Lab 9

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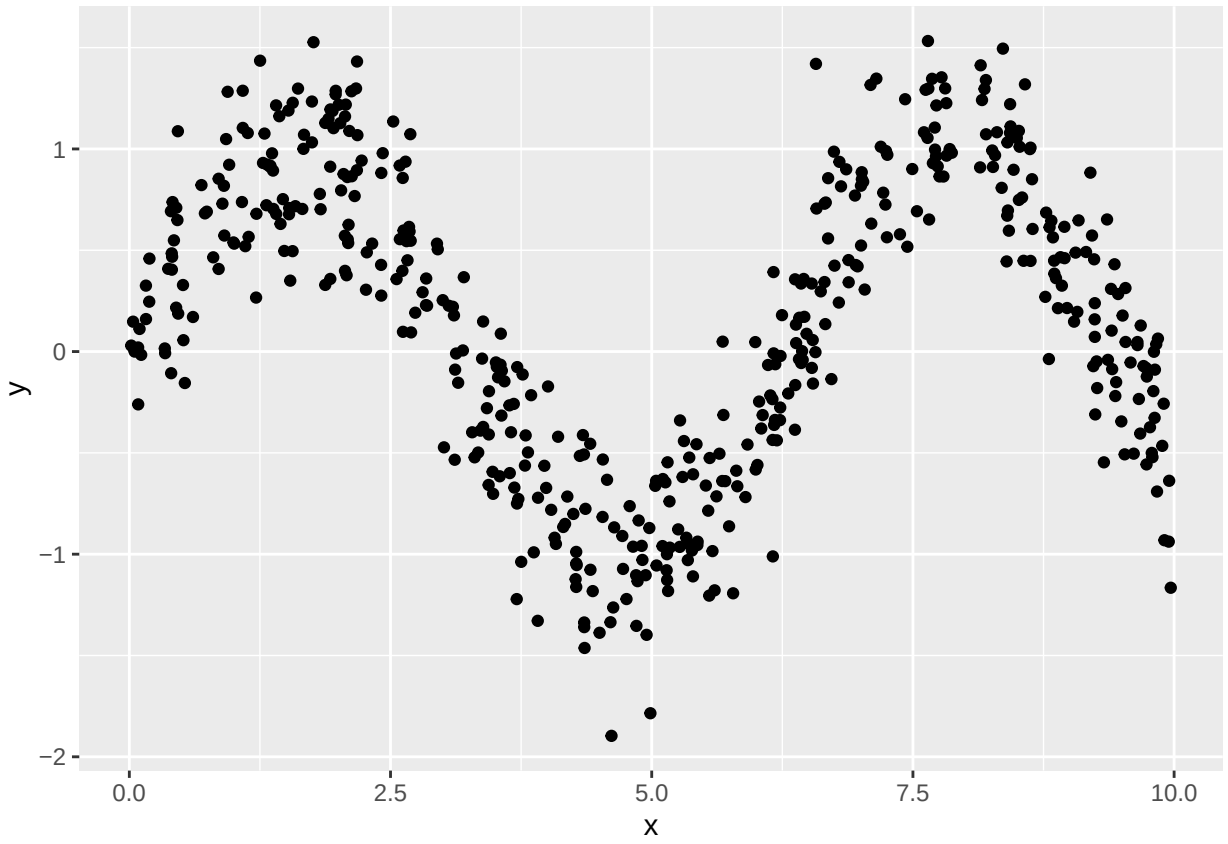
Here we will learn about trees, bagged trees and random forests. You can use the `YARF` package if it works, otherwise, use the `randomForest` package (the standard).

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 training dataset of size 500:

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

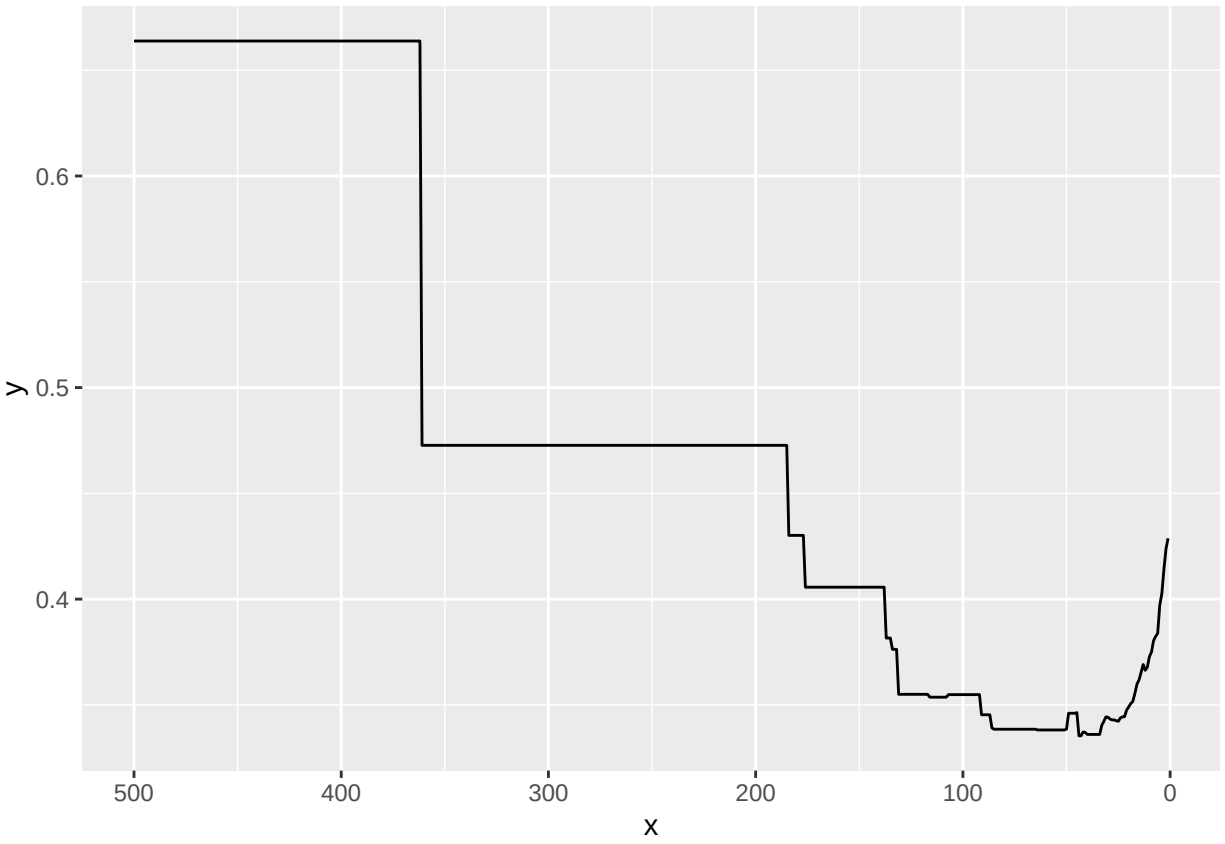


Create a test set of size 500 as well

```
x_test = runif(n, x_min, x_max)
y_test = y_x(x_test, sigma)
```

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.

```
pacman::p_load(randomForest)

node_sizes = 1:n

se_by_node_size = array(NA, dim = length(node_sizes))

for(i in 1:length(node_sizes)){
  rf_mod = randomForest(data.frame(x = x_train), y = y_train, ntree = 1, replace = FALSE, sampsize = n,
  y_hat_test = predict(rf_mod, data.frame(x = x_test))
  se_by_node_size[i] = sd(y_test - y_hat_test)
}

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

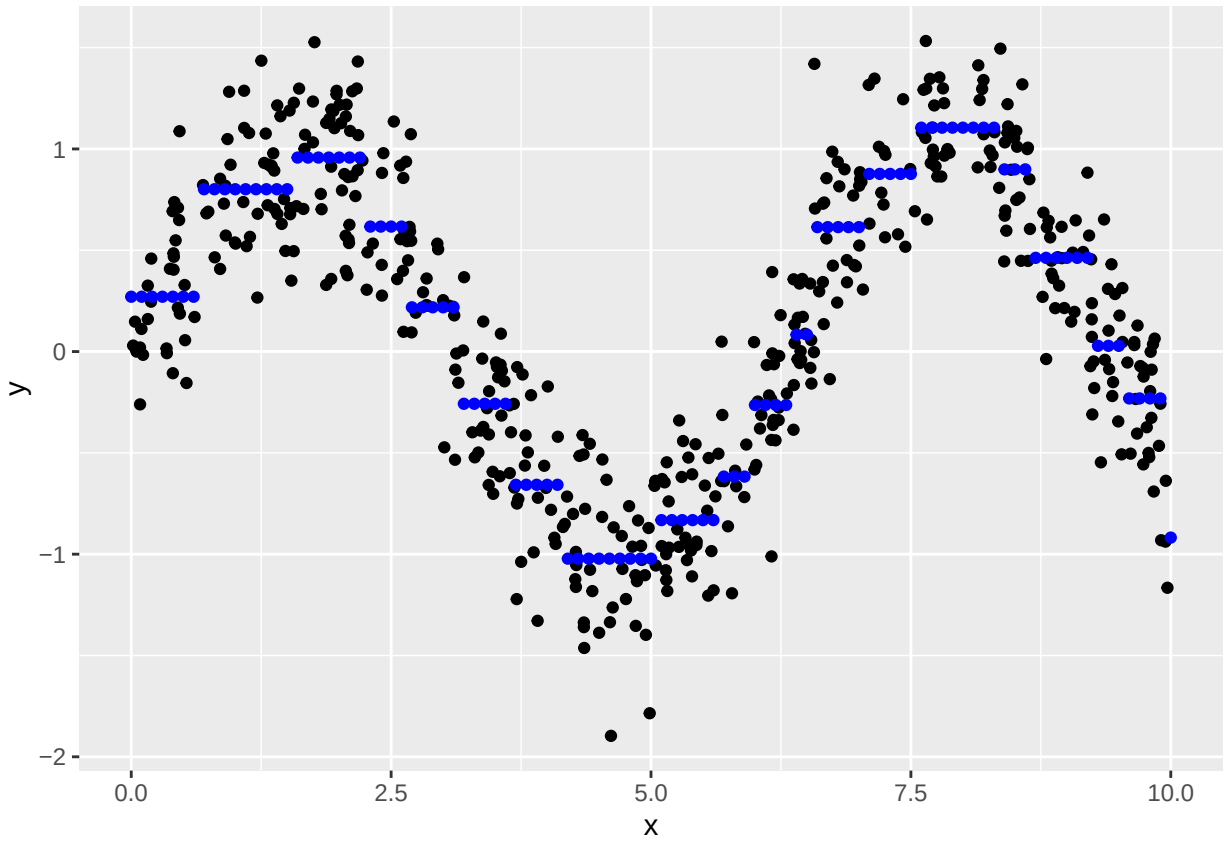



