0  2.31    0 0.5380 6.575  65.2  4.0900   1 296    15.3 396.90
## 2    0.02731   0.0  7.07    0 0.4690 6.421  78.9  4.9671   2 242    17.8 396.90
## 3    0.02729   0.0  7.07    0 0.4690 7.185  61.1  4.9671   2 242    17.8 392.83
## 4    0.03237   0.0  2.18    0 0.4580 6.998  45.8  6.0622   3 222    18.7 394.63
## 5    0.06905   0.0  2.18    0 0.4580 7.147  54.2  6.0622   3 222    18.7 396.90
## 6    0.02985   0.0  2.18    0 0.4580 6.430  58.7  6.0622   3 222    18.7 394.12
## 7    0.08829  12.5  7.87    0 0.5240 6.012  66.6  5.5605   5 311    15.2 395.60
## 8    0.14455  12.5  7.87    0 0.5240 6.172  96.1  5.9505   5 311    15.2 396.90
## 9    0.21124  12.5  7.87    0 0.5240 5.631 100.0  6.0821   5 311    15.2 386.63
## 10   0.17004  12.5  7.87    0 0.5240 6.004  85.9  6.5921   5 311    15.2 386.71
```

```
## 11   0.22489  12.5  7.87    0 0.5240 6.377  94.3  6.3467   5 311    15.2 392.52
## 12   0.11747  12.5  7.87    0 0.5240 6.009  82.9  6.2267   5 311    15.2 396.90
## 13   0.09378  12.5  7.87    0 0.5240 5.889  39.0  5.4509   5 311    15.2 390.50
## 14   0.62976   0.0  8.14    0 0.5380 5.949  61.8  4.7075   4 307    21.0 396.90
## 15   0.63796   0.0  8.14    0 0.5380 6.096  84.5  4.4619   4 307    21.0 380.02
## 16   0.62739   0.0  8.14    0 0.5380 5.834  56.5  4.4986   4 307    21.0 395.62
## 17   1.05393   0.0  8.14    0 0.5380 5.935  29.3  4.4986   4 307    21.0 386.85
## 18   0.78420   0.0  8.14    0 0.5380 5.990  81.7  4.2579   4 307    21.0 386.75
## 19   0.80271   0.0  8.14    0 0.5380 5.456  36.6  3.7965   4 307    21.0 288.99
## 20   0.72580   0.0  8.14    0 0.5380 5.727  69.5  3.7965   4 307    21.0 390.95
## 21   1.25179   0.0  8.14    0 0.5380 5.570  98.1  3.7979   4 307    21.0 376.57
## 22   0.85204   0.0  8.14    0 0.5380 5.965  89.2  4.0123   4 307    21.0 392.53
## 23   1.23247   0.0  8.14    0 0.5380 6.142  91.7  3.9769   4 307    21.0 396.90
## 24   0.98843   0.0  8.14    0 0.5380 5.813 100.0  4.0952   4 307    21.0 394.54
## 25   0.75026   0.0  8.14    0 0.5380 5.924  94.1  4.3996   4 307    21.0 394.33
## 26   0.84054   0.0  8.14    0 0.5380 5.599  85.7  4.4546   4 307    21.0 303.42
## 27   0.67191   0.0  8.14    0 0.5380 5.813  90.3  4.6820   4 307    21.0 376.88
## 28   0.95577   0.0  8.14    0 0.5380 6.047  88.8  4.4534   4 307    21.0 306.38
## 29   0.77299   0.0  8.14    0 0.5380 6.495  94.4  4.4547   4 307    21.0 387.94
## 30   1.00245   0.0  8.14    0 0.5380 6.674  87.3  4.2390   4 307    21.0 380.23
## 31   1.13081   0.0  8.14    0 0.5380 5.713  94.1  4.2330   4 307    21.0 360.17
## 32   1.35472   0.0  8.14    0 0.5380 6.072 100.0  4.1750   4 307    21.0 376.73
## 33   1.38799   0.0  8.14    0 0.5380 5.950  82.0  3.9900   4 307    21.0 232.60
## 34   1.15172   0.0  8.14    0 0.5380 5.701  95.0  3.7872   4 307    21.0 358.77
## 35   1.61282   0.0  8.14    0 0.5380 6.096  96.9  3.7598   4 307    21.0 248.31
## 36   0.06417   0.0  5.96    0 0.4990 5.933  68.2  3.3603   5 279    19.2 396.90
## 37   0.09744   0.0  5.96    0 0.4990 5.841  61.4  3.3779   5 279    19.2 377.56
## 38   0.08014   0.0  5.96    0 0.4990 5.850  41.5  3.9342   5 279    19.2 396.90
## 39   0.17505   0.0  5.96    0 0.4990 5.966  30.2  3.8473   5 279    19.2 393.43
## 40   0.02763  75.0  2.95    0 0.4280 6.595  21.8  5.4011   3 252    18.3 395.63
## 41   0.03359  75.0  2.95    0 0.4280 7.024  15.8  5.4011   3 252    18.3 395.62
## 42   0.12744   0.0  6.91    0 0.4480 6.770   2.9  5.7209   3 233    17.9 385.41
## 43   0.14150   0.0  6.91    0 0.4480 6.169   6.6  5.7209   3 233    17.9 383.37
## 44   0.15936   0.0  6.91    0 0.4480 6.211   6.5  5.7209   3 233    17.9 394.46
## 45   0.12269   0.0  6.91    0 0.4480 6.069  40.0  5.7209   3 233    17.9 389.39
## 46   0.17142   0.0  6.91    0 0.4480 5.682  33.8  5.1004   3 233    17.9 396.90
## 47   0.18836   0.0  6.91    0 0.4480 5.786  33.3  5.1004   3 233    17.9 396.90
## 48   0.22927   0.0  6.91    0 0.4480 6.030  85.5  5.6894   3 233    17.9 392.74
## 49   0.25387   0.0  6.91    0 0.4480 5.399  95.3  5.8700   3 233    17.9 396.90
## 50   0.21977   0.0  6.91    0 0.4480 5.602  62.0  6.0877   3 233    17.9 396.90
## 51   0.08873  21.0  5.64    0 0.4390 5.963  45.7  6.8147   4 243    16.8 395.56
## 52   0.04337  21.0  5.64    0 0.4390 6.115  63.0  6.8147   4 243    16.8 393.97
## 53   0.05360  21.0  5.64    0 0.4390 6.511  21.1  6.8147   4 243    16.8 396.90
## 54   0.04981  21.0  5.64    0 0.4390 5.998  21.4  6.8147   4 243    16.8 396.90
## 55   0.01360  75.0  4.00    0 0.4100 5.888  47.6  7.3197   3 469    21.1 396.90
## 56   0.01311  90.0  1.22    0 0.4030 7.249  21.9  8.6966   5 226    17.9 395.93
## 57   0.02055  85.0  0.74    0 0.4100 6.383  35.7  9.1876   2 313    17.3 396.90
## 58   0.01432 100.0  1.32    0 0.4110 6.816  40.5  8.3248   5 256    15.1 392.90
## 59   0.15445  25.0  5.13    0 0.4530 6.145  29.2  7.8148   8 284    19.7 390.68
## 60   0.10328  25.0  5.13    0 0.4530 5.927  47.2  6.9320   8 284    19.7 396.90
## 61   0.14932  25.0  5.13    0 0.4530 5.741  66.2  7.2254   8 284    19.7 395.11
## 62   0.17171  25.0  5.13    0 0.4530 5.966  93.4  6.8185   8 284    19.7 378.08
## 63   0.11027  25.0  5.13    0 0.4530 6.456  67.8  7.2255   8 284    19.7 396.90
## 64   0.12650  25.0  5.13    0 0.4530 6.762  43.4  7.9809   8 284    19.7 395.58
```

```
## 65   0.01951  17.5  1.38    0 0.4161 7.104  59.5  9.2229   3 216    18.6 393.24
## 66   0.03584  80.0  3.37    0 0.3980 6.290  17.8  6.6115   4 337    16.1 396.90
## 67   0.04379  80.0  3.37    0 0.3980 5.787  31.1  6.6115   4 337    16.1 396.90
## 68   0.05789  12.5  6.07    0 0.4090 5.878  21.4  6.4980   4 345    18.9 396.21
## 69   0.13554  12.5  6.07    0 0.4090 5.594  36.8  6.4980   4 345    18.9 396.90
## 70   0.12816  12.5  6.07    0 0.4090 5.885  33.0  6.4980   4 345    18.9 396.90
## 71   0.08826   0.0 10.81    0 0.4130 6.417   6.6  5.2873   4 305    19.2 383.73
## 72   0.15876   0.0 10.81    0 0.4130 5.961  17.5  5.2873   4 305    19.2 376.94
## 73   0.09164   0.0 10.81    0 0.4130 6.065   7.8  5.2873   4 305    19.2 390.91
## 74   0.19539   0.0 10.81    0 0.4130 6.245   6.2  5.2873   4 305    19.2 377.17
## 75   0.07896   0.0 12.83    0 0.4370 6.273   6.0  4.2515   5 398    18.7 394.92
## 76   0.09512   0.0 12.83    0 0.4370 6.286  45.0  4.5026   5 398    18.7 383.23
## 77   0.10153   0.0 12.83    0 0.4370 6.279  74.5  4.0522   5 398    18.7 373.66
## 78   0.08707   0.0 12.83    0 0.4370 6.140  45.8  4.0905   5 398    18.7 386.96
## 79   0.05646   0.0 12.83    0 0.4370 6.232  53.7  5.0141   5 398    18.7 386.40
## 80   0.08387   0.0 12.83    0 0.4370 5.874  36.6  4.5026   5 398    18.7 396.06
## 81   0.04113  25.0  4.86    0 0.4260 6.727  33.5  5.4007   4 281    19.0 396.90
## 82   0.04462  25.0  4.86    0 0.4260 6.619  70.4  5.4007   4 281    19.0 395.63
## 83   0.03659  25.0  4.86    0 0.4260 6.302  32.2  5.4007   4 281    19.0 396.90
## 84   0.03551  25.0  4.86    0 0.4260 6.167  46.7  5.4007   4 281    19.0 390.64
## 85   0.05059   0.0  4.49    0 0.4490 6.389  48.0  4.7794   3 247    18.5 396.90
## 86   0.05735   0.0  4.49    0 0.4490 6.630  56.1  4.4377   3 247    18.5 392.30
## 87   0.05188   0.0  4.49    0 0.4490 6.015  45.1  4.4272   3 247    18.5 395.99
## 88   0.07151   0.0  4.49    0 0.4490 6.121  56.8  3.7476   3 247    18.5 395.15
## 89   0.05660   0.0  3.41    0 0.4890 7.007  86.3  3.4217   2 270    17.8 396.90
## 90   0.05302   0.0  3.41    0 0.4890 7.079  63.1  3.4145   2 270    17.8 396.06
## 91   0.04684   0.0  3.41    0 0.4890 6.417  66.1  3.0923   2 270    17.8 392.18
## 92   0.03932   0.0  3.41    0 0.4890 6.405  73.9  3.0921   2 270    17.8 393.55
## 93   0.04203  28.0 15.04    0 0.4640 6.442  53.6  3.6659   4 270    18.2 395.01
## 94   0.02875  28.0 15.04    0 0.4640 6.211  28.9  3.6659   4 270    18.2 396.33
## 95   0.04294  28.0 15.04    0 0.4640 6.249  77.3  3.6150   4 270    18.2 396.90
## 96   0.12204   0.0  2.89    0 0.4450 6.625  57.8  3.4952   2 276    18.0 357.98
## 97   0.11504   0.0  2.89    0 0.4450 6.163  69.6  3.4952   2 276    18.0 391.83
## 98   0.12083   0.0  2.89    0 0.4450 8.069  76.0  3.4952   2 276    18.0 396.90
## 99   0.08187   0.0  2.89    0 0.4450 7.820  36.9  3.4952   2 276    18.0 393.53
## 100  0.06860   0.0  2.89    0 0.4450 7.416  62.5  3.4952   2 276    18.0 396.90
## 101  0.14866   0.0  8.56    0 0.5200 6.727  79.9  2.7778   5 384    20.9 394.76
## 102  0.11432   0.0  8.56    0 0.5200 6.781  71.3  2.8561   5 384    20.9 395.58
## 103  0.22876   0.0  8.56    0 0.5200 6.405  85.4  2.7147   5 384    20.9  70.80
## 104  0.21161   0.0  8.56    0 0.5200 6.137  87.4  2.7147   5 384    20.9 394.47
## 105  0.13960   0.0  8.56    0 0.5200 6.167  90.0  2.4210   5 384    20.9 392.69
## 106  0.13262   0.0  8.56    0 0.5200 5.851  96.7  2.1069   5 384    20.9 394.05
## 107  0.17120   0.0  8.56    0 0.5200 5.836  91.9  2.2110   5 384    20.9 395.67
## 108  0.13117   0.0  8.56    0 0.5200 6.127  85.2  2.1224   5 384    20.9 387.69
## 109  0.12802   0.0  8.56    0 0.5200 6.474  97.1  2.4329   5 384    20.9 395.24
## 110  0.26363   0.0  8.56    0 0.5200 6.229  91.2  2.5451   5 384    20.9 391.23
## 111  0.10793   0.0  8.56    0 0.5200 6.195  54.4  2.7778   5 384    20.9 393.49
## 112  0.10084   0.0 10.01    0 0.5470 6.715  81.6  2.6775   6 432    17.8 395.59
## 113  0.12329   0.0 10.01    0 0.5470 5.913  92.9  2.3534   6 432    17.8 394.95
## 114  0.22212   0.0 10.01    0 0.5470 6.092  95.4  2.5480   6 432    17.8 396.90
## 115  0.14231   0.0 10.01    0 0.5470 6.254  84.2  2.2565   6 432    17.8 388.74
## 116  0.17134   0.0 10.01    0 0.5470 5.928  88.2  2.4631   6 432    17.8 344.91
## 117  0.13158   0.0 10.01    0 0.5470 6.176  72.5  2.7301   6 432    17.8 393.30
## 118  0.15098   0.0 10.01    0 0.5470 6.021  82.6  2.7474   6 432    17.8 394.51
```

```
## 119  0.13058   0.0 10.01    0 0.5470 5.872  73.1  2.4775   6 432    17.8 338.63
## 120  0.14476   0.0 10.01    0 0.5470 5.731  65.2  2.7592   6 432    17.8 391.50
## 121  0.06899   0.0 25.65    0 0.5810 5.870  69.7  2.2577   2 188    19.1 389.15
## 122  0.07165   0.0 25.65    0 0.5810 6.004  84.1  2.1974   2 188    19.1 377.67
## 123  0.09299   0.0 25.65    0 0.5810 5.961  92.9  2.0869   2 188    19.1 378.09
## 124  0.15038   0.0 25.65    0 0.5810 5.856  97.0  1.9444   2 188    19.1 370.31
## 125  0.09849   0.0 25.65    0 0.5810 5.879  95.8  2.0063   2 188    19.1 379.38
## 126  0.16902   0.0 25.65    0 0.5810 5.986  88.4  1.9929   2 188    19.1 385.02
## 127  0.38735   0.0 25.65    0 0.5810 5.613  95.6  1.7572   2 188    19.1 359.29
## 128  0.25915   0.0 21.89    0 0.6240 5.693  96.0  1.7883   4 437    21.2 392.11
## 129  0.32543   0.0 21.89    0 0.6240 6.431  98.8  1.8125   4 437    21.2 396.90
## 130  0.88125   0.0 21.89    0 0.6240 5.637  94.7  1.9799   4 437    21.2 396.90
## 131  0.34006   0.0 21.89    0 0.6240 6.458  98.9  2.1185   4 437    21.2 395.04
## 132  1.19294   0.0 21.89    0 0.6240 6.326  97.7  2.2710   4 437    21.2 396.90
## 133  0.59005   0.0 21.89    0 0.6240 6.372  97.9  2.3274   4 437    21.2 385.76
## 134  0.32982   0.0 21.89    0 0.6240 5.822  95.4  2.4699   4 437    21.2 388.69
## 135  0.97617   0.0 21.89    0 0.6240 5.757  98.4  2.3460   4 437    21.2 262.76
## 136  0.55778   0.0 21.89    0 0.6240 6.335  98.2  2.1107   4 437    21.2 394.67
## 137  0.32264   0.0 21.89    0 0.6240 5.942  93.5  1.9669   4 437    21.2 378.25
## 138  0.35233   0.0 21.89    0 0.6240 6.454  98.4  1.8498   4 437    21.2 394.08
## 139  0.24980   0.0 21.89    0 0.6240 5.857  98.2  1.6686   4 437    21.2 392.04
## 140  0.54452   0.0 21.89    0 0.6240 6.151  97.9  1.6687   4 437    21.2 396.90
## 141  0.29090   0.0 21.89    0 0.6240 6.174  93.6  1.6119   4 437    21.2 388.08
## 142  1.62864   0.0 21.89    0 0.6240 5.019 100.0  1.4394   4 437    21.2 396.90
## 143  3.32105   0.0 19.58    1 0.8710 5.403 100.0  1.3216   5 403    14.7 396.90
## 144  4.09740   0.0 19.58    0 0.8710 5.468 100.0  1.4118   5 403    14.7 396.90
## 145  2.77974   0.0 19.58    0 0.8710 4.903  97.8  1.3459   5 403    14.7 396.90
## 146  2.37934   0.0 19.58    0 0.8710 6.130 100.0  1.4191   5 403    14.7 172.91
## 147  2.15505   0.0 19.58    0 0.8710 5.628 100.0  1.5166   5 403    14.7 169.27
## 148  2.36862   0.0 19.58    0 0.8710 4.926  95.7  1.4608   5 403    14.7 391.71
## 149  2.33099   0.0 19.58    0 0.8710 5.186  93.8  1.5296   5 403    14.7 356.99
## 150  2.73397   0.0 19.58    0 0.8710 5.597  94.9  1.5257   5 403    14.7 351.85
## 151  1.65660   0.0 19.58    0 0.8710 6.122  97.3  1.6180   5 403    14.7 372.80
## 152  1.49632   0.0 19.58    0 0.8710 5.404 100.0  1.5916   5 403    14.7 341.60
## 153  1.12658   0.0 19.58    1 0.8710 5.012  88.0  1.6102   5 403    14.7 343.28
## 154  2.14918   0.0 19.58    0 0.8710 5.709  98.5  1.6232   5 403    14.7 261.95
## 155  1.41385   0.0 19.58    1 0.8710 6.129  96.0  1.7494   5 403    14.7 321.02
## 156  3.53501   0.0 19.58    1 0.8710 6.152  82.6  1.7455   5 403    14.7  88.01
## 157  2.44668   0.0 19.58    0 0.8710 5.272  94.0  1.7364   5 403    14.7  88.63
## 158  1.22358   0.0 19.58    0 0.6050 6.943  97.4  1.8773   5 403    14.7 363.43
## 159  1.34284   0.0 19.58    0 0.6050 6.066 100.0  1.7573   5 403    14.7 353.89
## 160  1.42502   0.0 19.58    0 0.8710 6.510 100.0  1.7659   5 403    14.7 364.31
## 161  1.27346   0.0 19.58    1 0.6050 6.250  92.6  1.7984   5 403    14.7 338.92
## 162  1.46336   0.0 19.58    0 0.6050 7.489  90.8  1.9709   5 403    14.7 374.43
## 163  1.83377   0.0 19.58    1 0.6050 7.802  98.2  2.0407   5 403    14.7 389.61
## 164  1.51902   0.0 19.58    1 0.6050 8.375  93.9  2.1620   5 403    14.7 388.45
## 165  2.24236   0.0 19.58    0 0.6050 5.854  91.8  2.4220   5 403    14.7 395.11
## 166  2.92400   0.0 19.58    0 0.6050 6.101  93.0  2.2834   5 403    14.7 240.16
## 167  2.01019   0.0 19.58    0 0.6050 7.929  96.2  2.0459   5 403    14.7 369.30
## 168  1.80028   0.0 19.58    0 0.6050 5.877  79.2  2.4259   5 403    14.7 227.61
## 169  2.30040   0.0 19.58    0 0.6050 6.319  96.1  2.1000   5 403    14.7 297.09
## 170  2.44953   0.0 19.58    0 0.6050 6.402  95.2  2.2625   5 403    14.7 330.04
## 171  1.20742   0.0 19.58    0 0.6050 5.875  94.6  2.4259   5 403    14.7 292.29
## 172  2.31390   0.0 19.58    0 0.6050 5.880  97.3  2.3887   5 403    14.7 348.13
```

```
## 173  0.13914   0.0  4.05    0 0.5100 5.572  88.5  2.5961   5 296    16.6 396.90
## 174  0.09178   0.0  4.05    0 0.5100 6.416  84.1  2.6463   5 296    16.6 395.50
## 175  0.08447   0.0  4.05    0 0.5100 5.859  68.7  2.7019   5 296    16.6 393.23
## 176  0.06664   0.0  4.05    0 0.5100 6.546  33.1  3.1323   5 296    16.6 390.96
## 177  0.07022   0.0  4.05    0 0.5100 6.020  47.2  3.5549   5 296    16.6 393.23
## 178  0.05425   0.0  4.05    0 0.5100 6.315  73.4  3.3175   5 296    16.6 395.60
## 179  0.06642   0.0  4.05    0 0.5100 6.860  74.4  2.9153   5 296    16.6 391.27
## 180  0.05780   0.0  2.46    0 0.4880 6.980  58.4  2.8290   3 193    17.8 396.90
## 181  0.06588   0.0  2.46    0 0.4880 7.765  83.3  2.7410   3 193    17.8 395.56
## 182  0.06888   0.0  2.46    0 0.4880 6.144  62.2  2.5979   3 193    17.8 396.90
## 183  0.09103   0.0  2.46    0 0.4880 7.155  92.2  2.7006   3 193    17.8 394.12
## 184  0.10008   0.0  2.46    0 0.4880 6.563  95.6  2.8470   3 193    17.8 396.90
## 185  0.08308   0.0  2.46    0 0.4880 5.604  89.8  2.9879   3 193    17.8 391.00
## 186  0.06047   0.0  2.46    0 0.4880 6.153  68.8  3.2797   3 193    17.8 387.11
## 187  0.05602   0.0  2.46    0 0.4880 7.831  53.6  3.1992   3 193    17.8 392.63
## 188  0.07875  45.0  3.44    0 0.4370 6.782  41.1  3.7886   5 398    15.2 393.87
## 189  0.12579  45.0  3.44    0 0.4370 6.556  29.1  4.5667   5 398    15.2 382.84
## 190  0.08370  45.0  3.44    0 0.4370 7.185  38.9  4.5667   5 398    15.2 396.90
## 191  0.09068  45.0  3.44    0 0.4370 6.951  21.5  6.4798   5 398    15.2 377.68
## 192  0.06911  45.0  3.44    0 0.4370 6.739  30.8  6.4798   5 398    15.2 389.71
## 193  0.08664  45.0  3.44    0 0.4370 7.178  26.3  6.4798   5 398    15.2 390.49
## 194  0.02187  60.0  2.93    0 0.4010 6.800   9.9  6.2196   1 265    15.6 393.37
## 195  0.01439  60.0  2.93    0 0.4010 6.604  18.8  6.2196   1 265    15.6 376.70
## 196  0.01381  80.0  0.46    0 0.4220 7.875  32.0  5.6484   4 255    14.4 394.23
## 197  0.04011  80.0  1.52    0 0.4040 7.287  34.1  7.3090   2 329    12.6 396.90
## 198  0.04666  80.0  1.52    0 0.4040 7.107  36.6  7.3090   2 329    12.6 354.31
## 199  0.03768  80.0  1.52    0 0.4040 7.274  38.3  7.3090   2 329    12.6 392.20
## 200  0.03150  95.0  1.47    0 0.4030 6.975  15.3  7.6534   3 402    17.0 396.90
## 201  0.01778  95.0  1.47    0 0.4030 7.135  13.9  7.6534   3 402    17.0 384.30
## 202  0.03445  82.5  2.03    0 0.4150 6.162  38.4  6.2700   2 348    14.7 393.77
## 203  0.02177  82.5  2.03    0 0.4150 7.610  15.7  6.2700   2 348    14.7 395.38
## 204  0.03510  95.0  2.68    0 0.4161 7.853  33.2  5.1180   4 224    14.7 392.78
## 205  0.02009  95.0  2.68    0 0.4161 8.034  31.9  5.1180   4 224    14.7 390.55
## 206  0.13642   0.0 10.59    0 0.4890 5.891  22.3  3.9454   4 277    18.6 396.90
## 207  0.22969   0.0 10.59    0 0.4890 6.326  52.5  4.3549   4 277    18.6 394.87
## 208  0.25199   0.0 10.59    0 0.4890 5.783  72.7  4.3549   4 277    18.6 389.43
## 209  0.13587   0.0 10.59    1 0.4890 6.064  59.1  4.2392   4 277    18.6 381.32
## 210  0.43571   0.0 10.59    1 0.4890 5.344 100.0  3.8750   4 277    18.6 396.90
## 211  0.17446   0.0 10.59    1 0.4890 5.960  92.1  3.8771   4 277    18.6 393.25
## 212  0.37578   0.0 10.59    1 0.4890 5.404  88.6  3.6650   4 277    18.6 395.24
## 213  0.21719   0.0 10.59    1 0.4890 5.807  53.8  3.6526   4 277    18.6 390.94
## 214  0.14052   0.0 10.59    0 0.4890 6.375  32.3  3.9454   4 277    18.6 385.81
## 215  0.28955   0.0 10.59    0 0.4890 5.412   9.8  3.5875   4 277    18.6 348.93
## 216  0.19802   0.0 10.59    0 0.4890 6.182  42.4  3.9454   4 277    18.6 393.63
## 217  0.04560   0.0 13.89    1 0.5500 5.888  56.0  3.1121   5 276    16.4 392.80
## 218  0.07013   0.0 13.89    0 0.5500 6.642  85.1  3.4211   5 276    16.4 392.78
## 219  0.11069   0.0 13.89    1 0.5500 5.951  93.8  2.8893   5 276    16.4 396.90
## 220  0.11425   0.0 13.89    1 0.5500 6.373  92.4  3.3633   5 276    16.4 393.74
## 221  0.35809   0.0  6.20    1 0.5070 6.951  88.5  2.8617   8 307    17.4 391.70
## 222  0.40771   0.0  6.20    1 0.5070 6.164  91.3  3.0480   8 307    17.4 395.24
## 223  0.62356   0.0  6.20    1 0.5070 6.879  77.7  3.2721   8 307    17.4 390.39
## 224  0.61470   0.0  6.20    0 0.5070 6.618  80.8  3.2721   8 307    17.4 396.90
## 225  0.31533   0.0  6.20    0 0.5040 8.266  78.3  2.8944   8 307    17.4 385.05
## 226  0.52693   0.0  6.20    0 0.5040 8.725  83.0  2.8944   8 307    17.4 382.00
```

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## 227  0.38214   0.0  6.20    0 0.5040 8.040  86.5  3.2157   8 307    17.4 387.38
## 228  0.41238   0.0  6.20    0 0.5040 7.163  79.9  3.2157   8 307    17.4 372.08
## 229  0.29819   0.0  6.20    0 0.5040 7.686  17.0  3.3751   8 307    17.4 377.51
## 230  0.44178   0.0  6.20    0 0.5040 6.552  21.4  3.3751   8 307    17.4 380.34
## 231  0.53700   0.0  6.20    0 0.5040 5.981  68.1  3.6715   8 307    17.4 378.35
## 232  0.46296   0.0  6.20    0 0.5040 7.412  76.9  3.6715   8 307    17.4 376.14
## 233  0.57529   0.0  6.20    0 0.5070 8.337  73.3  3.8384   8 307    17.4 385.91
## 234  0.33147   0.0  6.20    0 0.5070 8.247  70.4  3.6519   8 307    17.4 378.95
## 235  0.44791   0.0  6.20    1 0.5070 6.726  66.5  3.6519   8 307    17.4 360.20
## 236  0.33045   0.0  6.20    0 0.5070 6.086  61.5  3.6519   8 307    17.4 376.75
## 237  0.52058   0.0  6.20    1 0.5070 6.631  76.5  4.1480   8 307    17.4 388.45
## 238  0.51183   0.0  6.20    0 0.5070 7.358  71.6  4.1480   8 307    17.4 390.07
## 239  0.08244  30.0  4.93    0 0.4280 6.481  18.5  6.1899   6 300    16.6 379.41
## 240  0.09252  30.0  4.93    0 0.4280 6.606  42.2  6.1899   6 300    16.6 383.78
## 241  0.11329  30.0  4.93    0 0.4280 6.897  54.3  6.3361   6 300    16.6 391.25
## 242  0.10612  30.0  4.93    0 0.4280 6.095  65.1  6.3361   6 300    16.6 394.62
## 243  0.10290  30.0  4.93    0 0.4280 6.358  52.9  7.0355   6 300    16.6 372.75
## 244  0.12757  30.0  4.93    0 0.4280 6.393   7.8  7.0355   6 300    16.6 374.71
## 245  0.20608  22.0  5.86    0 0.4310 5.593  76.5  7.9549   7 330    19.1 372.49
## 246  0.19133  22.0  5.86    0 0.4310 5.605  70.2  7.9549   7 330    19.1 389.13
## 247  0.33983  22.0  5.86    0 0.4310 6.108  34.9  8.0555   7 330    19.1 390.18
## 248  0.19657  22.0  5.86    0 0.4310 6.226  79.2  8.0555   7 330    19.1 376.14
## 249  0.16439  22.0  5.86    0 0.4310 6.433  49.1  7.8265   7 330    19.1 374.71
## 250  0.19073  22.0  5.86    0 0.4310 6.718  17.5  7.8265   7 330    19.1 393.74
## 251  0.14030  22.0  5.86    0 0.4310 6.487  13.0  7.3967   7 330    19.1 396.28
## 252  0.21409  22.0  5.86    0 0.4310 6.438   8.9  7.3967   7 330    19.1 377.07
## 253  0.08221  22.0  5.86    0 0.4310 6.957   6.8  8.9067   7 330    19.1 386.09
## 254  0.36894  22.0  5.86    0 0.4310 8.259   8.4  8.9067   7 330    19.1 396.90
## 255  0.04819  80.0  3.64    0 0.3920 6.108  32.0  9.2203   1 315    16.4 392.89
## 256  0.03548  80.0  3.64    0 0.3920 5.876  19.1  9.2203   1 315    16.4 395.18
## 257  0.01538  90.0  3.75    0 0.3940 7.454  34.2  6.3361   3 244    15.9 386.34
## 258  0.61154  20.0  3.97    0 0.6470 8.704  86.9  1.8010   5 264    13.0 389.70
## 259  0.66351  20.0  3.97    0 0.6470 7.333 100.0  1.8946   5 264    13.0 383.29
## 260  0.65665  20.0  3.97    0 0.6470 6.842 100.0  2.0107   5 264    13.0 391.93
## 261  0.54011  20.0  3.97    0 0.6470 7.203  81.8  2.1121   5 264    13.0 392.80
## 262  0.53412  20.0  3.97    0 0.6470 7.520  89.4  2.1398   5 264    13.0 388.37
## 263  0.52014  20.0  3.97    0 0.6470 8.398  91.5  2.2885   5 264    13.0 386.86
## 264  0.82526  20.0  3.97    0 0.6470 7.327  94.5  2.0788   5 264    13.0 393.42
## 265  0.55007  20.0  3.97    0 0.6470 7.206  91.6  1.9301   5 264    13.0 387.89
## 266  0.76162  20.0  3.97    0 0.6470 5.560  62.8  1.9865   5 264    13.0 392.40
## 267  0.78570  20.0  3.97    0 0.6470 7.014  84.6  2.1329   5 264    13.0 384.07
## 268  0.57834  20.0  3.97    0 0.5750 8.297  67.0  2.4216   5 264    13.0 384.54
## 269  0.54050  20.0  3.97    0 0.5750 7.470  52.6  2.8720   5 264    13.0 390.30
## 270  0.09065  20.0  6.96    1 0.4640 5.920  61.5  3.9175   3 223    18.6 391.34
## 271  0.29916  20.0  6.96    0 0.4640 5.856  42.1  4.4290   3 223    18.6 388.65
## 272  0.16211  20.0  6.96    0 0.4640 6.240  16.3  4.4290   3 223    18.6 396.90
## 273  0.11460  20.0  6.96    0 0.4640 6.538  58.7  3.9175   3 223    18.6 394.96
## 274  0.22188  20.0  6.96    1 0.4640 7.691  51.8  4.3665   3 223    18.6 390.77
## 275  0.05644  40.0  6.41    1 0.4470 6.758  32.9  4.0776   4 254    17.6 396.90
## 276  0.09604  40.0  6.41    0 0.4470 6.854  42.8  4.2673   4 254    17.6 396.90
## 277  0.10469  40.0  6.41    1 0.4470 7.267  49.0  4.7872   4 254    17.6 389.25
## 278  0.06127  40.0  6.41    1 0.4470 6.826  27.6  4.8628   4 254    17.6 393.45
## 279  0.07978  40.0  6.41    0 0.4470 6.482  32.1  4.1403   4 254    17.6 396.90
## 280  0.21038  20.0  3.33    0 0.4429 6.812  32.2  4.1007   5 216    14.9 396.90
```

```
## 281  0.03578  20.0  3.33    0 0.4429 7.820  64.5  4.6947   5 216    14.9 387.31
## 282  0.03705  20.0  3.33    0 0.4429 6.968  37.2  5.2447   5 216    14.9 392.23
## 283  0.06129  20.0  3.33    1 0.4429 7.645  49.7  5.2119   5 216    14.9 377.07
## 284  0.01501  90.0  1.21    1 0.4010 7.923  24.8  5.8850   1 198    13.6 395.52
## 285  0.00906  90.0  2.97    0 0.4000 7.088  20.8  7.3073   1 285    15.3 394.72
## 286  0.01096  55.0  2.25    0 0.3890 6.453  31.9  7.3073   1 300    15.3 394.72
## 287  0.01965  80.0  1.76    0 0.3850 6.230  31.5  9.0892   1 241    18.2 341.60
## 288  0.03871  52.5  5.32    0 0.4050 6.209  31.3  7.3172   6 293    16.6 396.90
## 289  0.04590  52.5  5.32    0 0.4050 6.315  45.6  7.3172   6 293    16.6 396.90
## 290  0.04297  52.5  5.32    0 0.4050 6.565  22.9  7.3172   6 293    16.6 371.72
## 291  0.03502  80.0  4.95    0 0.4110 6.861  27.9  5.1167   4 245    19.2 396.90
## 292  0.07886  80.0  4.95    0 0.4110 7.148  27.7  5.1167   4 245    19.2 396.90
## 293  0.03615  80.0  4.95    0 0.4110 6.630  23.4  5.1167   4 245    19.2 396.90
## 294  0.08265   0.0 13.92    0 0.4370 6.127  18.4  5.5027   4 289    16.0 396.90
## 295  0.08199   0.0 13.92    0 0.4370 6.009  42.3  5.5027   4 289    16.0 396.90
## 296  0.12932   0.0 13.92    0 0.4370 6.678  31.1  5.9604   4 289    16.0 396.90
## 297  0.05372   0.0 13.92    0 0.4370 6.549  51.0  5.9604   4 289    16.0 392.85
## 298  0.14103   0.0 13.92    0 0.4370 5.790  58.0  6.3200   4 289    16.0 396.90
## 299  0.06466  70.0  2.24    0 0.4000 6.345  20.1  7.8278   5 358    14.8 368.24
## 300  0.05561  70.0  2.24    0 0.4000 7.041  10.0  7.8278   5 358    14.8 371.58
## 301  0.04417  70.0  2.24    0 0.4000 6.871  47.4  7.8278   5 358    14.8 390.86
## 302  0.03537  34.0  6.09    0 0.4330 6.590  40.4  5.4917   7 329    16.1 395.75
## 303  0.09266  34.0  6.09    0 0.4330 6.495  18.4  5.4917   7 329    16.1 383.61
## 304  0.10000  34.0  6.09    0 0.4330 6.982  17.7  5.4917   7 329    16.1 390.43
## 305  0.05515  33.0  2.18    0 0.4720 7.236  41.1  4.0220   7 222    18.4 393.68
## 306  0.05479  33.0  2.18    0 0.4720 6.616  58.1  3.3700   7 222    18.4 393.36
## 307  0.07503  33.0  2.18    0 0.4720 7.420  71.9  3.0992   7 222    18.4 396.90
## 308  0.04932  33.0  2.18    0 0.4720 6.849  70.3  3.1827   7 222    18.4 396.90
## 309  0.49298   0.0  9.90    0 0.5440 6.635  82.5  3.3175   4 304    18.4 396.90
## 310  0.34940   0.0  9.90    0 0.5440 5.972  76.7  3.1025   4 304    18.4 396.24
## 311  2.63548   0.0  9.90    0 0.5440 4.973  37.8  2.5194   4 304    18.4 350.45
## 312  0.79041   0.0  9.90    0 0.5440 6.122  52.8  2.6403   4 304    18.4 396.90
## 313  0.26169   0.0  9.90    0 0.5440 6.023  90.4  2.8340   4 304    18.4 396.30
## 314  0.26938   0.0  9.90    0 0.5440 6.266  82.8  3.2628   4 304    18.4 393.39
## 315  0.36920   0.0  9.90    0 0.5440 6.567  87.3  3.6023   4 304    18.4 395.69
## 316  0.25356   0.0  9.90    0 0.5440 5.705  77.7  3.9450   4 304    18.4 396.42
## 317  0.31827   0.0  9.90    0 0.5440 5.914  83.2  3.9986   4 304    18.4 390.70
## 318  0.24522   0.0  9.90    0 0.5440 5.782  71.7  4.0317   4 304    18.4 396.90
## 319  0.40202   0.0  9.90    0 0.5440 6.382  67.2  3.5325   4 304    18.4 395.21
## 320  0.47547   0.0  9.90    0 0.5440 6.113  58.8  4.0019   4 304    18.4 396.23
## 321  0.16760   0.0  7.38    0 0.4930 6.426  52.3  4.5404   5 287    19.6 396.90
## 322  0.18159   0.0  7.38    0 0.4930 6.376  54.3  4.5404   5 287    19.6 396.90
## 323  0.35114   0.0  7.38    0 0.4930 6.041  49.9  4.7211   5 287    19.6 396.90
## 324  0.28392   0.0  7.38    0 0.4930 5.708  74.3  4.7211   5 287    19.6 391.13
## 325  0.34109   0.0  7.38    0 0.4930 6.415  40.1  4.7211   5 287    19.6 396.90
## 326  0.19186   0.0  7.38    0 0.4930 6.431  14.7  5.4159   5 287    19.6 393.68
## 327  0.30347   0.0  7.38    0 0.4930 6.312  28.9  5.4159   5 287    19.6 396.90
## 328  0.24103   0.0  7.38    0 0.4930 6.083  43.7  5.4159   5 287    19.6 396.90
## 329  0.06617   0.0  3.24    0 0.4600 5.868  25.8  5.2146   4 430    16.9 382.44
## 330  0.06724   0.0  3.24    0 0.4600 6.333  17.2  5.2146   4 430    16.9 375.21
## 331  0.04544   0.0  3.24    0 0.4600 6.144  32.2  5.8736   4 430    16.9 368.57
## 332  0.05023  35.0  6.06    0 0.4379 5.706  28.4  6.6407   1 304    16.9 394.02
## 333  0.03466  35.0  6.06    0 0.4379 6.031  23.3  6.6407   1 304    16.9 362.25
## 334  0.05083   0.0  5.19    0 0.5150 6.316  38.1  6.4584   5 224    20.2 389.71
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## 335  0.03738   0.0  5.19    0 0.5150 6.310  38.5  6.4584   5 224    20.2 389.40
## 336  0.03961   0.0  5.19    0 0.5150 6.037  34.5  5.9853   5 224    20.2 396.90
## 337  0.03427   0.0  5.19    0 0.5150 5.869  46.3  5.2311   5 224    20.2 396.90
## 338  0.03041   0.0  5.19    0 0.5150 5.895  59.6  5.6150   5 224    20.2 394.81
## 339  0.03306   0.0  5.19    0 0.5150 6.059  37.3  4.8122   5 224    20.2 396.14
## 340  0.05497   0.0  5.19    0 0.5150 5.985  45.4  4.8122   5 224    20.2 396.90
## 341  0.06151   0.0  5.19    0 0.5150 5.968  58.5  4.8122   5 224    20.2 396.90
## 342  0.01301  35.0  1.52    0 0.4420 7.241  49.3  7.0379   1 284    15.5 394.74
## 343  0.02498   0.0  1.89    0 0.5180 6.540  59.7  6.2669   1 422    15.9 389.96
## 344  0.02543  55.0  3.78    0 0.4840 6.696  56.4  5.7321   5 370    17.6 396.90
## 345  0.03049  55.0  3.78    0 0.4840 6.874  28.1  6.4654   5 370    17.6 387.97
## 346  0.03113   0.0  4.39    0 0.4420 6.014  48.5  8.0136   3 352    18.8 385.64
## 347  0.06162   0.0  4.39    0 0.4420 5.898  52.3  8.0136   3 352    18.8 364.61
## 348  0.01870  85.0  4.15    0 0.4290 6.516  27.7  8.5353   4 351    17.9 392.43
## 349  0.01501  80.0  2.01    0 0.4350 6.635  29.7  8.3440   4 280    17.0 390.94
## 350  0.02899  40.0  1.25    0 0.4290 6.939  34.5  8.7921   1 335    19.7 389.85
## 351  0.06211  40.0  1.25    0 0.4290 6.490  44.4  8.7921   1 335    19.7 396.90
## 352  0.07950  60.0  1.69    0 0.4110 6.579  35.9 10.7103   4 411    18.3 370.78
## 353  0.07244  60.0  1.69    0 0.4110 5.884  18.5 10.7103   4 411    18.3 392.33
## 354  0.01709  90.0  2.02    0 0.4100 6.728  36.1 12.1265   5 187    17.0 384.46
## 355  0.04301  80.0  1.91    0 0.4130 5.663  21.9 10.5857   4 334    22.0 382.80
## 356  0.10659  80.0  1.91    0 0.4130 5.936  19.5 10.5857   4 334    22.0 376.04
## 357  8.98296   0.0 18.10    1 0.7700 6.212  97.4  2.1222  24 666    20.2 377.73
## 358  3.84970   0.0 18.10    1 0.7700 6.395  91.0  2.5052  24 666    20.2 391.34
## 359  5.20177   0.0 18.10    1 0.7700 6.127  83.4  2.7227  24 666    20.2 395.43
## 360  4.26131   0.0 18.10    0 0.7700 6.112  81.3  2.5091  24 666    20.2 390.74
## 361  4.54192   0.0 18.10    0 0.7700 6.398  88.0  2.5182  24 666    20.2 374.56
## 362  3.83684   0.0 18.10    0 0.7700 6.251  91.1  2.2955  24 666    20.2 350.65
## 363  3.67822   0.0 18.10    0 0.7700 5.362  96.2  2.1036  24 666    20.2 380.79
## 364  4.22239   0.0 18.10    1 0.7700 5.803  89.0  1.9047  24 666    20.2 353.04
## 365  3.47428   0.0 18.10    1 0.7180 8.780  82.9  1.9047  24 666    20.2 354.55
## 366  4.55587   0.0 18.10    0 0.7180 3.561  87.9  1.6132  24 666    20.2 354.70
## 367  3.69695   0.0 18.10    0 0.7180 4.963  91.4  1.7523  24 666    20.2 316.03
## 368 13.52220   0.0 18.10    0 0.6310 3.863 100.0  1.5106  24 666    20.2 131.42
## 369  4.89822   0.0 18.10    0 0.6310 4.970 100.0  1.3325  24 666    20.2 375.52
## 370  5.66998   0.0 18.10    1 0.6310 6.683  96.8  1.3567  24 666    20.2 375.33
## 371  6.53876   0.0 18.10    1 0.6310 7.016  97.5  1.2024  24 666    20.2 392.05
## 372  9.23230   0.0 18.10    0 0.6310 6.216 100.0  1.1691  24 666    20.2 366.15
## 373  8.26725   0.0 18.10    1 0.6680 5.875  89.6  1.1296  24 666    20.2 347.88
## 374 11.10810   0.0 18.10    0 0.6680 4.906 100.0  1.1742  24 666    20.2 396.90
## 375 18.49820   0.0 18.10    0 0.6680 4.138 100.0  1.1370  24 666    20.2 396.90
## 376 19.60910   0.0 18.10    0 0.6710 7.313  97.9  1.3163  24 666    20.2 396.90
## 377 15.28800   0.0 18.10    0 0.6710 6.649  93.3  1.3449  24 666    20.2 363.02
## 378  9.82349   0.0 18.10    0 0.6710 6.794  98.8  1.3580  24 666    20.2 396.90
## 379 23.64820   0.0 18.10    0 0.6710 6.380  96.2  1.3861  24 666    20.2 396.90
## 380 17.86670   0.0 18.10    0 0.6710 6.223 100.0  1.3861  24 666    20.2 393.74
## 381 88.97620   0.0 18.10    0 0.6710 6.968  91.9  1.4165  24 666    20.2 396.90
## 382 15.87440   0.0 18.10    0 0.6710 6.545  99.1  1.5192  24 666    20.2 396.90
## 383  9.18702   0.0 18.10    0 0.7000 5.536 100.0  1.5804  24 666    20.2 396.90
## 384  7.99248   0.0 18.10    0 0.7000 5.520 100.0  1.5331  24 666    20.2 396.90
## 385 20.08490   0.0 18.10    0 0.7000 4.368  91.2  1.4395  24 666    20.2 285.83
## 386 16.81180   0.0 18.10    0 0.7000 5.277  98.1  1.4261  24 666    20.2 396.90
## 387 24.39380   0.0 18.10    0 0.7000 4.652 100.0  1.4672  24 666    20.2 396.90
## 388 22.59710   0.0 18.10    0 0.7000 5.000  89.5  1.5184  24 666    20.2 396.90
```