```
which.min(se_by_node_size)
```

```
## [1] 43
```

Plot the regression tree model with the optimal node size.

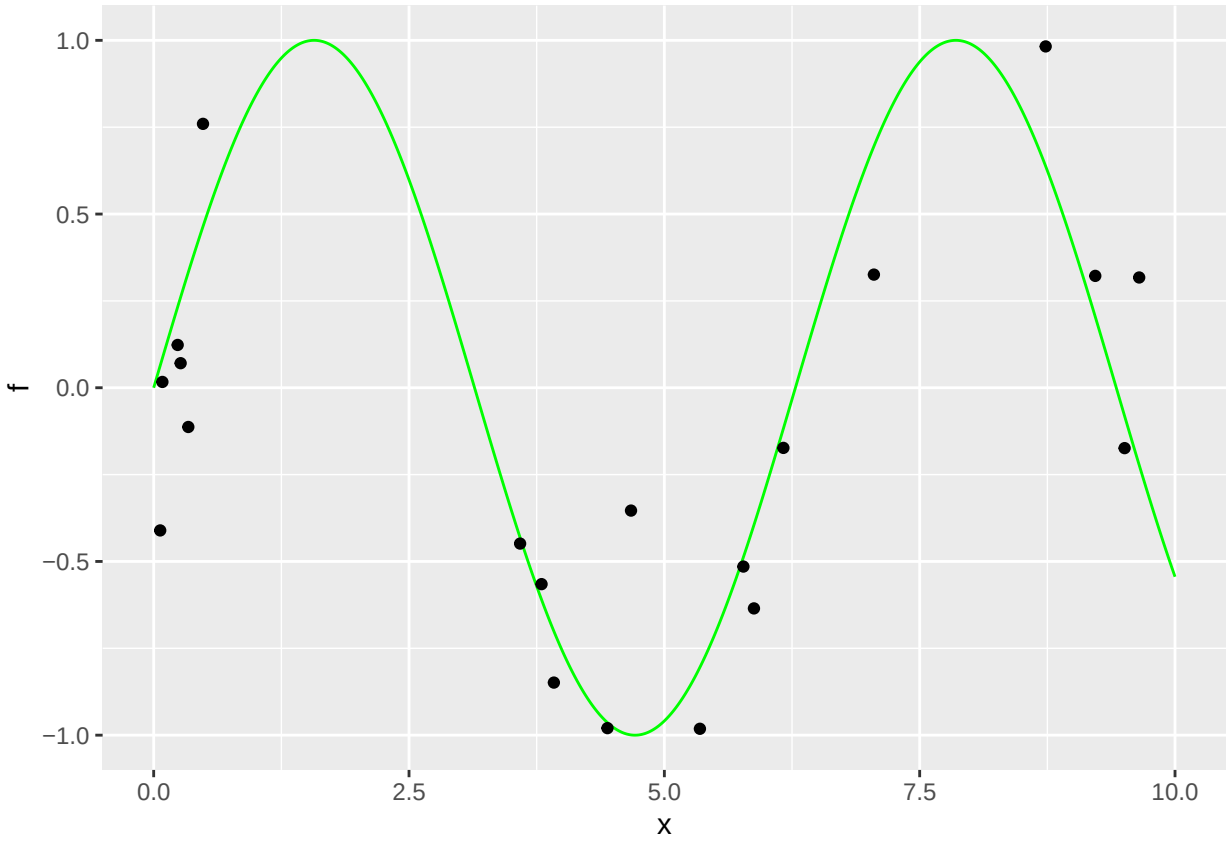
```
 rf_mod = randomForest(data.frame(x = x_train), y = y_train, ntree = 1, replace = FALSE, sampsize = n, 