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## 389 14.33370   0.0 18.10    0 0.7000 4.880 100.0  1.5895  24 666    20.2 372.92
## 390  8.15174   0.0 18.10    0 0.7000 5.390  98.9  1.7281  24 666    20.2 396.90
## 391  6.96215   0.0 18.10    0 0.7000 5.713  97.0  1.9265  24 666    20.2 394.43
## 392  5.29305   0.0 18.10    0 0.7000 6.051  82.5  2.1678  24 666    20.2 378.38
## 393 11.57790   0.0 18.10    0 0.7000 5.036  97.0  1.7700  24 666    20.2 396.90
## 394  8.64476   0.0 18.10    0 0.6930 6.193  92.6  1.7912  24 666    20.2 396.90
## 395 13.35980   0.0 18.10    0 0.6930 5.887  94.7  1.7821  24 666    20.2 396.90
## 396  8.71675   0.0 18.10    0 0.6930 6.471  98.8  1.7257  24 666    20.2 391.98
## 397  5.87205   0.0 18.10    0 0.6930 6.405  96.0  1.6768  24 666    20.2 396.90
## 398  7.67202   0.0 18.10    0 0.6930 5.747  98.9  1.6334  24 666    20.2 393.10
## 399 38.35180   0.0 18.10    0 0.6930 5.453 100.0  1.4896  24 666    20.2 396.90
## 400  9.91655   0.0 18.10    0 0.6930 5.852  77.8  1.5004  24 666    20.2 338.16
## 401 25.04610   0.0 18.10    0 0.6930 5.987 100.0  1.5888  24 666    20.2 396.90
## 402 14.23620   0.0 18.10    0 0.6930 6.343 100.0  1.5741  24 666    20.2 396.90
## 403  9.59571   0.0 18.10    0 0.6930 6.404 100.0  1.6390  24 666    20.2 376.11
## 404 24.80170   0.0 18.10    0 0.6930 5.349  96.0  1.7028  24 666    20.2 396.90
## 405 41.52920   0.0 18.10    0 0.6930 5.531  85.4  1.6074  24 666    20.2 329.46
## 406 67.92080   0.0 18.10    0 0.6930 5.683 100.0  1.4254  24 666    20.2 384.97
## 407 20.71620   0.0 18.10    0 0.6590 4.138 100.0  1.1781  24 666    20.2 370.22
## 408 11.95110   0.0 18.10    0 0.6590 5.608 100.0  1.2852  24 666    20.2 332.09
## 409  7.40389   0.0 18.10    0 0.5970 5.617  97.9  1.4547  24 666    20.2 314.64
## 410 14.43830   0.0 18.10    0 0.5970 6.852 100.0  1.4655  24 666    20.2 179.36
## 411 51.13580   0.0 18.10    0 0.5970 5.757 100.0  1.4130  24 666    20.2   2.60
## 412 14.05070   0.0 18.10    0 0.5970 6.657 100.0  1.5275  24 666    20.2  35.05
## 413 18.81100   0.0 18.10    0 0.5970 4.628 100.0  1.5539  24 666    20.2  28.79
## 414 28.65580   0.0 18.10    0 0.5970 5.155 100.0  1.5894  24 666    20.2 210.97
## 415 45.74610   0.0 18.10    0 0.6930 4.519 100.0  1.6582  24 666    20.2  88.27
## 416 18.08460   0.0 18.10    0 0.6790 6.434 100.0  1.8347  24 666    20.2  27.25
## 417 10.83420   0.0 18.10    0 0.6790 6.782  90.8  1.8195  24 666    20.2  21.57
## 418 25.94060   0.0 18.10    0 0.6790 5.304  89.1  1.6475  24 666    20.2 127.36
## 419 73.53410   0.0 18.10    0 0.6790 5.957 100.0  1.8026  24 666    20.2  16.45
## 420 11.81230   0.0 18.10    0 0.7180 6.824  76.5  1.7940  24 666    20.2  48.45
## 421 11.08740   0.0 18.10    0 0.7180 6.411 100.0  1.8589  24 666    20.2 318.75
## 422  7.02259   0.0 18.10    0 0.7180 6.006  95.3  1.8746  24 666    20.2 319.98
## 423 12.04820   0.0 18.10    0 0.6140 5.648  87.6  1.9512  24 666    20.2 291.55
## 424  7.05042   0.0 18.10    0 0.6140 6.103  85.1  2.0218  24 666    20.2   2.52
## 425  8.79212   0.0 18.10    0 0.5840 5.565  70.6  2.0635  24 666    20.2   3.65
## 426 15.86030   0.0 18.10    0 0.6790 5.896  95.4  1.9096  24 666    20.2   7.68
## 427 12.24720   0.0 18.10    0 0.5840 5.837  59.7  1.9976  24 666    20.2  24.65
## 428 37.66190   0.0 18.10    0 0.6790 6.202  78.7  1.8629  24 666    20.2  18.82
## 429  7.36711   0.0 18.10    0 0.6790 6.193  78.1  1.9356  24 666    20.2  96.73
## 430  9.33889   0.0 18.10    0 0.6790 6.380  95.6  1.9682  24 666    20.2  60.72
## 431  8.49213   0.0 18.10    0 0.5840 6.348  86.1  2.0527  24 666    20.2  83.45
## 432 10.06230   0.0 18.10    0 0.5840 6.833  94.3  2.0882  24 666    20.2  81.33
## 433  6.44405   0.0 18.10    0 0.5840 6.425  74.8  2.2004  24 666    20.2  97.95
## 434  5.58107   0.0 18.10    0 0.7130 6.436  87.9  2.3158  24 666    20.2 100.19
## 435 13.91340   0.0 18.10    0 0.7130 6.208  95.0  2.2222  24 666    20.2 100.63
## 436 11.16040   0.0 18.10    0 0.7400 6.629  94.6  2.1247  24 666    20.2 109.85
## 437 14.42080   0.0 18.10    0 0.7400 6.461  93.3  2.0026  24 666    20.2  27.49
## 438 15.17720   0.0 18.10    0 0.7400 6.152 100.0  1.9142  24 666    20.2   9.32
## 439 13.67810   0.0 18.10    0 0.7400 5.935  87.9  1.8206  24 666    20.2  68.95
## 440  9.39063   0.0 18.10    0 0.7400 5.627  93.9  1.8172  24 666    20.2 396.90
## 441 22.05110   0.0 18.10    0 0.7400 5.818  92.4  1.8662  24 666    20.2 391.45
## 442  9.72418   0.0 18.10    0 0.7400 6.406  97.2  2.0651  24 666    20.2 385.96
```

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## 443  5.66637   0.0 18.10    0 0.7400 6.219 100.0  2.0048  24 666    20.2 395.69
## 444  9.96654   0.0 18.10    0 0.7400 6.485 100.0  1.9784  24 666    20.2 386.73
## 445 12.80230   0.0 18.10    0 0.7400 5.854  96.6  1.8956  24 666    20.2 240.52
## 446 10.67180   0.0 18.10    0 0.7400 6.459  94.8  1.9879  24 666    20.2  43.06
## 447  6.28807   0.0 18.10    0 0.7400 6.341  96.4  2.0720  24 666    20.2 318.01
## 448  9.92485   0.0 18.10    0 0.7400 6.251  96.6  2.1980  24 666    20.2 388.52
## 449  9.32909   0.0 18.10    0 0.7130 6.185  98.7  2.2616  24 666    20.2 396.90
## 450  7.52601   0.0 18.10    0 0.7130 6.417  98.3  2.1850  24 666    20.2 304.21
## 451  6.71772   0.0 18.10    0 0.7130 6.749  92.6  2.3236  24 666    20.2   0.32
## 452  5.44114   0.0 18.10    0 0.7130 6.655  98.2  2.3552  24 666    20.2 355.29
## 453  5.09017   0.0 18.10    0 0.7130 6.297  91.8  2.3682  24 666    20.2 385.09
## 454  8.24809   0.0 18.10    0 0.7130 7.393  99.3  2.4527  24 666    20.2 375.87
## 455  9.51363   0.0 18.10    0 0.7130 6.728  94.1  2.4961  24 666    20.2   6.68
## 456  4.75237   0.0 18.10    0 0.7130 6.525  86.5  2.4358  24 666    20.2  50.92
## 457  4.66883   0.0 18.10    0 0.7130 5.976  87.9  2.5806  24 666    20.2  10.48
## 458  8.20058   0.0 18.10    0 0.7130 5.936  80.3  2.7792  24 666    20.2   3.50
## 459  7.75223   0.0 18.10    0 0.7130 6.301  83.7  2.7831  24 666    20.2 272.21
## 460  6.80117   0.0 18.10    0 0.7130 6.081  84.4  2.7175  24 666    20.2 396.90
## 461  4.81213   0.0 18.10    0 0.7130 6.701  90.0  2.5975  24 666    20.2 255.23
## 462  3.69311   0.0 18.10    0 0.7130 6.376  88.4  2.5671  24 666    20.2 391.43
## 463  6.65492   0.0 18.10    0 0.7130 6.317  83.0  2.7344  24 666    20.2 396.90
## 464  5.82115   0.0 18.10    0 0.7130 6.513  89.9  2.8016  24 666    20.2 393.82
## 465  7.83932   0.0 18.10    0 0.6550 6.209  65.4  2.9634  24 666    20.2 396.90
## 466  3.16360   0.0 18.10    0 0.6550 5.759  48.2  3.0665  24 666    20.2 334.40
## 467  3.77498   0.0 18.10    0 0.6550 5.952  84.7  2.8715  24 666    20.2  22.01
## 468  4.42228   0.0 18.10    0 0.5840 6.003  94.5  2.5403  24 666    20.2 331.29
## 469 15.57570   0.0 18.10    0 0.5800 5.926  71.0  2.9084  24 666    20.2 368.74
## 470 13.07510   0.0 18.10    0 0.5800 5.713  56.7  2.8237  24 666    20.2 396.90
## 471  4.34879   0.0 18.10    0 0.5800 6.167  84.0  3.0334  24 666    20.2 396.90
## 472  4.03841   0.0 18.10    0 0.5320 6.229  90.7  3.0993  24 666    20.2 395.33
## 473  3.56868   0.0 18.10    0 0.5800 6.437  75.0  2.8965  24 666    20.2 393.37
## 474  4.64689   0.0 18.10    0 0.6140 6.980  67.6  2.5329  24 666    20.2 374.68
## 475  8.05579   0.0 18.10    0 0.5840 5.427  95.4  2.4298  24 666    20.2 352.58
## 476  6.39312   0.0 18.10    0 0.5840 6.162  97.4  2.2060  24 666    20.2 302.76
## 477  4.87141   0.0 18.10    0 0.6140 6.484  93.6  2.3053  24 666    20.2 396.21
## 478 15.02340   0.0 18.10    0 0.6140 5.304  97.3  2.1007  24 666    20.2 349.48
## 479 10.23300   0.0 18.10    0 0.6140 6.185  96.7  2.1705  24 666    20.2 379.70
## 480 14.33370   0.0 18.10    0 0.6140 6.229  88.0  1.9512  24 666    20.2 383.32
## 481  5.82401   0.0 18.10    0 0.5320 6.242  64.7  3.4242  24 666    20.2 396.90
## 482  5.70818   0.0 18.10    0 0.5320 6.750  74.9  3.3317  24 666    20.2 393.07
## 483  5.73116   0.0 18.10    0 0.5320 7.061  77.0  3.4106  24 666    20.2 395.28
## 484  2.81838   0.0 18.10    0 0.5320 5.762  40.3  4.0983  24 666    20.2 392.92
## 485  2.37857   0.0 18.10    0 0.5830 5.871  41.9  3.7240  24 666    20.2 370.73
## 486  3.67367   0.0 18.10    0 0.5830 6.312  51.9  3.9917  24 666    20.2 388.62
## 487  5.69175   0.0 18.10    0 0.5830 6.114  79.8  3.5459  24 666    20.2 392.68
## 488  4.83567   0.0 18.10    0 0.5830 5.905  53.2  3.1523  24 666    20.2 388.22
## 489  0.15086   0.0 27.74    0 0.6090 5.454  92.7  1.8209   4 711    20.1 395.09
## 490  0.18337   0.0 27.74    0 0.6090 5.414  98.3  1.7554   4 711    20.1 344.05
## 491  0.20746   0.0 27.74    0 0.6090 5.093  98.0  1.8226   4 711    20.1 318.43
## 492  0.10574   0.0 27.74    0 0.6090 5.983  98.8  1.8681   4 711    20.1 390.11
## 493  0.11132   0.0 27.74    0 0.6090 5.983  83.5  2.1099   4 711    20.1 396.90
## 494  0.17331   0.0  9.69    0 0.5850 5.707  54.0  2.3817   6 391    19.2 396.90
## 495  0.27957   0.0  9.69    0 0.5850 5.926  42.6  2.3817   6 391    19.2 396.90
## 496  0.17899   0.0  9.69    0 0.5850 5.670  28.8  2.7986   6 391    19.2 393.29
```

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## 497  0.28960   0.0  9.69    0 0.5850 5.390  72.9  2.7986   6 391    19.2 396.90
## 498  0.26838   0.0  9.69    0 0.5850 5.794  70.6  2.8927   6 391    19.2 396.90
## 499  0.23912   0.0  9.69    0 0.5850 6.019  65.3  2.4091   6 391    19.2 396.90
## 500  0.17783   0.0  9.69    0 0.5850 5.569  73.5  2.3999   6 391    19.2 395.77
## 501  0.22438   0.0  9.69    0 0.5850 6.027  79.7  2.4982   6 391    19.2 396.90
## 502  0.06263   0.0 11.93    0 0.5730 6.593  69.1  2.4786   1 273    21.0 391.99
## 503  0.04527   0.0 11.93    0 0.5730 6.120  76.7  2.2875   1 273    21.0 396.90
## 504  0.06076   0.0 11.93    0 0.5730 6.976  91.0  2.1675   1 273    21.0 396.90
## 505  0.10959   0.0 11.93    0 0.5730 6.794  89.3  2.3889   1 273    21.0 393.45
## 506  0.04741   0.0 11.93    0 0.5730 6.030  80.8  2.5050   1 273    21.0 396.90
##     lstat
## 1    4.98
## 2    9.14
## 3    4.03
## 4    2.94
## 5    5.33
## 6    5.21
## 7   12.43
## 8   19.15
## 9   29.93
## 10  17.10
## 11  20.45
## 12  13.27
## 13  15.71
## 14   8.26
## 15  10.26
## 16   8.47
## 17   6.58
## 18  14.67
## 19  11.69
## 20  11.28
## 21  21.02
## 22  13.83
## 23  18.72
## 24  19.88
## 25  16.30
## 26  16.51
## 27  14.81
## 28  17.28
## 29  12.80
## 30  11.98
## 31  22.60
## 32  13.04
## 33  27.71
## 34  18.35
## 35  20.34
## 36   9.68
## 37  11.41
## 38   8.77
## 39  10.13
## 40   4.32
## 41   1.98
## 42   4.84
## 43   5.81
```

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## 44   7.44
## 45   9.55
## 46  10.21
## 47  14.15
## 48  18.80
## 49  30.81
## 50  16.20
## 51  13.45
## 52   9.43
## 53   5.28
## 54   8.43
## 55  14.80
## 56   4.81
## 57   5.77
## 58   3.95
## 59   6.86
## 60   9.22
## 61  13.15
## 62  14.44
## 63   6.73
## 64   9.50
## 65   8.05
## 66   4.67
## 67  10.24
## 68   8.10
## 69  13.09
## 70   8.79
## 71   6.72
## 72   9.88
## 73   5.52
## 74   7.54
## 75   6.78
## 76   8.94
## 77  11.97
## 78  10.27
## 79  12.34
## 80   9.10
## 81   5.29
## 82   7.22
## 83   6.72
## 84   7.51
## 85   9.62
## 86   6.53
## 87  12.86
## 88   8.44
## 89   5.50
## 90   5.70
## 91   8.81
## 92   8.20
## 93   8.16
## 94   6.21
## 95  10.59
## 96   6.65
## 97  11.34
```

```
## 98   4.21
## 99   3.57
## 100  6.19
## 101  9.42
## 102  7.67
## 103 10.63
## 104 13.44
## 105 12.33
## 106 16.47
## 107 18.66
## 108 14.09
## 109 12.27
## 110 15.55
## 111 13.00
## 112 10.16
## 113 16.21
## 114 17.09
## 115 10.45
## 116 15.76
## 117 12.04
## 118 10.30
## 119 15.37
## 120 13.61
## 121 14.37
## 122 14.27
## 123 17.93
## 124 25.41
## 125 17.58
## 126 14.81
## 127 27.26
## 128 17.19
## 129 15.39
## 130 18.34
## 131 12.60
## 132 12.26
## 133 11.12
## 134 15.03
## 135 17.31
## 136 16.96
## 137 16.90
## 138 14.59
## 139 21.32
## 140 18.46
## 141 24.16
## 142 34.41
## 143 26.82
## 144 26.42
## 145 29.29
## 146 27.80
## 147 16.65
## 148 29.53
## 149 28.32
## 150 21.45
## 151 14.10
```

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## 152 13.28
## 153 12.12
## 154 15.79
## 155 15.12
## 156 15.02
## 157 16.14
## 158  4.59
## 159  6.43
## 160  7.39
## 161  5.50
## 162  1.73
## 163  1.92
## 164  3.32
## 165 11.64
## 166  9.81
## 167  3.70
## 168 12.14
## 169 11.10
## 170 11.32
## 171 14.43
## 172 12.03
## 173 14.69
## 174  9.04
## 175  9.64
## 176  5.33
## 177 10.11
## 178  6.29
## 179  6.92
## 180  5.04
## 181  7.56
## 182  9.45
## 183  4.82
## 184  5.68
## 185 13.98
## 186 13.15
## 187  4.45
## 188  6.68
## 189  4.56
## 190  5.39
## 191  5.10
## 192  4.69
## 193  2.87
## 194  5.03
## 195  4.38
## 196  2.97
## 197  4.08
## 198  8.61
## 199  6.62
## 200  4.56
## 201  4.45
## 202  7.43
## 203  3.11
## 204  3.81
## 205  2.88
```

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## 206 10.87
## 207 10.97
## 208 18.06
## 209 14.66
## 210 23.09
## 211 17.27
## 212 23.98
## 213 16.03
## 214  9.38
## 215 29.55
## 216  9.47
## 217 13.51
## 218  9.69
## 219 17.92
## 220 10.50
## 221  9.71
## 222 21.46
## 223  9.93
## 224  7.60
## 225  4.14
## 226  4.63
## 227  3.13
## 228  6.36
## 229  3.92
## 230  3.76
## 231 11.65
## 232  5.25
## 233  2.47
## 234  3.95
## 235  8.05
## 236 10.88
## 237  9.54
## 238  4.73
## 239  6.36
## 240  7.37
## 241 11.38
## 242 12.40
## 243 11.22
## 244  5.19
## 245 12.50
## 246 18.46
## 247  9.16
## 248 10.15
## 249  9.52
## 250  6.56
## 251  5.90
## 252  3.59
## 253  3.53
## 254  3.54
## 255  6.57
## 256  9.25
## 257  3.11
## 258  5.12
## 259  7.79
```

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## 260  6.90
## 261  9.59
## 262  7.26
## 263  5.91
## 264 11.25
## 265  8.10
## 266 10.45
## 267 14.79
## 268  7.44
## 269  3.16
## 270 13.65
## 271 13.00
## 272  6.59
## 273  7.73
## 274  6.58
## 275  3.53
## 276  2.98
## 277  6.05
## 278  4.16
## 279  7.19
## 280  4.85
## 281  3.76
## 282  4.59
## 283  3.01
## 284  3.16
## 285  7.85
## 286  8.23
## 287 12.93
## 288  7.14
## 289  7.60
## 290  9.51
## 291  3.33
## 292  3.56
## 293  4.70
## 294  8.58
## 295 10.40
## 296  6.27
## 297  7.39
## 298 15.84
## 299  4.97
## 300  4.74
## 301  6.07
## 302  9.50
## 303  8.67
## 304  4.86
## 305  6.93
## 306  8.93
## 307  6.47
## 308  7.53
## 309  4.54
## 310  9.97
## 311 12.64
## 312  5.98
## 313 11.72
```

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## 314  7.90
## 315  9.28
## 316 11.50
## 317 18.33
## 318 15.94
## 319 10.36
## 320 12.73
## 321  7.20
## 322  6.87
## 323  7.70
## 324 11.74
## 325  6.12
## 326  5.08
## 327  6.15
## 328 12.79
## 329  9.97
## 330  7.34
## 331  9.09
## 332 12.43
## 333  7.83
## 334  5.68
## 335  6.75
## 336  8.01
## 337  9.80
## 338 10.56
## 339  8.51
## 340  9.74
## 341  9.29
## 342  5.49
## 343  8.65
## 344  7.18
## 345  4.61
## 346 10.53
## 347 12.67
## 348  6.36
## 349  5.99
## 350  5.89
## 351  5.98
## 352  5.49
## 353  7.79
## 354  4.50
## 355  8.05
## 356  5.57
## 357 17.60
## 358 13.27
## 359 11.48
## 360 12.67
## 361  7.79
## 362 14.19
## 363 10.19
## 364 14.64
## 365  5.29
## 366  7.12
## 367 14.00
```

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## 368 13.33
## 369  3.26
## 370  3.73
## 371  2.96
## 372  9.53
## 373  8.88
## 374 34.77
## 375 37.97
## 376 13.44
## 377 23.24
## 378 21.24
## 379 23.69
## 380 21.78
## 381 17.21
## 382 21.08
## 383 23.60
## 384 24.56
## 385 30.63
## 386 30.81
## 387 28.28
## 388 31.99
## 389 30.62
## 390 20.85
## 391 17.11
## 392 18.76
## 393 25.68
## 394 15.17
## 395 16.35
## 396 17.12
## 397 19.37
## 398 19.92
## 399 30.59
## 400 29.97
## 401 26.77
## 402 20.32
## 403 20.31
## 404 19.77
## 405 27.38
## 406 22.98
## 407 23.34
## 408 12.13
## 409 26.40
## 410 19.78
## 411 10.11
## 412 21.22
## 413 34.37
## 414 20.08
## 415 36.98
## 416 29.05
## 417 25.79
## 418 26.64
## 419 20.62
## 420 22.74
## 421 15.02
```

```
## 422 15.70
## 423 14.10
## 424 23.29
## 425 17.16
## 426 24.39
## 427 15.69
## 428 14.52
## 429 21.52
## 430 24.08
## 431 17.64
## 432 19.69
## 433 12.03
## 434 16.22
## 435 15.17
## 436 23.27
## 437 18.05
## 438 26.45
## 439 34.02
## 440 22.88
## 441 22.11
## 442 19.52
## 443 16.59
## 444 18.85
## 445 23.79
## 446 23.98
## 447 17.79
## 448 16.44
## 449 18.13
## 450 19.31
## 451 17.44
## 452 17.73
## 453 17.27
## 454 16.74
## 455 18.71
## 456 18.13
## 457 19.01
## 458 16.94
## 459 16.23
## 460 14.70
## 461 16.42
## 462 14.65
## 463 13.99
## 464 10.29
## 465 13.22
## 466 14.13
## 467 17.15
## 468 21.32
## 469 18.13
## 470 14.76
## 471 16.29
## 472 12.87
## 473 14.36
## 474 11.66
## 475 18.14
```

```
## 476 24.10
## 477 18.68
## 478 24.91
## 479 18.03
## 480 13.11
## 481 10.74
## 482  7.74
## 483  7.01
## 484 10.42
## 485 13.34
## 486 10.58
## 487 14.98
## 488 11.45
## 489 18.06
## 490 23.97
## 491 29.68
## 492 18.07
## 493 13.35
## 494 12.01
## 495 13.59
## 496 17.60
## 497 21.14
## 498 14.10
## 499 12.92
## 500 15.10
## 501 14.33
## 502  9.67
## 503  9.08
## 504  5.64
## 505  6.48
## 506  7.88
##
## $OOBerror
## NRMSE
##     0
##
## attr(,"class")
## [1] "missForest"
```

```
pacman::p_load(randomForest)

library(tidyr)

X = Boston
X = data.frame(punchholes(X  , 0.3))
n = nrow(X)
p = ncol(X)



for(i in 1:n){
  for(j in 1:p){
    if(is.na(X[i,j])){
      # Replacing NA values with column means
```

```
      X_naive = X %>%
 replace_na(as.list(colMeans(X, na.rm = TRUE)))

      # Initialize random forest model
      rf_mod = randomForest(X_naive[,j] ~ ., data = X_naive, ntree = 100)

      # Setting the value at X[i,j] to be the prediction
      X[i,j] = predict(rf_mod, X_naive[i,])
    }
  }
}
```

```
## Warning in randomForest.default(m, y, ...): The response has five or fewer
## unique values. Are you sure you want to do regression?

## Warning in randomForest.default(m, y, ...): The response has five or fewer
## unique values. Are you sure you want to do regression?

## Warning in randomForest.default(m, y, ...): The response has five or fewer
## unique values. Are you sure you want to do regression?
```

```
X
```

```
##          crim        zn     indus       chas       nox       rm       age
## 1    0.006320  18.00000 10.757452 0.00000000 0.5380000 6.575000  65.20000
## 2    0.027310   0.00000 10.864352 0.00000000 0.4690000 6.421000  78.90000
## 3    3.540107  13.73651  7.070000 0.06093750 0.4690000 6.482568  67.00834
## 4    0.032370   0.00000  2.180000 0.06062089 0.4580000 6.998000  66.47951
## 5    3.444705   0.00000  2.180000 0.00000000 0.4580000 7.147000  54.20000
## 6    0.029850  11.77553 10.592590 0.00000000 0.5509895 6.430000  66.57924
## 7    0.088290  12.73894  7.870000 0.00000000 0.5540672 6.314279  66.60000
## 8    0.144550  11.65226  7.870000 0.06016295 0.5240000 6.172000  68.43577
## 9    0.211240  12.50000  7.870000 0.00000000 0.5589677 5.631000 100.00000
## 10   3.526582  11.62253 10.794121 0.00000000 0.5537327 6.004000  85.90000
## 11   0.224890  12.50000  7.870000 0.06008323 0.5608885 6.287089  94.30000
## 12   0.117470  12.50000 11.012750 0.00000000 0.5568694 6.009000  82.90000
## 13   0.093780  12.37906  7.870000 0.00000000 0.5240000 6.290646  39.00000
## 14   0.629760   0.00000  8.140000 0.00000000 0.5557031 6.309417  61.80000
## 15   0.637960  11.77839  8.140000 0.00000000 0.5565608 6.096000  68.69841
## 16   0.627390   0.00000  8.140000 0.06997885 0.5380000 5.834000  56.50000
## 17   1.053930  10.88569 11.010770 0.00000000 0.5380000 5.935000  29.30000
## 18   0.784200   0.00000  8.140000 0.00000000 0.5586351 6.299073  69.19651
## 19   0.802710  11.31523  8.140000 0.06322888 0.5380000 5.456000  68.70473
## 20   0.725800   0.00000  8.140000 0.00000000 0.5573176 6.301876  69.50000
## 21   3.442437   0.00000  8.140000 0.00000000 0.5380000 5.570000  98.10000
## 22   0.852040   0.00000 10.922079 0.00000000 0.5560597 5.965000  68.21145
## 23   1.232470   0.00000  8.140000 0.00000000 0.5380000 6.142000  91.70000
## 24   0.988430  11.52696  8.140000 0.00000000 0.5571652 5.813000 100.00000
## 25   0.750260  11.59723  8.140000 0.00000000 0.5380000 6.318107  94.10000
## 26   3.514410   0.00000 11.200321 0.00000000 0.5380000 6.299037  85.70000
## 27   3.465078   0.00000  8.140000 0.06754472 0.5380000 5.813000  90.30000
## 28   3.625108   0.00000 10.945580 0.00000000 0.5380000 6.047000  88.80000
## 29   0.772990   0.00000 10.900406 0.00000000 0.5380000 6.495000  94.40000
```

```
## 30   1.002450   0.00000  8.140000 0.00000000 0.5380000 6.674000  68.64438
## 31   1.130810   0.00000 10.823988 0.00000000 0.5380000 6.333726  94.10000
## 32   3.483023  11.46017  8.140000 0.00000000 0.5581976 6.072000 100.00000
## 33   1.387990   0.00000  8.140000 0.05765105 0.5380000 5.950000  82.00000
## 34   1.151720   0.00000  8.140000 0.06031051 0.5380000 5.701000  95.00000
## 35   1.612820   0.00000 10.903343 0.00000000 0.5588395 6.096000  69.16660
## 36   0.064170  11.34179  5.960000 0.00000000 0.4990000 5.933000  68.20000
## 37   0.097440   0.00000 10.891638 0.00000000 0.5580449 5.841000  61.40000
## 38   0.080140   0.00000  5.960000 0.00000000 0.4990000 6.311482  67.58754
## 39   0.175050   0.00000  5.960000 0.00000000 0.4990000 5.966000  30.20000
## 40   0.027630  75.00000  2.950000 0.06215064 0.5437203 6.595000  21.80000
## 41   0.033590  15.53260  2.950000 0.00000000 0.4280000 7.024000  15.80000
## 42   0.127440   0.00000  6.910000 0.00000000 0.5543048 6.332572   2.90000
## 43   0.141500   0.00000  6.910000 0.00000000 0.5531534 6.169000  65.27974
## 44   3.573540  11.99265  6.910000 0.06828015 0.4480000 6.211000  65.17433
## 45   0.122690  11.98669 11.047889 0.07134750 0.4480000 6.069000  40.00000
## 46   3.431940  12.00844 10.903801 0.05879408 0.5553354 5.682000  33.80000
## 47   0.188360   0.00000  6.910000 0.00000000 0.4480000 6.302519  33.30000
## 48   0.229270  11.34995 10.858927 0.00000000 0.5584674 6.030000  85.50000
## 49   0.253870   0.00000 10.883598 0.11116250 0.4480000 5.399000  95.30000
## 50   3.498621   0.00000  6.910000 0.00000000 0.5555326 5.602000  62.00000
## 51   0.088730  21.00000  5.640000 0.00000000 0.5539995 5.963000  45.70000
## 52   0.043370  21.00000  5.640000 0.00000000 0.5543245 6.115000  63.00000
## 53   0.053600  12.90616 10.866400 0.06101676 0.4390000 6.330250  66.58471
## 54   0.049810  21.00000 10.838521 0.00000000 0.4390000 6.308568  21.40000
## 55   0.013600  75.00000  4.000000 0.00000000 0.4100000 5.888000  47.60000
## 56   0.013110  90.00000 10.781001 0.00000000 0.4030000 6.405624  64.84172
## 57   0.020550  85.00000  0.740000 0.00000000 0.4100000 6.383000  35.70000
## 58   0.014320 100.00000  1.320000 0.00000000 0.5423912 6.816000  60.98734
## 59   0.154450  25.00000  5.130000 0.06150046 0.4530000 6.313107  66.62441
## 60   0.103280  12.30892 10.949567 0.00000000 0.4530000 6.292268  67.28164
## 61   0.149320  13.32498  5.130000 0.00000000 0.4530000 5.741000  66.20000
## 62   0.171710  25.00000  5.130000 0.00000000 0.4530000 5.966000  68.14253
## 63   0.110270  12.25260  5.130000 0.00000000 0.4530000 6.312605  66.39536
## 64   0.126500  25.00000 10.880346 0.06180999 0.4530000 6.762000  43.40000
## 65   0.019510  19.42500  1.380000 0.00000000 0.4161000 7.104000  59.50000
## 66   0.035840  13.95526 10.497354 0.00000000 0.3980000 6.290000  17.80000
## 67   0.043790  80.00000 10.544579 0.00000000 0.3980000 6.309820  65.65832
## 68   0.057890  12.50000  6.070000 0.00000000 0.4090000 5.878000  21.40000
## 69   0.135540  12.50000  6.070000 0.06104452 0.4090000 6.295370  36.80000
## 70   0.128160  12.50000  6.070000 0.00000000 0.5532671 6.310199  66.53199
## 71   0.088260   0.00000 10.810000 0.00000000 0.5556501 6.417000   6.60000
## 72   0.158760   0.00000 10.810000 0.00000000 0.5535663 5.961000  17.50000
## 73   3.430822   0.00000 10.810000 0.06183779 0.4130000 6.065000   7.80000
## 74   0.195390  12.37413 10.810000 0.06300185 0.4130000 6.287448   6.20000
## 75   0.078960   0.00000 12.830000 0.00000000 0.4370000 6.273000  65.69167
## 76   0.095120   0.00000 12.830000 0.00000000 0.4370000 6.286000  45.00000
## 77   3.538665   0.00000 12.830000 0.00000000 0.4370000 6.279000  68.09809
## 78   3.537513   0.00000 10.918977 0.00000000 0.5570788 6.140000  67.27555
## 79   0.056460  11.59180 12.830000 0.06093854 0.5529787 6.298136  53.70000
## 80   0.083870  11.90737 12.830000 0.00000000 0.4370000 5.874000  36.60000
## 81   0.041130  13.86519  4.860000 0.00000000 0.4260000 6.727000  33.50000
## 82   3.495962  11.71505 10.983097 0.06259668 0.5572049 6.310983  67.21005
## 83   0.036590  12.34604  4.860000 0.00000000 0.4260000 6.302000  32.20000
```

```
## 84   0.035510  12.60245  4.860000 0.00000000 0.4260000 6.167000  46.70000
## 85   0.050590   0.00000  4.490000 0.00000000 0.5546008 6.389000  67.18839
## 86   0.057350   0.00000  4.490000 0.00000000 0.4490000 6.314653  56.10000
## 87   0.051880  11.96063 10.896708 0.00000000 0.4490000 6.309083  66.56963
## 88   3.569721  11.57176  4.490000 0.00000000 0.5566531 6.121000  56.80000
## 89   3.342647  12.34256  3.410000 0.00000000 0.4890000 7.007000  86.30000
## 90   0.053020   0.00000  3.410000 0.05995218 0.5465598 7.079000  63.10000
## 91   0.046840  11.58999 10.895370 0.00000000 0.5567638 6.318906  66.10000
## 92   0.039320   0.00000 10.725239 0.00000000 0.4890000 6.405000  68.02595
## 93   0.042030  28.00000 15.040000 0.00000000 0.4640000 6.309012  53.60000
## 94   3.526453  28.00000 15.040000 0.00000000 0.4640000 6.211000  65.31304
## 95   0.042940  28.00000 15.040000 0.00000000 0.4640000 6.249000  66.86204
## 96   0.122040   0.00000  2.890000 0.00000000 0.5562650 6.318458  57.80000
## 97   0.115040   0.00000  2.890000 0.00000000 0.4450000 6.163000  69.60000
## 98   0.120830  11.50277 10.957449 0.00000000 0.5543965 8.069000  76.00000
## 99   0.081870   0.00000  2.890000 0.05864546 0.4450000 6.304450  36.90000
## 100  0.068600  13.34925 10.528304 0.05854942 0.4450000 7.416000  62.50000
## 101  0.148660  11.51737  8.560000 0.00000000 0.5551591 6.727000  79.90000
## 102  0.114320   0.00000 10.830985 0.00000000 0.5200000 6.781000  71.30000
## 103  3.522143  11.49060  8.560000 0.00000000 0.5200000 6.307270  68.32878
## 104  0.211610  11.53393 10.933367 0.00000000 0.5200000 6.137000  69.02684
## 105  3.438901  11.62706  8.560000 0.00000000 0.5580957 6.310675  90.00000
## 106  3.393164   0.00000 10.895174 0.00000000 0.5200000 5.851000  96.70000
## 107  0.171200   0.00000  8.560000 0.00000000 0.5553540 6.290051  68.79229
## 108  3.505369  11.61635  8.560000 0.00000000 0.5200000 6.298904  85.20000
## 109  0.128020   0.00000  8.560000 0.00000000 0.5200000 6.474000  97.10000
## 110  0.263630   0.00000  8.560000 0.00000000 0.5574482 6.289292  68.46144
## 111  0.107930   0.00000  8.560000 0.00000000 0.5200000 6.195000  68.08782
## 112  3.536473   0.00000 10.010000 0.00000000 0.5557264 6.715000  81.60000
## 113  3.541470   0.00000 10.010000 0.00000000 0.5470000 5.913000  68.83301
## 114  0.222120   0.00000 10.919931 0.00000000 0.5470000 6.092000  95.40000
## 115  0.142310  11.63503 10.010000 0.00000000 0.5581297 6.254000  84.20000
## 116  0.171340  11.63279 10.010000 0.00000000 0.5565607 5.928000  88.20000
## 117  0.131580   0.00000 10.910901 0.00000000 0.5470000 6.176000  72.50000
## 118  3.506175  11.25768 10.010000 0.06029287 0.5470000 6.021000  82.60000
## 119  0.130580   0.00000 10.695352 0.00000000 0.5592513 5.872000  73.10000
## 120  0.144760  11.61763 10.010000 0.00000000 0.5562219 6.329056  69.16387
## 121  0.068990  10.88208 25.650000 0.00000000 0.5810000 5.870000  68.59670
## 122  0.071650   0.00000 11.177347 0.00000000 0.5810000 6.004000  84.10000
## 123  0.092990  11.39596 25.650000 0.08960637 0.5810000 5.961000  92.90000
## 124  0.150380  11.52100 11.399317 0.00000000 0.5810000 5.856000  97.00000
## 125  0.098490   0.00000 25.650000 0.05989906 0.5810000 6.290074  69.27518
## 126  3.628440  13.22220 10.981311 0.06084918 0.5810000 5.986000  88.40000
## 127  0.387350   0.00000 25.650000 0.06457875 0.5810000 5.613000  68.87072
## 128  0.259150  11.50411 21.890000 0.00000000 0.6240000 5.693000  96.00000
## 129  0.325430   0.00000 11.674137 0.07454049 0.6240000 6.431000  98.80000
## 130  0.881250   0.00000 21.890000 0.00000000 0.6240000 6.266425  69.07885
## 131  0.340060   0.00000 21.890000 0.00000000 0.6240000 6.303949  98.90000
## 132  1.192940   0.00000 21.890000 0.06481813 0.5673280 6.326000  68.35679
## 133  3.419062  11.62074 21.890000 0.00000000 0.5653841 6.272281  97.90000
## 134  0.329820   0.00000 11.320369 0.00000000 0.6240000 6.307416  69.04672
## 135  0.976170  11.63076 21.890000 0.00000000 0.6240000 5.757000  98.40000
## 136  3.310955   0.00000 11.313194 0.06103288 0.6240000 6.315221  98.20000
## 137  0.322640  11.51354 11.306999 0.00000000 0.5606263 5.942000  93.50000
```

```
## 138  0.352330   0.00000 21.890000 0.06213380 0.5686019 6.454000  69.24205
## 139  3.261023  11.54862 21.890000 0.00000000 0.6240000 5.857000  98.20000
## 140  0.544520   0.00000 11.945668 0.00000000 0.6240000 6.151000  97.90000
## 141  0.290900   0.00000 21.890000 0.00000000 0.5629491 6.174000  93.60000
## 142  1.628640   0.00000 21.890000 0.00000000 0.5673896 5.019000  69.16854
## 143  3.321050   0.00000 11.244842 0.07595994 0.8710000 5.403000 100.00000
## 144  3.547254   0.00000 19.580000 0.00000000 0.8710000 6.219474 100.00000
## 145  2.779740  11.39137 19.580000 0.00000000 0.8710000 4.903000  97.80000
## 146  3.657726   0.00000 19.580000 0.07143695 0.8710000 6.130000 100.00000
## 147  2.155050  10.99777 19.580000 0.00000000 0.8710000 5.628000 100.00000
## 148  2.368620   0.00000 11.505394 0.00000000 0.8710000 4.926000  70.15778
## 149  2.330990   0.00000 19.580000 0.00000000 0.8710000 6.166489  93.80000
## 150  2.733970  11.63021 19.580000 0.05538516 0.8710000 5.597000  94.90000
## 151  1.656600  11.91641 19.580000 0.06346737 0.8710000 6.122000  68.40266
## 152  3.413719  11.61054 11.480661 0.08445262 0.8710000 5.404000  69.23038
## 153  3.394441  11.39609 19.580000 1.00000000 0.5653076 6.194176  88.00000
## 154  2.149180  11.63346 19.580000 0.00000000 0.8710000 5.709000  70.11591
## 155  3.517234  11.29156 11.690630 1.00000000 0.5758660 6.129000  96.00000
## 156  3.916640   0.00000 19.580000 1.00000000 0.5652896 6.152000  82.60000
## 157  2.446680   0.00000 19.580000 0.00000000 0.8710000 5.272000  94.00000
## 158  3.436495  11.64113 11.492055 0.00000000 0.5628968 6.943000  97.40000
## 159  1.342840   0.00000 19.580000 0.05848377 0.5656554 6.066000 100.00000
## 160  1.425020   0.00000 19.580000 0.00000000 0.8710000 6.272041 100.00000
## 161  1.273460   0.00000 10.959370 0.05970154 0.6050000 6.250000  69.37546
## 162  1.463360  11.83541 10.900820 0.00000000 0.6050000 7.489000  90.80000
## 163  3.510173   0.00000 19.580000 1.00000000 0.6050000 7.802000  98.20000
## 164  1.519020   0.00000 19.580000 1.00000000 0.5658867 8.375000  93.90000
## 165  2.242360  11.55788 11.192100 0.06031748 0.6050000 5.854000  91.80000
## 166  2.924000   0.00000 19.580000 0.00000000 0.6050000 6.101000  93.00000
## 167  3.272537   0.00000 19.580000 0.00000000 0.6050000 7.929000  96.20000
## 168  3.376942   0.00000 19.580000 0.00000000 0.6050000 6.296661  69.24899
## 169  2.300400   0.00000 11.329450 0.00000000 0.6050000 6.277767  96.10000
## 170  2.449530   0.00000 19.580000 0.00000000 0.6050000 6.288820  95.20000
## 171  1.207420  11.89866 19.580000 0.00000000 0.6050000 6.284877  69.00229
## 172  2.313900   0.00000 19.580000 0.00000000 0.5684456 6.270631  69.84089
## 173  0.139140  11.55862  4.050000 0.00000000 0.5571104 5.572000  88.50000
## 174  0.091780  11.71855  4.050000 0.00000000 0.5558562 6.416000  84.10000
## 175  3.484654  11.52948  4.050000 0.00000000 0.5100000 5.859000  68.70000
## 176  0.066640   0.00000  4.050000 0.00000000 0.5531129 6.546000  33.10000
## 177  3.532914  12.22672  4.050000 0.00000000 0.5556703 6.020000  47.20000
## 178  0.054250  12.15046 11.005442 0.06221800 0.5100000 6.325687  73.40000
## 179  0.066420   0.00000 10.747604 0.00000000 0.5533420 6.860000  68.24889
## 180  0.057800  11.74463  2.460000 0.06714747 0.4880000 6.980000  58.40000
## 181  3.486346   0.00000  2.460000 0.00000000 0.4880000 7.765000  68.31103
## 182  0.068880   0.00000 10.812112 0.00000000 0.4880000 6.144000  62.20000
## 183  0.091030   0.00000  2.460000 0.00000000 0.4880000 7.155000  92.20000
## 184  3.454053   0.00000  2.460000 0.00000000 0.4880000 6.563000  67.44351
## 185  3.428841   0.00000  2.460000 0.00000000 0.5524963 5.604000  89.80000
## 186  3.517419   0.00000  2.460000 0.06814820 0.4880000 6.153000  68.80000
## 187  0.056020   0.00000  2.460000 0.09181103 0.4880000 7.831000  53.60000
## 188  0.078750  11.97083  3.440000 0.06023759 0.5545118 6.335685  41.10000
## 189  0.125790  45.00000  3.440000 0.00000000 0.5510983 6.341109  66.40309
## 190  3.492416  13.05472  3.440000 0.00000000 0.4370000 7.185000  65.56356
## 191  0.090680  45.00000  3.440000 0.06024773 0.5504784 6.330080  21.50000
```

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## 192  0.069110  45.00000  3.440000 0.06404079 0.4370000 6.739000  30.80000
## 193  0.086640  45.00000 10.700152 0.09514706 0.4370000 7.178000  26.30000
## 194  0.021870  60.00000  2.930000 0.00000000 0.4010000 6.800000   9.90000
## 195  0.014390  60.00000  2.930000 0.00000000 0.5416364 6.604000  18.80000
## 196  0.013810  80.00000 10.147825 0.00000000 0.4220000 7.875000  32.00000
## 197  0.040110  20.16264  1.520000 0.00000000 0.5533213 7.287000  66.04950
## 198  3.404474  12.11323 10.734305 0.00000000 0.5547569 7.107000  36.60000
## 199  0.037680  80.00000  1.520000 0.08120903 0.4040000 7.274000  38.30000
## 200  0.031500  95.00000  1.470000 0.00000000 0.4030000 6.975000  15.30000
## 201  0.017780  95.00000  1.470000 0.00000000 0.4030000 6.440937  13.90000
## 202  3.480748  82.50000 10.611340 0.00000000 0.5505742 6.331021  38.40000
## 203  0.021770  16.25907  2.030000 0.07653917 0.4150000 7.610000  15.70000
## 204  0.035100  95.00000  2.680000 0.00000000 0.4161000 7.853000  33.20000
## 205  0.020090  19.03854  2.680000 0.09200414 0.4161000 8.034000  31.90000
## 206  3.511867   0.00000 10.590000 0.00000000 0.4890000 5.891000  66.73368
## 207  0.229690   0.00000 10.590000 0.00000000 0.4890000 6.326000  52.50000
## 208  0.251990  11.49791 10.590000 0.00000000 0.5582129 5.783000  72.70000
## 209  0.135870   0.00000 10.932197 0.06234704 0.5579152 6.316199  59.10000
## 210  0.435710   0.00000 10.590000 1.00000000 0.4890000 5.344000 100.00000
## 211  0.174460  11.69163 10.590000 1.00000000 0.4890000 5.960000  92.10000
## 212  0.375780   0.00000 10.966996 1.00000000 0.4890000 5.404000  88.60000
## 213  0.217190   0.00000 11.075482 1.00000000 0.5565762 5.807000  53.80000
## 214  3.460704   0.00000 10.590000 0.00000000 0.5567129 6.326317  32.30000
## 215  0.289550   0.00000 10.590000 0.00000000 0.5567900 5.412000  70.35385
## 216  0.198020  11.29365 10.590000 0.00000000 0.4890000 6.182000  42.40000
## 217  3.574163   0.00000 13.890000 1.00000000 0.5557310 5.888000  56.00000
## 218  3.536842   0.00000 10.860683 0.00000000 0.5500000 6.355656  85.10000
## 219  0.110690  11.39728 11.157118 1.00000000 0.5500000 5.951000  93.80000
## 220  3.449525   0.00000 13.890000 0.06936597 0.5586016 6.298875  92.40000
## 221  3.525817  11.65630  6.200000 0.06874659 0.5070000 6.951000  88.50000
## 222  0.407710  11.26781  6.200000 0.07858754 0.5070000 6.164000  91.30000
## 223  0.623560   0.00000  6.200000 1.00000000 0.5070000 6.879000  77.70000
## 224  3.480340   0.00000 10.577214 0.00000000 0.5070000 6.618000  68.58049
## 225  0.315330   0.00000 10.755498 0.00000000 0.5561306 8.266000  78.30000
## 226  0.526930   0.00000  6.200000 0.00000000 0.5566754 8.725000  83.00000
## 227  3.476289  11.80549  6.200000 0.00000000 0.5040000 8.040000  86.50000
## 228  0.412380   0.00000  6.200000 0.00000000 0.5040000 7.163000  79.90000
## 229  0.298190   0.00000  6.200000 0.00000000 0.5040000 6.368311  66.99545
## 230  0.441780   0.00000  6.200000 0.00000000 0.5040000 6.333431  21.40000
## 231  0.537000   0.00000  6.200000 0.00000000 0.5040000 6.310627  68.10000
## 232  0.462960   0.00000  6.200000 0.00000000 0.5040000 6.348493  67.89361
## 233  3.475779   0.00000  6.200000 0.00000000 0.5551004 8.337000  73.30000
## 234  0.331470   0.00000  6.200000 0.06386850 0.5070000 8.247000  70.40000
## 235  0.447910   0.00000  6.200000 0.06709952 0.5070000 6.726000  66.50000
## 236  3.453817   0.00000 11.009446 0.00000000 0.5566295 6.305865  68.26906
## 237  0.520580   0.00000  6.200000 1.00000000 0.5527791 6.631000  76.50000
## 238  0.511830  12.81091  6.200000 0.00000000 0.5533763 7.358000  71.60000
## 239  0.082440  30.00000 10.711554 0.06566605 0.5479173 6.311394  18.50000
## 240  0.092520  30.00000 10.468870 0.00000000 0.5530102 6.606000  42.20000
## 241  0.113290  30.00000  4.930000 0.00000000 0.5525272 6.897000  67.47577
## 242  3.474544  30.00000 10.665396 0.06232980 0.4280000 6.095000  65.10000
## 243  3.522186  30.00000  4.930000 0.00000000 0.4280000 6.358000  52.90000
## 244  3.482793  12.25736 10.601895 0.06199669 0.5491916 6.337696   7.80000
## 245  0.206080  22.00000  5.860000 0.06260703 0.5459446 5.593000  76.50000
```

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## 246  0.191330  22.00000  5.860000 0.00000000 0.4310000 5.605000  70.20000
## 247  3.237034  22.00000  5.860000 0.06184205 0.5541353 6.108000  34.90000
## 248  0.196570  22.00000  5.860000 0.06296605 0.5492690 6.286803  79.20000
## 249  0.164390  22.00000  5.860000 0.00000000 0.4310000 6.306676  49.10000
## 250  3.372034  12.95858  5.860000 0.00000000 0.4310000 6.342515  17.50000
## 251  0.140300  22.00000 10.194529 0.00000000 0.4310000 6.487000  13.00000
## 252  3.260903  22.00000  5.860000 0.00000000 0.4310000 6.336100   8.90000
## 253  0.082210  22.00000  5.860000 0.07059459 0.5509578 6.353221   6.80000
## 254  3.378509  22.00000  5.860000 0.00000000 0.4310000 6.487443  65.84817
## 255  3.392837  80.00000  3.640000 0.00000000 0.3920000 6.108000  32.00000
## 256  3.435254  80.00000  3.640000 0.00000000 0.3920000 5.876000  19.10000
## 257  0.015380  17.47882  3.750000 0.06977571 0.3940000 6.344571  65.90310
## 258  3.404552  20.00000 10.363830 0.00000000 0.6470000 6.490838  86.90000
## 259  0.663510  20.00000  3.970000 0.00000000 0.6470000 6.353333  68.65771
## 260  3.334873  20.00000  3.970000 0.00000000 0.5612766 6.842000 100.00000
## 261  3.403689  20.00000  3.970000 0.06892081 0.6470000 7.203000  81.80000
## 262  0.534120  20.00000  3.970000 0.00000000 0.5589878 7.520000  89.40000
## 263  3.396014  20.00000 10.058328 0.10388191 0.6470000 8.398000  91.50000
## 264  3.382125  12.82152  3.970000 0.00000000 0.6470000 6.388257  94.50000
## 265  0.550070  20.00000  3.970000 0.00000000 0.5665470 7.206000  91.60000
## 266  0.761620  20.00000  3.970000 0.00000000 0.6470000 5.560000  62.80000
## 267  0.785700  12.77509 10.522430 0.00000000 0.6470000 6.330628  84.60000
## 268  3.461590  12.32769 10.731233 0.00000000 0.5555565 8.297000  67.00000
## 269  0.540500  20.00000  3.970000 0.00000000 0.5562155 7.470000  52.60000
## 270  0.090650  20.00000  6.960000 1.00000000 0.4640000 5.920000  61.50000
## 271  3.538637  20.00000 10.689944 0.00000000 0.4640000 6.312369  42.10000
## 272  0.162110  20.00000 10.917990 0.00000000 0.4640000 6.240000  16.30000
## 273  0.114600  20.00000  6.960000 0.00000000 0.5468125 6.538000  67.05804
## 274  0.221880  20.00000  6.960000 1.00000000 0.4640000 7.691000  51.80000
## 275  0.056440  12.42508 10.572698 1.00000000 0.4470000 6.758000  32.90000
## 276  0.096040  40.00000  6.410000 0.07215751 0.4470000 6.854000  42.80000
## 277  3.375069  40.00000  6.410000 1.00000000 0.4470000 7.267000  49.00000
## 278  0.061270  40.00000  6.410000 1.00000000 0.4470000 6.395173  27.60000
## 279  0.079780  40.00000  6.410000 0.00000000 0.4470000 6.482000  65.64837
## 280  3.524553  13.07163  3.330000 0.05878064 0.4429000 6.812000  32.20000
## 281  0.035780  20.00000  3.330000 0.00000000 0.4429000 7.820000  64.50000
## 282  3.480746  20.00000 10.784518 0.05971913 0.4429000 6.968000  37.20000
## 283  0.061290  20.00000  3.330000 1.00000000 0.5485108 7.645000  66.12124
## 284  0.015010  18.20589 10.329959 1.00000000 0.4010000 7.923000  64.90559
## 285  3.370883  90.00000  2.970000 0.00000000 0.4000000 7.088000  20.80000
## 286  0.010960  55.00000  2.250000 0.00000000 0.3890000 6.453000  31.90000
## 287  0.019650  80.00000  1.760000 0.00000000 0.3850000 6.327913  64.21264
## 288  3.361315  52.50000  5.320000 0.05981818 0.5538559 6.209000  31.30000
## 289  0.045900  16.00113 10.294168 0.00000000 0.4050000 6.315000  65.91946
## 290  3.455419  14.78315  5.320000 0.00000000 0.4050000 6.306290  22.90000
## 291  0.035020  16.30584  4.950000 0.00000000 0.4110000 6.861000  27.90000
## 292  0.078860  80.00000  4.950000 0.00000000 0.4110000 7.148000  27.70000
## 293  0.036150  80.00000  4.950000 0.00000000 0.4110000 6.630000  64.68431
## 294  0.082650   0.00000 13.920000 0.00000000 0.4370000 6.312199  66.96697
## 295  3.430221   0.00000 13.920000 0.00000000 0.5496816 6.292350  42.30000
## 296  3.533448   0.00000 10.673017 0.00000000 0.5500367 6.678000  31.10000
## 297  3.425783   0.00000 13.920000 0.00000000 0.4370000 6.549000  51.00000
## 298  0.141030   0.00000 13.920000 0.07856486 0.4370000 5.790000  68.30612
## 299  3.501172  15.73213  2.240000 0.06386611 0.4000000 6.349004  65.62296
```

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## 300  0.055610  70.00000  2.240000 0.05640506 0.5480887 7.041000  10.00000
## 301  3.380784  70.00000  2.240000 0.00000000 0.4000000 6.871000  47.40000
## 302  0.035370  34.00000  6.090000 0.00000000 0.4330000 6.335487  40.40000
## 303  0.092660  34.00000 10.650244 0.00000000 0.4330000 6.495000  18.40000
## 304  3.456268  14.11878 10.811624 0.06690027 0.4330000 6.982000  17.70000
## 305  0.055150  33.00000  2.180000 0.00000000 0.4720000 6.393043  41.10000
## 306  3.363972  33.00000  2.180000 0.00000000 0.5453665 6.616000  66.48613
## 307  3.311644  33.00000 10.337694 0.00000000 0.4720000 7.420000  66.73457
## 308  0.049320  12.39365 10.200194 0.06127813 0.5525850 6.849000  70.30000
## 309  3.454089   0.00000  9.900000 0.00000000 0.5440000 6.350649  82.50000
## 310  3.426319   0.00000  9.900000 0.06227582 0.5440000 5.972000  76.70000
## 311  2.635480   0.00000  9.900000 0.00000000 0.5593656 4.973000  37.80000
## 312  3.537418   0.00000 10.834194 0.00000000 0.5440000 6.122000  52.80000
## 313  3.478675   0.00000 10.756947 0.00000000 0.5440000 6.023000  68.03901
## 314  0.269380  11.63469  9.900000 0.00000000 0.5568045 6.329865  82.80000
## 315  0.369200   0.00000 10.744756 0.00000000 0.5440000 6.567000  87.30000
## 316  0.253560   0.00000  9.900000 0.00000000 0.5552032 5.705000  68.22739
## 317  3.343261   0.00000  9.900000 0.00000000 0.5571748 6.283485  83.20000
## 318  3.555548   0.00000 10.996279 0.00000000 0.5638575 5.782000  68.49521
## 319  3.429958   0.00000  9.900000 0.00000000 0.5440000 6.382000  67.20000
## 320  0.475470   0.00000  9.900000 0.05925056 0.5440000 6.312483  68.40593
## 321  0.167600   0.00000  7.380000 0.00000000 0.4930000 6.426000  67.27201
## 322  3.220937  10.83197  7.380000 0.00000000 0.4930000 6.310076  54.30000
## 323  3.432714   0.00000  7.380000 0.00000000 0.4930000 6.041000  67.45254
## 324  0.283920  11.69823  7.380000 0.06125513 0.5567822 5.708000  74.30000
## 325  0.341090   0.00000  7.380000 0.00000000 0.4930000 6.415000  66.62937
## 326  0.191860   0.00000  7.380000 0.00000000 0.4930000 6.330381  14.70000
## 327  0.303470   0.00000  7.380000 0.05878713 0.4930000 6.303481  28.90000
## 328  3.466804   0.00000  7.380000 0.00000000 0.5538293 6.285473  43.70000
## 329  3.423800  12.62602  3.240000 0.00000000 0.4600000 5.868000  25.80000
## 330  0.067240   0.00000  3.240000 0.00000000 0.5508758 6.333000  66.68583
## 331  0.045440   0.00000  3.240000 0.00000000 0.4600000 6.144000  32.20000
## 332  3.384329  14.10028  6.060000 0.00000000 0.5525987 5.706000  28.40000
## 333  0.034660  35.00000  6.060000 0.06312563 0.4379000 6.031000  23.30000
## 334  0.050830   0.00000  5.190000 0.00000000 0.5150000 6.316000  38.10000
## 335  3.490719   0.00000  5.190000 0.06117858 0.5150000 6.310000  38.50000
## 336  0.039610   0.00000 10.948416 0.00000000 0.5150000 6.037000  34.50000
## 337  0.034270   0.00000  5.190000 0.00000000 0.5488923 5.869000  66.57016
## 338  0.030410  11.99388 10.895309 0.00000000 0.5150000 5.895000  59.60000
## 339  0.033060   0.00000 10.861304 0.00000000 0.5150000 6.311276  37.30000
## 340  0.054970   0.00000  5.190000 0.00000000 0.5150000 5.985000  45.40000
## 341  0.061510   0.00000 10.929180 0.00000000 0.5150000 6.301553  66.79010
## 342  0.013010  35.00000  9.898925 0.00000000 0.4420000 6.403173  49.30000
## 343  0.024980   0.00000 10.202631 0.00000000 0.5180000 6.540000  59.70000
## 344  3.477205  11.74720 10.595656 0.06199331 0.4840000 6.296036  56.40000
## 345  0.030490  55.00000  3.780000 0.00000000 0.4840000 6.874000  28.10000
## 346  3.509071   0.00000  4.390000 0.05910766 0.4420000 6.014000  67.60473
## 347  3.438236   0.00000  4.390000 0.07262619 0.4420000 5.898000  65.81738
## 348  0.018700  85.00000  4.150000 0.06362321 0.4290000 6.335687  65.78348
## 349  0.015010  80.00000  2.010000 0.00000000 0.4350000 6.635000  29.70000
## 350  0.028990  40.00000  1.250000 0.00000000 0.4290000 6.939000  66.20431
## 351  0.062110  20.51503  1.250000 0.06022484 0.4290000 6.325694  44.40000
## 352  0.079500  15.71533  1.690000 0.00000000 0.4110000 6.325279  35.90000
## 353  0.072440  60.00000  1.690000 0.06156341 0.4110000 5.884000  18.50000
```

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## 354  0.017090  21.46680  2.020000 0.06285709 0.5493958 6.728000  66.21938
## 355  0.043010  80.00000 10.028673 0.00000000 0.4130000 5.663000  67.09335
## 356  3.248486  80.00000  1.910000 0.00000000 0.4130000 5.936000  19.50000
## 357  8.982960   0.00000 18.100000 0.06125938 0.7700000 6.212000  97.40000
## 358  3.778359  11.87526 11.252667 1.00000000 0.7700000 6.395000  91.00000
## 359  3.812275   0.00000 18.100000 0.07111949 0.7700000 6.298441  68.94834
## 360  4.261310  11.71368 18.100000 0.00000000 0.7700000 6.112000  68.55409
## 361  4.313852  11.91322 11.254813 0.00000000 0.7700000 6.398000  69.28807
## 362  3.836840   0.00000 18.100000 0.00000000 0.7700000 6.251000  91.10000
## 363  3.678220   0.00000 18.100000 0.00000000 0.7700000 5.362000  96.20000
## 364  4.222390  11.48667 11.110911 0.05979454 0.7700000 6.300225  89.00000
## 365  3.474280  11.48468 18.100000 0.08145851 0.5608653 8.780000  82.90000
## 366  4.555870  11.50391 18.100000 0.07036049 0.7180000 3.561000  87.90000
## 367  3.696950   0.00000 18.100000 0.00000000 0.5632172 4.963000  91.40000
## 368 13.522200   0.00000 18.100000 0.00000000 0.6310000 3.863000 100.00000
## 369  4.898220  11.52095 18.100000 0.14703330 0.5670797 4.970000 100.00000
## 370  5.669980   0.00000 11.060629 0.07877349 0.5597129 6.683000  69.31448
## 371  6.538760   0.00000 11.088266 1.00000000 0.6310000 6.306034  68.19019
## 372  4.763549   0.00000 11.044802 0.00000000 0.5614803 6.216000 100.00000
## 373  8.267250   0.00000 11.001171 1.00000000 0.5632768 5.875000  89.60000
## 374 11.108100   0.00000 18.100000 0.06234243 0.6680000 6.222999  69.35883
## 375 18.498200   0.00000 11.109977 0.18625144 0.5702342 4.138000  69.34139
## 376 19.609100  11.78541 18.100000 0.00000000 0.6710000 7.313000  97.90000
## 377 15.288000   0.00000 18.100000 0.06213963 0.6710000 6.649000  69.98289
## 378  9.823490   0.00000 11.093819 0.08178523 0.6710000 6.794000  98.80000
## 379  4.258340   0.00000 18.100000 0.00000000 0.6710000 6.380000  96.20000
## 380 17.866700   0.00000 18.100000 0.00000000 0.6710000 6.223000  70.39926
## 381  4.337724   0.00000 18.100000 0.00000000 0.6710000 6.288312  69.74798
## 382  4.260390   0.00000 18.100000 0.00000000 0.6710000 6.545000  68.76078
## 383  9.187020  11.46466 11.031158 0.00000000 0.7000000 5.536000 100.00000
## 384  7.992480   0.00000 18.100000 0.00000000 0.7000000 5.520000 100.00000
## 385  7.054927   0.00000 11.001962 0.00000000 0.7000000 6.301233  91.20000
## 386 16.811800   0.00000 11.089319 0.00000000 0.7000000 5.277000  98.10000
## 387 24.393800   0.00000 11.076363 0.00000000 0.5618416 6.277884  68.41074
## 388 22.597100   0.00000 18.100000 0.00000000 0.7000000 5.000000  89.50000
## 389  6.250940  11.62536 18.100000 0.00000000 0.7000000 4.880000 100.00000
## 390  8.151740   0.00000 11.017860 0.00000000 0.7000000 6.306443  98.90000
## 391  6.962150  11.65985 18.100000 0.00000000 0.7000000 5.713000  97.00000
## 392  5.293050   0.00000 18.100000 0.00000000 0.7000000 6.280638  68.62864
## 393 11.577900  11.40636 18.100000 0.06161214 0.7000000 5.036000  97.00000
## 394  3.826912   0.00000 10.976469 0.06053419 0.6930000 6.289838  68.68268
## 395 13.359800  11.48232 18.100000 0.06605039 0.6930000 5.887000  69.14419
## 396  8.716750   0.00000 11.101225 0.00000000 0.5618487 6.471000  69.73317
## 397  5.872050   0.00000 11.159366 0.00000000 0.6930000 6.293341  68.96707
## 398  6.962545   0.00000 18.100000 0.00000000 0.6930000 5.747000  98.90000
## 399 38.351800   0.00000 11.125516 0.00000000 0.5611283 5.453000  68.19499
## 400  9.916550  11.57471 18.100000 0.06245419 0.6930000 6.239138  70.24940
## 401 25.046100  11.71084 18.100000 0.00000000 0.5642834 5.987000 100.00000
## 402 14.236200   0.00000 18.100000 0.00000000 0.5602019 6.343000 100.00000
## 403  9.595710   0.00000 18.100000 0.00000000 0.6930000 6.404000 100.00000
## 404 24.801700   0.00000 18.100000 0.06311488 0.5639819 5.349000  68.77571
## 405 41.529200  11.57739 18.100000 0.00000000 0.5669747 6.268280  69.05169
## 406  8.683703   0.00000 11.076559 0.00000000 0.6930000 6.270463 100.00000
## 407 20.716200   0.00000 10.989459 0.11676184 0.6590000 6.276474 100.00000
```

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## 408 11.951100  11.41669 18.100000 0.00000000 0.6590000 6.300462 100.00000
## 409  5.138780   0.00000 18.100000 0.00000000 0.5970000 6.311569  97.90000
## 410 14.438300   0.00000 18.100000 0.00000000 0.5970000 6.852000 100.00000
## 411 51.135800   0.00000 18.100000 0.00000000 0.5970000 5.757000 100.00000
## 412 14.050700   0.00000 11.171417 0.00000000 0.5622940 6.657000  70.10229
## 413  4.895675  11.07428 18.100000 0.00000000 0.5662002 6.206750 100.00000
## 414 28.655800   0.00000 18.100000 0.00000000 0.5970000 5.155000 100.00000
## 415  4.603642  11.20187 11.361773 0.00000000 0.5720716 4.519000  69.13949
## 416 18.084600   0.00000 18.100000 0.06038039 0.6790000 6.295533  69.24631
## 417 10.834200  11.36600 11.172380 0.05932731 0.6790000 6.293249  90.80000
## 418 25.940600   0.00000 11.148227 0.00000000 0.6790000 5.304000  89.10000
## 419 73.534100  11.26731 18.100000 0.00000000 0.6790000 5.957000 100.00000
## 420 11.812300   0.00000 11.214011 0.00000000 0.7180000 6.824000  70.02905
## 421  3.763679   0.00000 18.100000 0.00000000 0.7180000 6.283967  68.69226
## 422  4.481647   0.00000 18.100000 0.00000000 0.7180000 6.006000  68.99490
## 423 12.048200   0.00000 18.100000 0.05999734 0.6140000 6.300726  69.29346
## 424  7.050420  11.79494 11.275602 0.00000000 0.6140000 6.103000  85.10000
## 425  8.792120   0.00000 18.100000 0.00000000 0.5840000 5.565000  70.60000
## 426 15.860300   0.00000 18.100000 0.00000000 0.6790000 5.896000  95.40000
## 427  6.271318   0.00000 10.992183 0.00000000 0.5840000 6.303696  59.70000
## 428 37.661900   0.00000 18.100000 0.00000000 0.6790000 6.202000  78.70000
## 429  7.367110   0.00000 18.100000 0.00000000 0.6790000 6.193000  78.10000
## 430  9.338890  11.50547 18.100000 0.00000000 0.6790000 6.380000  71.08511
## 431  4.175535  11.52783 18.100000 0.00000000 0.5840000 6.348000  86.10000
## 432  3.923348  11.68234 11.233119 0.00000000 0.5840000 6.833000  94.30000
## 433  6.444050  11.71748 18.100000 0.00000000 0.5840000 6.425000  74.80000
## 434  4.059658   0.00000 18.100000 0.06222873 0.5620286 6.436000  68.99131
## 435 13.913400  11.68519 18.100000 0.00000000 0.7130000 6.304812  95.00000
## 436 11.160400   0.00000 18.100000 0.00000000 0.5643131 6.629000  94.60000
## 437 14.420800  11.43282 18.100000 0.00000000 0.7400000 6.461000  93.30000
## 438 15.177200   0.00000 18.100000 0.00000000 0.5700573 6.152000  69.53821
## 439  4.710958   0.00000 18.100000 0.00000000 0.5632985 6.211817  87.90000
## 440  9.390630   0.00000 11.125251 0.00000000 0.7400000 6.296490  93.90000
## 441 22.051100  11.59107 18.100000 0.07496773 0.7400000 5.818000  69.00537
## 442  4.330439   0.00000 18.100000 0.06398490 0.7400000 6.406000  97.20000
## 443  4.195580   0.00000 18.100000 0.00000000 0.5602970 6.313161  68.99460
## 444  9.966540   0.00000 18.100000 0.00000000 0.5614969 6.485000 100.00000
## 445 12.802300  11.72248 18.100000 0.00000000 0.7400000 5.854000  68.99884
## 446 10.671800   0.00000 18.100000 0.00000000 0.7400000 6.300358  94.80000
## 447  6.288070   0.00000 11.187839 0.06252498 0.7400000 6.341000  96.40000
## 448  9.924850  11.65696 18.100000 0.00000000 0.7400000 6.251000  96.60000
## 449  4.216734   0.00000 11.067231 0.00000000 0.7130000 6.185000  98.70000
## 450  4.378199   0.00000 11.104224 0.05827707 0.7130000 6.300027  69.12645
## 451  6.717720  11.56145 11.208875 0.00000000 0.7130000 6.283773  69.18215
## 452  5.441140   0.00000 11.033778 0.00000000 0.5632326 6.655000  98.20000
## 453  5.090170   0.00000 18.100000 0.00000000 0.7130000 6.297000  68.85397
## 454  4.205567   0.00000 18.100000 0.00000000 0.7130000 7.393000  99.30000
## 455  9.513630   0.00000 10.960904 0.00000000 0.5624727 6.728000  94.10000
## 456  4.752370  11.80598 18.100000 0.00000000 0.7130000 6.299118  86.50000
## 457  4.668830  11.54043 18.100000 0.00000000 0.7130000 6.268575  87.90000
## 458  4.491570  11.45449 18.100000 0.00000000 0.7130000 5.936000  80.30000
## 459  7.752230   0.00000 18.100000 0.00000000 0.7130000 6.264099  69.48382
## 460  6.801170   0.00000 18.100000 0.00000000 0.7130000 6.081000  84.40000
## 461  4.812130   0.00000 11.230915 0.00000000 0.7130000 6.701000  90.00000
```

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## 462  3.693110  11.73988 18.100000 0.06139590 0.7130000 6.297331  88.40000
## 463  6.654920  11.34966 18.100000 0.00000000 0.5603785 6.317000  83.00000
## 464  5.821150   0.00000 18.100000 0.06274576 0.5621857 6.513000  89.90000
## 465  7.839320   0.00000 18.100000 0.06109004 0.5615113 6.301896  65.40000
## 466  3.163600  11.72839 11.474377 0.06895559 0.6550000 6.304669  68.98594
## 467  3.774980   0.00000 18.100000 0.06332658 0.5664984 5.952000  84.70000
## 468  4.100736   0.00000 18.100000 0.06282151 0.5840000 6.003000  68.52239
## 469 15.575700   0.00000 18.100000 0.06396458 0.5800000 5.926000  69.23791
## 470 13.075100  12.16072 18.100000 0.00000000 0.5800000 6.290964  56.70000
## 471  4.348790   0.00000 18.100000 0.06303651 0.5622304 6.167000  84.00000
## 472  4.038410   0.00000 11.395024 0.06259908 0.5629170 6.229000  90.70000
## 473  3.568680   0.00000 18.100000 0.00000000 0.5602308 6.437000  68.56101
## 474  4.646890   0.00000 11.121425 0.06267029 0.6140000 6.980000  67.60000
## 475  8.055790  11.47871 11.388159 0.00000000 0.5840000 5.427000  95.40000
## 476  6.393120   0.00000 18.100000 0.00000000 0.5840000 6.162000  97.40000
## 477  4.871410   0.00000 11.360698 0.00000000 0.5635104 6.310260  93.60000
## 478 15.023400   0.00000 18.100000 0.00000000 0.6140000 6.288967  68.92911
## 479 10.233000  11.26617 18.100000 0.00000000 0.6140000 6.185000  96.70000
## 480 14.333700   0.00000 18.100000 0.06319313 0.6140000 6.302342  88.00000
## 481  5.824010   0.00000 18.100000 0.00000000 0.5320000 6.242000  64.70000
## 482  5.708180   0.00000 18.100000 0.06346471 0.5320000 6.750000  74.90000
## 483  3.722922   0.00000 18.100000 0.00000000 0.5320000 7.061000  77.00000
## 484  3.811085   0.00000 18.100000 0.07296892 0.5527606 5.762000  40.30000
## 485  4.198207   0.00000 18.100000 0.06302351 0.5830000 5.871000  41.90000
## 486  3.893563   0.00000 18.100000 0.06341043 0.5587893 6.286332  51.90000
## 487  5.691750   0.00000 18.100000 0.00000000 0.5830000 6.114000  79.80000
## 488  3.789028   0.00000 18.100000 0.06372517 0.5830000 5.905000  68.64987
## 489  0.150860  11.58084 27.740000 0.06328204 0.5647849 6.264688  92.70000
## 490  3.314051   0.00000 27.740000 0.06121312 0.6090000 5.414000  70.44999
## 491  0.207460   0.00000 27.740000 0.00000000 0.6090000 5.093000  98.00000
## 492  0.105740   0.00000 11.677905 0.06705071 0.6090000 5.983000  98.80000
## 493  0.111320  11.45132 27.740000 0.06183077 0.5636760 5.983000  83.50000
## 494  0.173310   0.00000 10.868533 0.00000000 0.5850000 5.707000  54.00000
## 495  0.279570  11.38829 10.952141 0.00000000 0.5850000 5.926000  68.82413
## 496  0.178990  12.13152  9.690000 0.00000000 0.5575181 5.670000  28.80000
## 497  0.289600  11.75475 11.077131 0.00000000 0.5850000 6.293884  72.90000
## 498  3.562164   0.00000  9.690000 0.00000000 0.5850000 6.284187  70.60000
## 499  0.239120   0.00000  9.690000 0.00000000 0.5850000 6.019000  65.30000
## 500  0.177830  11.51490  9.690000 0.00000000 0.5850000 5.569000  73.50000
## 501  0.224380  11.63830  9.690000 0.00000000 0.5570525 6.027000  79.70000
## 502  3.363857   0.00000 11.930000 0.00000000 0.5730000 6.593000  69.10000
## 503  0.045270  11.51132 11.930000 0.06306665 0.5730000 6.120000  69.12448
## 504  0.060760  11.61814 11.930000 0.00000000 0.5537448 6.976000  69.71532
## 505  0.109590  11.57920 11.930000 0.00000000 0.5588342 6.794000  89.30000
## 506  0.047410  12.01220 11.930000 0.06260105 0.5628742 6.030000  80.80000
##          dis       rad      tax  ptratio    black    lstat     medv
## 1   4.090000  1.000000 296.0000 15.30000 358.4144  4.98000 23.57125
## 2   3.878363  2.000000 242.0000 18.49298 396.9000  9.14000 21.60000
## 3   4.967100  2.000000 406.1845 17.80000 392.8300  4.03000 34.70000
## 4   6.062200  3.000000 408.9284 18.39777 394.6300 12.52429 22.81198
## 5   6.062200  3.000000 222.0000 18.36021 396.9000 12.64150 36.20000
## 6   6.062200  3.000000 222.0000 18.44864 394.1200  5.21000 22.78667
## 7   3.883490  5.000000 311.0000 15.20000 395.6000 12.43000 22.41099
## 8   3.898133  9.499319 413.6771 15.20000 396.9000 19.15000 27.10000
```

```
## 9    6.082100  5.000000 311.0000 15.20000 386.6300 29.93000 22.25121
## 10   6.592100  9.471692 411.0494 15.20000 386.7100 12.91636 18.90000
## 11   6.346700  5.000000 405.0688 15.20000 392.5200 12.95849 15.00000
## 12   6.226700  9.485420 311.0000 18.37042 396.9000 13.27000 22.24876
## 13   5.450900  9.467689 408.5532 15.20000 357.6554 15.71000 22.44682
## 14   4.707500  9.325722 307.0000 21.00000 396.9000  8.26000 20.40000
## 15   4.461900  4.000000 307.0000 21.00000 380.0200 12.83155 18.20000
## 16   4.498600  4.000000 307.0000 18.46415 395.6200  8.47000 22.29353
## 17   4.498600  9.118786 307.0000 18.50646 386.8500  6.58000 22.48169
## 18   3.810248  9.560661 410.6715 18.50754 359.3294 14.67000 17.50000
## 19   3.796500  4.000000 409.1204 21.00000 358.1666 11.69000 20.20000
## 20   3.864356  9.514772 307.0000 18.49182 390.9500 11.28000 18.20000
## 21   3.797900  9.164816 307.0000 21.00000 376.5700 21.02000 21.95490
## 22   4.012300  4.000000 307.0000 21.00000 392.5300 12.59335 22.25697
## 23   3.976900  4.000000 307.0000 18.42856 396.9000 18.72000 15.20000
## 24   4.095200  4.000000 406.7458 18.41709 394.5400 19.88000 22.27765
## 25   4.399600  4.000000 307.0000 21.00000 358.7190 12.91352 22.38863
## 26   4.454600  4.000000 307.0000 21.00000 303.4200 16.51000 13.90000
## 27   4.682000  4.000000 307.0000 21.00000 376.8800 14.81000 22.23300
## 28   4.453400  9.231974 307.0000 18.51229 306.3800 13.16045 14.80000
## 29   4.454700  9.274889 307.0000 21.00000 387.9400 12.78680 22.41478
## 30   4.239000  9.208092 307.0000 21.00000 380.2300 11.98000 21.00000
## 31   4.233000  9.421804 307.0000 21.00000 360.1700 12.89314 22.28710
## 32   3.832373  4.000000 307.0000 18.46763 376.7300 13.04000 22.77682
## 33   3.990000  4.000000 307.0000 18.60362 232.6000 27.71000 13.20000
## 34   3.886073  4.000000 307.0000 21.00000 351.4878 18.35000 13.10000
## 35   3.873844  4.000000 307.0000 21.00000 248.3100 20.34000 21.74342
## 36   3.951344  5.000000 408.8971 19.20000 396.9000  9.68000 18.90000
## 37   3.823458  9.397134 411.5673 19.20000 358.3448 11.41000 22.30884
## 38   3.934200  5.000000 410.7693 19.20000 359.1908  8.77000 21.00000
## 39   3.847300  5.000000 409.6346 19.20000 358.4592 10.13000 24.70000
## 40   4.182421  8.932647 252.0000 18.30000 395.6300 12.14081 30.80000
## 41   5.401100  9.105931 252.0000 18.36521 359.1881 12.39488 23.24613
## 42   5.720900  3.000000 406.4943 18.50125 359.1068  4.84000 26.60000
## 43   5.720900  3.000000 233.0000 17.90000 383.3700  5.81000 25.30000
## 44   5.720900  9.376998 233.0000 17.90000 394.4600  7.44000 22.66957
## 45   5.720900  3.000000 233.0000 18.44236 389.3900 12.58931 21.20000
## 46   5.100400  3.000000 233.0000 18.42415 396.9000 10.21000 19.30000
## 47   3.855016  3.000000 406.2787 17.90000 359.2734 14.15000 22.33197
## 48   5.689400  9.459649 407.5084 17.90000 356.7713 18.80000 16.60000
## 49   5.870000  9.411011 233.0000 17.90000 396.9000 13.88184 22.26934
## 50   6.087700  3.000000 233.0000 17.90000 396.9000 16.20000 22.12576
## 51   6.814700  4.000000 243.0000 16.80000 395.5600 13.45000 19.70000
## 52   6.814700  4.000000 243.0000 16.80000 393.9700 12.69141 20.50000
## 53   3.891983  9.354403 243.0000 16.80000 359.6575  5.28000 25.00000
## 54   6.814700  4.000000 406.2958 16.80000 396.9000  8.43000 23.40000
## 55   7.319700  3.000000 469.0000 21.10000 396.9000 14.80000 22.30224
## 56   4.246706  5.000000 226.0000 17.90000 358.5437 12.37140 22.54318
## 57   9.187600  2.000000 405.2887 18.40829 396.9000 12.31492 22.61007
## 58   8.324800  8.670037 404.4760 15.10000 358.9275  3.95000 31.60000
## 59   7.814800  8.000000 284.0000 19.70000 359.0619  6.86000 23.30000
## 60   3.985160  9.380044 284.0000 19.70000 396.9000  9.22000 19.60000
## 61   7.225400  9.213216 284.0000 19.70000 395.1100 12.87934 18.70000
## 62   6.818500  8.000000 284.0000 19.70000 378.0800 12.64059 16.00000
```

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## 63   7.225500  8.000000 407.2117 18.46981 396.9000  6.73000 22.39469
## 64   3.864444  8.000000 284.0000 18.44945 359.2765  9.50000 22.66466
## 65   9.222900  3.000000 216.0000 18.39032 359.0123 12.50724 33.00000
## 66   6.611500  8.652199 337.0000 16.10000 360.9732  4.67000 23.50000
## 67   4.098315  4.000000 407.1324 16.10000 396.9000 10.24000 19.40000
## 68   6.498000  4.000000 345.0000 18.90000 359.5598 12.37058 22.27949
## 69   6.498000  4.000000 345.0000 18.90000 358.7485 12.66089 22.37356
## 70   6.498000  4.000000 406.2895 18.90000 396.9000  8.79000 20.90000
## 71   5.287300  4.000000 305.0000 19.20000 383.7300  6.72000 24.20000
## 72   3.903322  4.000000 407.7854 19.20000 376.9400 12.39365 21.70000
## 73   5.287300  4.000000 305.0000 19.20000 390.9100  5.52000 22.80000
## 74   5.287300  4.000000 305.0000 19.20000 377.1700  7.54000 23.40000
## 75   4.251500  9.340329 398.0000 18.70000 394.9200  6.78000 22.38508
## 76   4.502600  5.000000 405.9873 18.70000 358.3568  8.94000 21.40000
## 77   3.923422  5.000000 398.0000 18.70000 359.4228 12.58261 20.00000
## 78   3.875462  5.000000 398.0000 18.46589 386.9600 10.27000 20.80000
## 79   5.014100  5.000000 398.0000 18.70000 386.4000 12.51853 21.20000
## 80   4.502600  5.000000 405.5947 18.70000 396.0600  9.10000 20.30000
## 81   5.400700  9.005298 406.7596 19.00000 396.9000  5.29000 28.00000
## 82   5.400700  4.000000 406.6613 19.00000 358.5522  7.22000 23.90000
## 83   5.400700  4.000000 281.0000 19.00000 396.9000 12.51858 24.80000
## 84   3.961041  4.000000 408.4409 19.00000 358.5822  7.51000 22.90000
## 85   4.779400  9.435747 409.0669 18.50000 396.9000 12.60595 23.90000
## 86   3.853026  9.371356 247.0000 18.50000 392.3000  6.53000 22.56930
## 87   3.894243  9.463493 408.0418 18.50000 358.7341 12.86000 22.50000
## 88   3.747600  3.000000 247.0000 18.50000 359.4489 12.34676 22.53877
## 89   3.421700  9.228449 270.0000 18.41737 396.9000 12.63935 23.07694
## 90   3.414500  2.000000 408.2895 17.80000 359.2529  5.70000 28.70000
## 91   3.092300  9.231484 270.0000 17.80000 392.1800  8.81000 22.60000
## 92   3.092100  2.000000 270.0000 18.45093 393.5500 12.56628 22.00000
## 93   3.665900  9.312789 270.0000 18.39509 395.0100  8.16000 22.42630
## 94   3.665900  4.000000 270.0000 18.20000 396.3300  6.21000 25.00000
## 95   3.615000  4.000000 270.0000 18.20000 358.4001 12.23224 22.39817
## 96   3.822390  2.000000 276.0000 18.00000 357.9800  6.65000 22.57657
## 97   3.495200  2.000000 276.0000 18.00000 391.8300 11.34000 22.32869
## 98   3.495200  2.000000 404.1916 18.36443 396.9000 12.38067 24.36222
## 99   3.847039  9.120199 276.0000 18.42826 393.5300 12.57020 22.44753
## 100  3.495200  2.000000 408.1475 18.00000 396.9000  6.19000 23.61807
## 101  3.834135  5.000000 384.0000 20.90000 394.7600  9.42000 27.50000
## 102  2.856100  5.000000 410.6086 18.42760 395.5800  7.67000 26.50000
## 103  2.714700  5.000000 384.0000 18.46917  70.8000 10.63000 22.12146
## 104  3.775999  5.000000 408.5415 20.90000 394.4700 13.44000 19.30000
## 105  2.421000  5.000000 384.0000 18.53363 357.8509 12.33000 20.10000
## 106  2.106900  5.000000 384.0000 20.90000 357.8733 16.47000 19.50000
## 107  2.211000  5.000000 384.0000 20.90000 395.6700 18.66000 19.50000
## 108  2.122400  5.000000 406.4382 20.90000 387.6900 14.09000 20.40000
## 109  3.866697  9.541482 406.6451 18.58990 395.2400 12.27000 19.80000
## 110  3.784925  9.283750 384.0000 20.90000 391.2300 15.55000 22.31818
## 111  2.777800  9.113162 384.0000 20.90000 393.4900 13.00000 21.70000
## 112  2.677500  9.458020 432.0000 17.80000 358.5791 10.16000 22.22247
## 113  3.771428  6.000000 432.0000 18.44370 394.9500 16.21000 18.80000
## 114  3.782397  9.536967 432.0000 17.80000 396.9000 17.09000 18.70000
## 115  2.256500  9.472612 432.0000 18.52633 388.7400 10.45000 18.50000
## 116  3.917641  6.000000 432.0000 17.80000 344.9100 15.76000 18.30000
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## 117  3.808854  6.000000 411.5077 17.80000 393.3000 12.04000 21.20000
## 118  2.747400  6.000000 412.1300 17.80000 394.5100 10.30000 19.20000
## 119  2.477500  6.000000 432.0000 17.80000 338.6300 15.37000 20.40000
## 120  2.759200  6.000000 432.0000 17.80000 391.5000 13.61000 19.30000
## 121  2.257700  2.000000 188.0000 18.59753 356.6294 14.37000 22.00000
## 122  3.848174  8.893907 188.0000 18.51320 377.6700 12.88384 20.30000
## 123  2.086900  2.000000 188.0000 19.10000 356.7660 17.93000 20.50000
## 124  1.944400  9.399045 405.8621 19.10000 355.1008 25.41000 17.30000
## 125  3.776974  2.000000 377.8973 19.10000 379.3800 17.58000 18.80000
## 126  3.888164  2.000000 188.0000 19.10000 385.0200 12.76300 21.40000
## 127  1.757200  2.000000 188.0000 19.10000 353.7659 27.26000 15.70000
## 128  1.788300  4.000000 437.0000 21.20000 392.1100 17.19000 16.20000
## 129  1.812500  4.000000 437.0000 21.20000 360.2380 15.39000 21.89205
## 130  3.752506  4.000000 437.0000 21.20000 396.9000 18.34000 14.30000
## 131  2.118500  9.345883 418.3625 18.47460 395.0400 12.60000 19.20000
## 132  2.271000  9.023331 437.0000 21.20000 396.9000 12.95529 19.60000
## 133  3.784964  4.000000 437.0000 21.20000 355.7591 12.83334 23.00000
## 134  2.469900  4.000000 437.0000 21.20000 388.6900 12.83236 22.17656
## 135  3.745021  9.191356 415.1580 18.32354 262.7600 12.98775 15.60000
## 136  2.110700  4.000000 416.6967 21.20000 394.6700 16.96000 21.96955
## 137  3.753762  4.000000 437.0000 18.69612 378.2500 16.90000 17.40000
## 138  1.849800  9.314768 437.0000 21.20000 394.0800 14.59000 22.14808
## 139  3.783926  4.000000 437.0000 21.20000 392.0400 21.32000 13.30000
## 140  1.668700  4.000000 421.3930 21.20000 396.9000 18.46000 17.80000
## 141  1.611900  4.000000 437.0000 18.72594 388.0800 13.03774 14.00000
## 142  3.713809  4.000000 437.0000 21.20000 396.9000 13.14930 14.40000
## 143  1.321600  5.000000 403.0000 14.70000 396.9000 26.82000 13.40000
## 144  3.748612  5.000000 413.0379 14.70000 396.9000 26.42000 15.60000
## 145  3.692792  5.000000 403.0000 18.11662 396.9000 29.29000 11.80000
## 146  1.419100  9.372896 403.0000 14.70000 172.9100 27.80000 13.80000
## 147  1.516600  5.000000 403.0000 14.70000 169.2700 16.65000 21.75078
## 148  1.460800  9.311444 403.0000 18.41543 351.1155 29.53000 21.58582
## 149  1.529600  9.354523 403.0000 18.20673 355.7454 28.32000 21.88919
## 150  3.687902  5.000000 410.6784 14.70000 351.8500 21.45000 15.40000
## 151  1.618000  9.154876 403.0000 14.70000 372.8000 14.10000 21.50000
## 152  1.591600  5.000000 403.0000 14.70000 341.6000 13.28000 19.60000
## 153  1.610200  5.000000 403.0000 14.70000 343.2800 12.12000 15.30000
## 154  1.623200  5.000000 407.5558 14.70000 261.9500 15.79000 19.40000
## 155  1.749400  5.000000 411.1086 14.70000 321.0200 12.74343 22.13168
## 156  1.745500 10.471747 403.0000 14.70000  88.0100 13.02033 15.60000
## 157  3.745349  5.000000 410.8897 14.70000  88.6300 16.14000 13.10000
## 158  1.877300  5.000000 403.0000 14.70000 363.4300  4.59000 41.30000
## 159  3.759049  5.000000 411.6193 18.33057 357.7255  6.43000 24.30000
## 160  1.765900  9.477018 409.9325 14.70000 364.3100 13.79041 21.80662
## 161  3.818560  9.396500 403.0000 14.70000 358.3399 12.72151 27.00000
## 162  3.839318  5.000000 403.0000 18.16056 374.4300  1.73000 50.00000
## 163  2.040700  9.220424 403.0000 14.70000 389.6100  1.92000 50.00000
## 164  3.642110  5.000000 403.0000 14.70000 388.4500  3.32000 25.35398
## 165  2.422000  5.000000 408.0778 14.70000 395.1100 11.64000 22.43188
## 166  2.283400  5.000000 410.6588 14.70000 240.1600 12.76419 25.00000
## 167  2.045900  5.000000 412.7156 14.70000 369.3000  3.70000 25.34753
## 168  3.762672  5.000000 410.6294 14.70000 227.6100 12.14000 23.80000
## 169  2.100000  5.000000 403.0000 18.42554 359.0019 12.82778 22.29675
## 170  2.262500  5.000000 411.5156 14.70000 330.0400 11.32000 22.30000
```

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## 171  2.425900  5.000000 403.0000 14.70000 292.2900 14.43000 17.40000
## 172  2.388700  5.000000 403.0000 14.70000 348.2568 12.03000 19.10000
## 173  2.596100  9.356650 296.0000 16.60000 396.9000 14.69000 23.10000
## 174  3.738149  5.000000 296.0000 16.60000 395.5000 12.76772 22.41543
## 175  2.701900  5.000000 407.9630 18.41499 393.2300  9.64000 22.60000
## 176  3.861012  5.000000 296.0000 18.46303 358.2264  5.33000 29.40000
## 177  3.848975  5.000000 296.0000 16.60000 393.2300 10.11000 23.20000
## 178  3.317500  9.362454 296.0000 18.43976 359.8602 12.69920 22.42770
## 179  2.915300  9.419565 409.2389 18.37537 391.2700  6.92000 29.90000
## 180  3.831072  3.000000 193.0000 17.80000 396.9000 12.35277 37.20000
## 181  2.741000  3.000000 404.2210 17.80000 395.5600  7.56000 39.80000
## 182  2.597900  3.000000 193.0000 18.38563 396.9000  9.45000 36.20000
## 183  2.700600  3.000000 193.0000 18.29181 394.1200  4.82000 37.90000
## 184  3.819045  9.324167 407.2388 17.80000 358.2500  5.68000 32.50000
## 185  2.987900  3.000000 193.0000 17.80000 357.2937 13.98000 22.29210
## 186  3.818768  9.140588 409.1189 17.80000 387.1100 13.15000 22.41623
## 187  3.199200  3.000000 404.4764 17.80000 392.6300  4.45000 50.00000
## 188  3.788600  5.000000 398.0000 18.36760 393.8700  6.68000 32.00000
## 189  4.566700  5.000000 409.8600 15.20000 382.8400 12.70923 22.45477
## 190  3.926381  5.000000 406.6699 15.20000 396.9000 12.18730 34.90000
## 191  6.479800  9.295763 398.0000 18.37934 377.6800 12.48221 22.60722
## 192  6.479800  9.294312 398.0000 15.20000 358.8798  4.69000 30.50000
## 193  3.995556  5.000000 398.0000 15.20000 358.9890  2.87000 36.40000
## 194  4.137580  1.000000 408.8130 15.60000 393.3700  5.03000 23.08856
## 195  6.219600  1.000000 265.0000 15.60000 358.3915 12.27009 29.10000
## 196  5.648400  4.000000 255.0000 18.35257 394.2300  2.97000 24.34099
## 197  7.309000  9.018958 329.0000 12.60000 396.9000  4.08000 33.30000
## 198  3.825852  9.403045 329.0000 18.41050 354.3100 12.51147 30.30000
## 199  4.262112  2.000000 404.9638 12.60000 392.2000  6.62000 24.15340
## 200  4.203570  8.792552 407.5251 18.32037 396.9000  4.56000 24.60737
## 201  7.653400  3.000000 402.0000 18.26395 384.3000  4.45000 32.90000
## 202  3.969847  2.000000 348.0000 14.70000 393.7700 12.44086 24.10000
## 203  6.270000  2.000000 348.0000 14.70000 395.3800 12.41311 42.30000
## 204  4.047211  4.000000 224.0000 14.70000 392.7800 11.96220 48.50000
## 205  5.118000  4.000000 224.0000 18.40410 359.7873  2.88000 26.06869
## 206  3.945400  4.000000 277.0000 18.60000 355.6523 10.87000 22.40884
## 207  4.354900  9.387025 410.9234 18.45230 394.8700 10.97000 24.40000
## 208  3.786033  4.000000 408.8397 18.46973 359.0454 12.80228 22.50000
## 209  4.239200  4.000000 408.7589 18.45877 358.7211 12.57919 24.40000
## 210  3.875000  4.000000 277.0000 18.60000 396.9000 23.09000 20.00000
## 211  3.838697  4.000000 277.0000 18.60000 393.2500 17.27000 21.70000
## 212  3.665000  9.136727 407.3574 18.60000 395.2400 23.98000 19.30000
## 213  3.652600  4.000000 411.6153 18.60000 359.0537 16.03000 22.40000
## 214  3.945400  4.000000 277.0000 18.60000 359.6653 12.63857 28.10000
## 215  3.826294  4.000000 277.0000 18.60000 353.7455 29.55000 23.70000
## 216  3.945400  9.189774 277.0000 18.60000 359.5797  9.47000 25.00000
## 217  3.834241  5.000000 276.0000 18.41167 392.8000 13.51000 23.30000
## 218  3.421100  5.000000 276.0000 16.40000 392.7800  9.69000 28.70000
## 219  2.889300  5.000000 276.0000 16.40000 358.3113 17.92000 21.50000
## 220  3.363300  5.000000 276.0000 16.40000 393.7400 10.50000 23.00000
## 221  2.861700  8.000000 408.7642 18.43149 359.0946  9.71000 26.70000
## 222  3.048000  8.000000 307.0000 17.40000 395.2400 21.46000 21.70000
## 223  3.272100  8.000000 307.0000 18.38653 390.3900  9.93000 27.50000
## 224  3.272100  8.000000 307.0000 17.40000 396.9000 12.43550 30.10000
```

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## 225  2.894400  9.409711 307.0000 17.40000 385.0500 12.55119 23.47088
## 226  2.894400  9.898745 407.4423 17.40000 382.0000  4.63000 50.00000
## 227  3.215700  8.000000 401.6842 17.40000 358.7621  3.13000 37.60000
## 228  3.215700  9.283601 307.0000 17.40000 372.0800  6.36000 31.60000
## 229  3.375100  8.000000 307.0000 17.40000 377.5100 12.23424 46.70000
## 230  3.375100  8.000000 307.0000 17.40000 380.3400 12.38437 31.50000
## 231  3.811001  8.000000 410.9230 17.40000 378.3500 11.65000 24.30000
## 232  3.671500  8.000000 307.0000 18.43023 358.4772  5.25000 23.08576
## 233  3.753164  8.000000 307.0000 17.40000 358.8935  2.47000 41.70000
## 234  3.651900  8.000000 307.0000 17.40000 378.9500  3.95000 48.30000
## 235  3.651900  8.000000 410.4154 18.35890 360.2000  8.05000 29.00000
## 236  3.803144  9.388972 307.0000 17.40000 355.7568 10.88000 24.00000
## 237  3.786652  8.000000 408.9529 17.40000 388.4500  9.54000 25.10000
## 238  4.148000  8.000000 307.0000 18.28713 390.0700  4.73000 23.28141
## 239  4.067230  6.000000 407.7606 18.48038 379.4100  6.36000 23.70000
## 240  6.189900  6.000000 300.0000 18.47128 358.4798 12.66487 23.30000
## 241  3.893369  6.000000 407.6923 16.60000 391.2500 11.38000 22.00000
## 242  6.336100  6.000000 300.0000 18.43863 394.6200 12.31248 22.36498
## 243  3.930921  9.233313 300.0000 16.60000 359.3412 11.22000 22.61452
## 244  3.937091  6.000000 300.0000 18.46033 359.7030  5.19000 23.70000
## 245  7.954900  9.085929 330.0000 19.10000 372.4900 13.00496 22.25028
## 246  7.954900  7.000000 330.0000 18.50881 389.1300 18.46000 18.50000
## 247  3.975409  9.168351 330.0000 19.10000 359.5298 12.48066 24.30000
## 248  8.055500  7.000000 330.0000 19.10000 359.6589 10.15000 20.50000
## 249  4.086190  9.191916 330.0000 19.10000 374.7100  9.52000 24.50000
## 250  3.988915  7.000000 330.0000 19.10000 393.7400  6.56000 26.20000
## 251  7.396700  7.000000 330.0000 19.10000 396.2800  5.90000 24.40000
## 252  7.396700  9.074447 406.4496 18.46912 377.0700  3.59000 23.36167
## 253  8.906700  7.000000 330.0000 19.10000 386.0900 12.33740 29.60000
## 254  3.983078  9.351409 405.9887 18.40868 396.9000  3.54000 42.80000
## 255  9.220300  1.000000 315.0000 16.40000 392.8900  6.57000 21.90000
## 256  4.187631  1.000000 315.0000 18.41864 395.1800  9.25000 22.28668
## 257  4.159238  3.000000 403.1097 15.90000 386.3400 12.64504 22.63657
## 258  3.667616  5.000000 264.0000 13.00000 389.7000  5.12000 50.00000
## 259  1.894600  5.000000 264.0000 13.00000 383.2900  7.79000 36.00000
## 260  3.798590  5.000000 394.0939 13.00000 391.9300 12.74915 23.49841
## 261  2.112100  9.378574 264.0000 13.00000 392.8000  9.59000 33.80000
## 262  2.139800  5.000000 264.0000 18.03289 359.1505  7.26000 43.10000
## 263  2.288500  5.000000 264.0000 13.00000 386.8600  5.91000 48.80000
## 264  3.710853  9.506541 264.0000 18.25909 359.0471 11.25000 23.08399
## 265  1.930100  5.000000 264.0000 13.00000 387.8900  8.10000 23.50679
## 266  1.986500  5.000000 264.0000 13.00000 358.8713 10.45000 22.80000
## 267  3.836539  5.000000 264.0000 13.00000 384.0700 14.79000 22.76568
## 268  3.849704  5.000000 264.0000 18.36810 384.5400  7.44000 50.00000
## 269  2.872000  9.237272 264.0000 18.26033 358.5987 12.47178 24.70328
## 270  3.917500  3.000000 405.2144 18.60000 391.3400 13.65000 20.70000
## 271  3.884909  9.334566 405.7416 18.60000 388.6500 13.00000 21.10000
## 272  4.429000  8.907027 223.0000 18.46376 396.9000  6.59000 25.20000
## 273  3.917500  9.331775 408.2903 18.60000 358.2839  7.73000 22.73051
## 274  4.366500  3.000000 223.0000 18.60000 390.7700 12.36066 35.20000
## 275  4.077600  9.404204 254.0000 18.36968 396.9000 12.28210 32.40000
## 276  4.267300  9.328994 407.3693 17.60000 396.9000 12.40446 22.83330
## 277  4.787200  4.000000 405.4309 17.60000 389.2500 12.52265 23.48562
## 278  3.964604  9.145841 404.5710 17.60000 393.4500  4.16000 33.10000
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## 279  3.908586  4.000000 254.0000 17.60000 396.9000  7.19000 29.10000
## 280  4.100700  9.278977 216.0000 14.90000 396.9000  4.85000 23.52457
## 281  4.694700  5.000000 391.5783 14.90000 387.3100  3.76000 45.40000
## 282  3.861112  5.000000 405.6135 14.90000 392.2300  4.59000 35.40000
## 283  5.211900  5.000000 216.0000 18.29140 359.0475  3.01000 46.00000
## 284  5.885000  1.000000 198.0000 18.20881 359.5019  3.16000 50.00000
## 285  7.307300  1.000000 399.6731 18.35972 394.7200  7.85000 32.20000
## 286  7.307300  1.000000 300.0000 15.30000 394.7200  8.23000 23.14944
## 287  9.089200  1.000000 241.0000 18.20000 341.6000 12.93000 20.10000
## 288  4.048555  9.031372 293.0000 16.60000 396.9000  7.14000 23.20000
## 289  7.317200  6.000000 293.0000 16.60000 396.9000  7.60000 22.30000
## 290  7.317200  6.000000 293.0000 16.60000 371.7200  9.51000 22.70739
## 291  5.116700  4.000000 245.0000 19.20000 396.9000 12.29532 28.50000
## 292  5.116700  8.881733 245.0000 18.30443 396.9000  3.56000 37.30000
## 293  5.116700  4.000000 245.0000 18.38842 396.9000  4.70000 27.90000
## 294  3.941419  4.000000 289.0000 16.00000 396.9000  8.58000 22.41040
## 295  5.502700  4.000000 289.0000 18.43832 358.8728 10.40000 21.70000
## 296  5.960400  9.298866 289.0000 16.00000 396.9000 12.56732 28.60000
## 297  5.960400  9.248252 289.0000 16.00000 392.8500  7.39000 22.74302
## 298  6.320000  9.165689 289.0000 18.49771 359.0460 15.84000 20.30000
## 299  7.827800  5.000000 358.0000 18.44812 358.9644  4.97000 22.94977
## 300  7.827800  8.783576 358.0000 14.80000 371.5800  4.74000 29.00000
## 301  7.827800  8.724035 358.0000 18.36343 390.8600 12.26195 24.80000
## 302  5.491700  7.000000 329.0000 16.10000 395.7500  9.50000 22.00000
## 303  5.491700  7.000000 329.0000 16.10000 359.4948 12.22163 26.40000
## 304  4.042390  7.000000 329.0000 16.10000 390.4300  4.86000 33.10000
## 305  4.022000  9.044640 406.2696 18.40000 393.6800  6.93000 36.10000
## 306  3.370000  9.080026 222.0000 18.40000 359.4814  8.93000 28.40000
## 307  3.897324  9.228031 222.0000 18.40000 396.9000  6.47000 33.40000
## 308  3.824620  7.000000 222.0000 18.41298 359.2414  7.53000 28.20000
## 309  3.317500  9.427241 304.0000 18.40000 396.9000 12.52202 22.80000
## 310  3.829135  4.000000 408.4052 18.40000 358.3326  9.97000 20.30000
## 311  2.519400  4.000000 402.2328 18.48930 355.6837 12.64000 16.10000
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## 313  2.834000  4.000000 409.0742 18.46966 396.3000 11.72000 22.31561
## 314  3.262800  9.444332 407.4572 18.40000 393.3900  7.90000 21.60000
## 315  3.602300  9.409983 407.4318 18.38859 395.6900  9.28000 23.80000
## 316  3.945000  4.000000 304.0000 18.40000 396.4200 12.86652 16.20000
## 317  3.998600  4.000000 409.3645 18.46719 390.7000 18.33000 17.80000
## 318  3.810261  4.000000 412.7725 18.40000 396.9000 15.94000 19.80000
## 319  3.532500  9.269757 407.9474 18.40000 395.2100 12.66026 22.54259
## 320  3.870238  9.411998 304.0000 18.49145 356.6811 12.73000 21.00000
## 321  4.540400  5.000000 409.0376 19.60000 358.8164 12.44421 23.80000
## 322  4.540400  9.369815 287.0000 19.60000 396.9000  6.87000 22.47318
## 323  4.721100  5.000000 287.0000 18.52075 396.9000  7.70000 20.40000
## 324  4.721100  5.000000 287.0000 19.60000 358.6357 11.74000 18.50000
## 325  4.721100  5.000000 287.0000 19.60000 396.9000  6.12000 25.00000
## 326  5.415900  5.000000 287.0000 18.55323 393.6800  5.08000 22.77217
## 327  5.415900  9.322727 407.8988 19.60000 396.9000  6.15000 22.62017
## 328  5.415900  5.000000 287.0000 19.60000 396.9000 12.79000 22.20000
## 329  5.214600  4.000000 407.3692 16.90000 382.4400 12.70918 22.33191
## 330  3.887149  4.000000 410.3076 18.42690 375.2100  7.34000 22.57727
## 331  5.873600  4.000000 410.1029 16.90000 368.5700  9.09000 19.80000
## 332  3.983441  1.000000 304.0000 16.90000 394.0200 12.43000 22.50921
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## 333  6.640700  1.000000 304.0000 18.54776 358.7253  7.83000 19.40000
## 334  6.458400  5.000000 405.0411 20.20000 389.7100  5.68000 22.20000
## 335  6.458400  5.000000 224.0000 20.20000 359.2776  6.75000 22.51877
## 336  5.985300  5.000000 224.0000 20.20000 359.6553 12.54520 22.28267
## 337  5.231100  9.181486 402.8200 18.48442 396.9000 12.65942 19.50000
## 338  4.176860  5.000000 406.8946 18.37648 394.8100 10.56000 18.50000
## 339  4.812200  9.157047 224.0000 20.20000 396.1400 12.62394 20.60000
## 340  4.812200  5.000000 224.0000 18.46106 358.0353 12.43501 19.00000
## 341  4.812200  5.000000 224.0000 20.20000 396.9000  9.29000 18.70000
## 342  4.161554  1.000000 409.4044 15.50000 359.4880  5.49000 32.70000
## 343  6.266900  8.960123 408.6082 15.90000 389.9600 12.71234 22.50794
## 344  5.732100  5.000000 370.0000 17.60000 396.9000 12.58780 22.41775
## 345  6.465400  5.000000 370.0000 17.60000 387.9700  4.61000 31.20000
## 346  3.982036  3.000000 352.0000 18.80000 358.7827 12.77055 17.50000
## 347  8.013600  3.000000 352.0000 18.39390 360.6442 12.67000 22.43800
## 348  8.535300  8.258756 351.0000 18.39637 358.1396  6.36000 22.77177
## 349  8.344000  4.000000 406.3612 17.00000 360.0859  5.99000 24.50000
## 350  4.244603  1.000000 402.5128 19.70000 358.5243  5.89000 23.38982
## 351  8.792100  1.000000 335.0000 19.70000 396.9000  5.98000 22.59988
## 352  4.300129  4.000000 411.0000 18.30000 357.6505 12.37774 24.10000
## 353 10.710300  4.000000 403.6187 18.30000 392.3300  7.79000 18.60000
## 354 12.126500  5.000000 187.0000 17.00000 384.4600 12.36508 30.10000
## 355 10.585700  4.000000 334.0000 18.52290 358.8559  8.05000 18.20000
## 356 10.585700  4.000000 334.0000 22.00000 376.0400  5.57000 20.60000
## 357  2.122200 24.000000 666.0000 18.52480 359.9561 17.60000 17.80000
## 358  2.505200 10.125743 420.6521 18.34092 391.3400 12.74986 22.16860
## 359  2.722700 24.000000 666.0000 18.47814 395.4300 12.77397 22.70000
## 360  2.509100 24.000000 666.0000 20.20000 390.7400 12.67000 22.60000
## 361  2.518200 24.000000 666.0000 20.20000 374.5600  7.79000 25.00000
## 362  2.295500  9.816540 666.0000 20.20000 350.6500 14.19000 19.90000
## 363  3.798084 24.000000 666.0000 20.20000 380.7900 10.19000 20.80000
## 364  1.904700  9.730860 423.3817 18.49893 357.2414 14.64000 16.80000
## 365  3.737177 24.000000 419.8679 18.30170 354.5500  5.29000 21.90000
## 366  1.613200  9.742668 666.0000 20.20000 354.7000 12.91562 27.50000
## 367  1.752300  9.595611 415.9620 20.20000 316.0300 14.00000 21.90000
## 368  1.510600 24.000000 666.0000 20.20000 131.4200 13.33000 23.10000
## 369  1.332500 24.000000 422.7042 18.47310 375.5200  3.26000 23.01253
## 370  1.356700 24.000000 419.5979 20.20000 356.4272 13.00250 50.00000
## 371  3.743259 24.000000 666.0000 20.20000 392.0500 12.81868 22.41416
## 372  3.733507 24.000000 417.5730 18.38743 356.3984 12.46937 50.00000
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## 376  1.316300 24.000000 666.0000 20.20000 396.9000 13.12913 15.00000
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## 381  1.416500 10.067979 413.7973 18.47318 396.9000 17.21000 21.99971
## 382  1.519200 24.000000 418.4913 18.52399 396.9000 13.39246 22.29846
## 383  1.580400 24.000000 426.9856 18.49813 353.9989 23.60000 11.30000
## 384  1.533100 10.281097 666.0000 20.20000 396.9000 24.56000 21.73387
## 385  3.782969 24.000000 666.0000 20.20000 343.2892 13.31306  8.80000
## 386  1.426100 24.000000 666.0000 18.53579 396.9000 13.28061  7.20000
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## 387  3.706582 24.000000 666.0000 20.20000 396.9000 13.26569 21.80537
## 388  1.518400  9.733872 418.9556 20.20000 353.6744 13.48092  7.40000
## 389  3.704301 24.000000 666.0000 20.20000 372.9200 30.62000 10.20000
## 390  1.728100 24.000000 425.4740 20.20000 359.1843 13.11609 11.50000
## 391  3.817588 24.000000 666.0000 20.20000 394.4300 17.11000 15.10000
## 392  2.167800  9.785416 666.0000 20.20000 357.4944 12.71671 23.20000
## 393  3.695913 24.000000 666.0000 18.52413 396.9000 25.68000 21.07924
## 394  3.743817 24.000000 666.0000 18.50234 396.9000 15.17000 22.00831
## 395  1.782100 24.000000 666.0000 20.20000 396.9000 16.35000 12.70000
## 396  1.725700 24.000000 666.0000 20.20000 391.9800 17.12000 13.10000
## 397  3.808912 24.000000 666.0000 20.20000 396.9000 19.37000 12.50000
## 398  1.633400 24.000000 666.0000 18.52395 393.1000 19.92000  8.50000
## 399  3.696140 24.000000 423.2082 18.58890 396.9000 30.59000  5.00000
## 400  1.500400 10.088713 666.0000 20.20000 338.1600 29.97000  6.30000
## 401  3.644065 10.515436 666.0000 20.20000 348.9626 13.35977  5.60000
## 402  3.719245 10.220722 666.0000 20.20000 396.9000 13.07270 22.13177
## 403  1.639000 24.000000 666.0000 20.20000 354.5931 20.31000 12.10000
## 404  1.702800 10.269952 419.5101 18.48583 396.9000 13.18714  8.30000
## 405  3.618725 24.000000 666.0000 20.20000 329.4600 13.50448  8.50000
## 406  1.425400 24.000000 666.0000 20.20000 384.9700 13.50425  5.00000
## 407  1.178100 24.000000 666.0000 20.20000 370.2200 23.34000 21.53298
## 408  1.285200 24.000000 666.0000 18.52604 356.5073 12.13000 22.67834
## 409  1.454700 24.000000 666.0000 18.48619 356.1535 12.89642 22.56517
## 410  1.465500 24.000000 419.2423 18.40387 179.3600 19.78000 27.50000
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## 412  1.527500 24.000000 666.0000 20.20000 359.6431 21.22000 17.20000
## 413  1.553900 24.000000 413.1824 20.20000 351.4997 34.37000 17.90000
## 414  3.700107 24.000000 666.0000 18.59635 210.9700 20.08000 16.30000
## 415  1.658200 24.000000 417.2978 20.20000 347.1902 36.98000 21.86726
## 416  1.834700  9.489906 666.0000 18.50869  27.2500 29.05000  7.20000
## 417  1.819500 24.000000 666.0000 20.20000  21.5700 13.79284  7.50000
## 418  1.647500 10.052137 666.0000 20.20000 354.5543 12.94804 21.47208
## 419  1.802600 10.366757 666.0000 20.20000  16.4500 20.62000  8.80000
## 420  1.794000 10.112069 666.0000 18.49711  48.4500 22.74000  8.40000
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## 422  1.874600 24.000000 666.0000 20.20000 319.9800 15.70000 14.20000
## 423  1.951200 24.000000 666.0000 20.20000 291.5500 14.10000 20.80000
## 424  3.831908 24.000000 666.0000 20.20000   2.5200 23.29000 13.40000
## 425  2.063500 10.011396 666.0000 20.20000   3.6500 17.16000 11.70000
## 426  1.909600 24.000000 666.0000 20.20000   7.6800 24.39000  8.30000
## 427  1.997600 24.000000 666.0000 20.20000 353.0557 13.13299 10.20000
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## 429  1.935600 24.000000 423.4424 20.20000  96.7300 21.52000 21.61253
## 430  1.968200 24.000000 666.0000 18.50879  60.7200 24.08000  9.50000
## 431  3.800536  9.857791 666.0000 20.20000 346.6822 17.64000 14.50000
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## 435  2.222200 24.000000 666.0000 18.46165 100.6300 15.17000 11.70000
## 436  2.124700 24.000000 666.0000 20.20000 352.2355 23.27000 21.65119
## 437  2.002600 24.000000 666.0000 18.48765 342.2633 18.05000  9.60000
## 438  1.914200 10.008197 666.0000 20.20000   9.3200 26.45000  8.70000
## 439  1.820600 24.000000 414.4696 20.20000  68.9500 34.02000 21.76121
## 440  3.687755 24.000000 666.0000 20.20000 346.4243 22.88000 12.80000
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## 441  1.866200 10.406991 666.0000 20.20000 391.4500 13.28437 21.69401
## 442  2.065100 24.000000 666.0000 20.20000 356.7696 19.52000 17.10000
## 443  2.004800 24.000000 419.5899 20.20000 395.6900 16.59000 18.40000
## 444  1.978400 24.000000 666.0000 20.20000 386.7300 13.04177 15.40000
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## 447  2.072000 24.000000 666.0000 20.20000 352.5006 17.79000 14.90000
## 448  2.198000 24.000000 421.0046 20.20000 388.5200 16.44000 21.38887
## 449  3.762492 24.000000 666.0000 18.50115 396.9000 13.36688 14.10000
## 450  2.185000 10.006485 666.0000 20.20000 304.2100 19.31000 13.00000
## 451  3.799205 10.965856 666.0000 20.20000   0.3200 13.49708 13.40000
## 452  2.355200 24.000000 666.0000 20.20000 356.4933 17.73000 15.20000
## 453  2.368200 10.232992 414.1593 20.20000 347.4239 17.27000 16.10000
## 454  2.452700 10.001209 666.0000 20.20000 375.8700 16.74000 17.80000
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## 458  3.787593 24.000000 415.6462 20.20000   3.5000 16.94000 13.50000
## 459  3.756237 24.000000 418.6624 20.20000 272.2100 13.25725 21.89829
## 460  3.796752 24.000000 666.0000 20.20000 396.9000 14.70000 20.00000
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## 464  2.801600 24.000000 666.0000 20.20000 393.8200 12.89617 20.20000
## 465  3.740376 24.000000 666.0000 20.20000 396.9000 13.22000 21.40000
## 466  3.066500 24.000000 666.0000 18.56863 357.0697 14.13000 22.23228
## 467  3.744829 24.000000 414.7655 20.20000 355.5352 17.15000 19.00000
## 468  3.745724  9.824086 416.7974 20.20000 331.2900 13.05502 19.10000
## 469  3.695811 24.000000 423.9448 20.20000 368.7400 18.13000 19.10000
## 470  2.823700 24.000000 425.6367 18.48008 355.5915 12.90862 20.10000
## 471  3.750449 10.356968 666.0000 18.53268 396.9000 12.84076 22.11243
## 472  3.099300 24.000000 666.0000 20.20000 359.1444 12.87000 22.31491
## 473  2.896500 24.000000 666.0000 20.20000 393.3700 14.36000 23.20000
## 474  2.532900 24.000000 666.0000 20.20000 358.3872 11.66000 29.80000
## 475  3.789491 24.000000 414.1404 20.20000 352.5800 18.14000 13.80000
## 476  3.717263 24.000000 427.2592 18.55361 302.7600 24.10000 13.30000
## 477  3.765702  9.919988 666.0000 20.20000 353.5320 18.68000 16.70000
## 478  2.100700  9.970319 666.0000 18.52407 349.4800 13.17906 12.00000
## 479  3.774756 24.000000 666.0000 20.20000 379.7000 12.80843 22.24342
## 480  1.951200 10.046163 666.0000 20.20000 383.3200 13.11000 21.40000
## 481  3.424200 24.000000 666.0000 20.20000 396.9000 10.74000 23.00000
## 482  3.765341 24.000000 666.0000 20.20000 393.0700 12.65066 23.70000
## 483  3.410600 11.146105 666.0000 20.20000 356.4064  7.01000 25.00000
## 484  4.098300 24.000000 666.0000 20.20000 392.9200 10.42000 21.80000
## 485  3.724000 24.000000 666.0000 20.20000 370.7300 12.76488 20.60000
## 486  3.747690 24.000000 666.0000 20.20000 388.6200 10.58000 22.22892
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## 488  3.152300 24.000000 666.0000 20.20000 388.2200 11.45000 22.37971
## 489  1.820900  4.000000 421.9003 18.61128 395.0900 18.06000 15.20000
## 490  1.755400  4.000000 431.5277 20.10000 355.2300 23.97000 22.02628
## 491  1.822600  4.000000 711.0000 20.10000 358.1463 29.68000 22.15075
## 492  3.692364  4.000000 711.0000 20.10000 390.1100 18.07000 21.95286
## 493  2.109900  4.000000 711.0000 18.63712 396.9000 13.35000 22.01404
## 494  2.381700  9.228977 391.0000 19.20000 357.9629 12.01000 21.80000
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## 495  2.381700  6.000000 413.4757 18.53267 396.9000 13.59000 22.20566
## 496  3.824905  6.000000 391.0000 19.20000 393.2900 17.60000 23.10000
## 497  2.798600  9.324152 391.0000 19.20000 358.1072 21.14000 19.70000
## 498  3.785835  6.000000 409.9526 19.20000 358.9417 14.10000 18.30000
## 499  3.717598  9.349083 391.0000 19.20000 396.9000 12.67741 21.20000
## 500  2.399900  6.000000 409.2282 19.20000 395.7700 15.10000 22.24428
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## 503  2.287500  1.000000 273.0000 21.00000 396.9000  9.08000 20.60000
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## 506  3.763214  1.000000 401.0364 21.00000 396.9000  7.88000 11.90000
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