resolution = 0.1
x_grid = seq(from = x_min, to = x_max, by = resolution)
g_x = predict(rf_mod, data.frame(x = x_grid))

ggplot(data.frame(x = x_grid, y = g_x))  +
  aes(x = x, y = y) +
  geom_point(data = data.frame(x = x_train, y = y_train)) +
  geom_point(color = "blue")
```



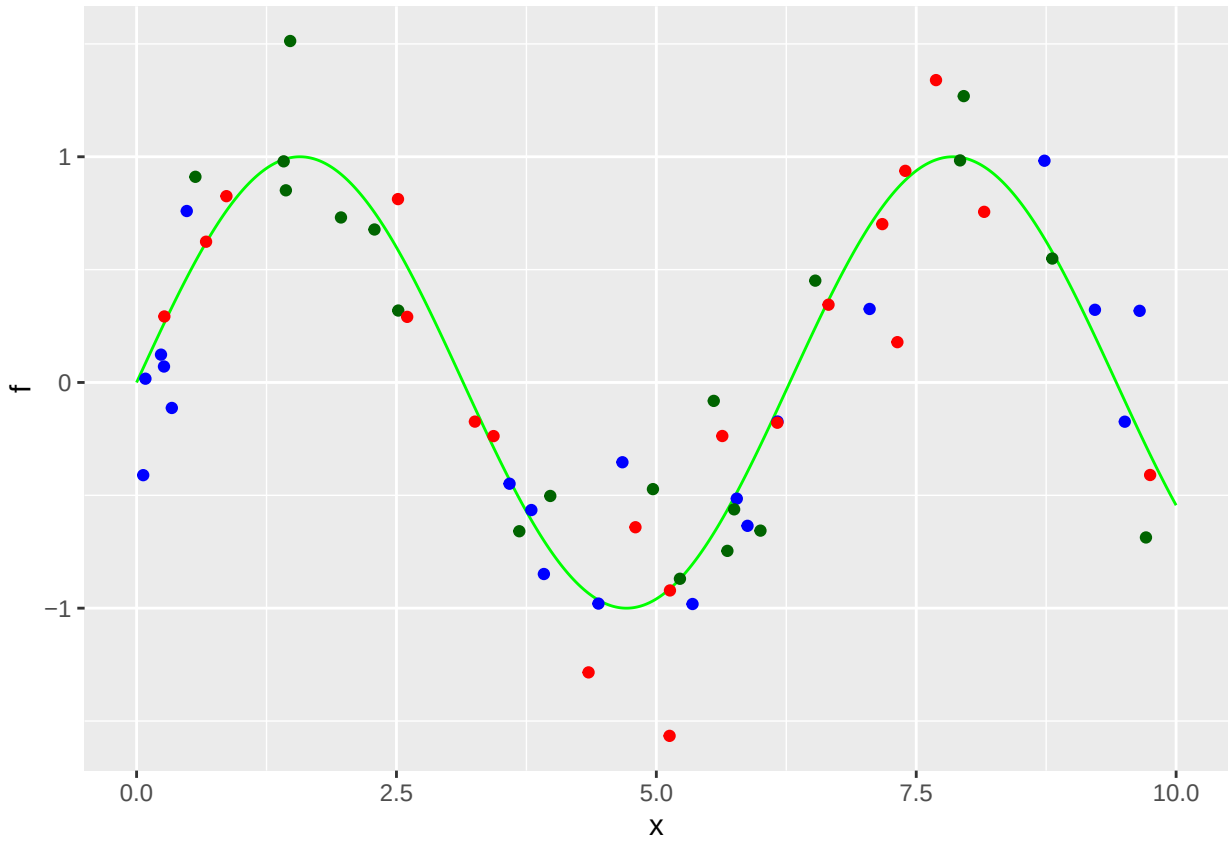
Provide the bias-variance decomposition of this DGP fit with this model. It is a lot of code, but it is in the practice lectures. If your three numbers don't add up within two significant digits, increase your resolution.

```
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, ]))
```



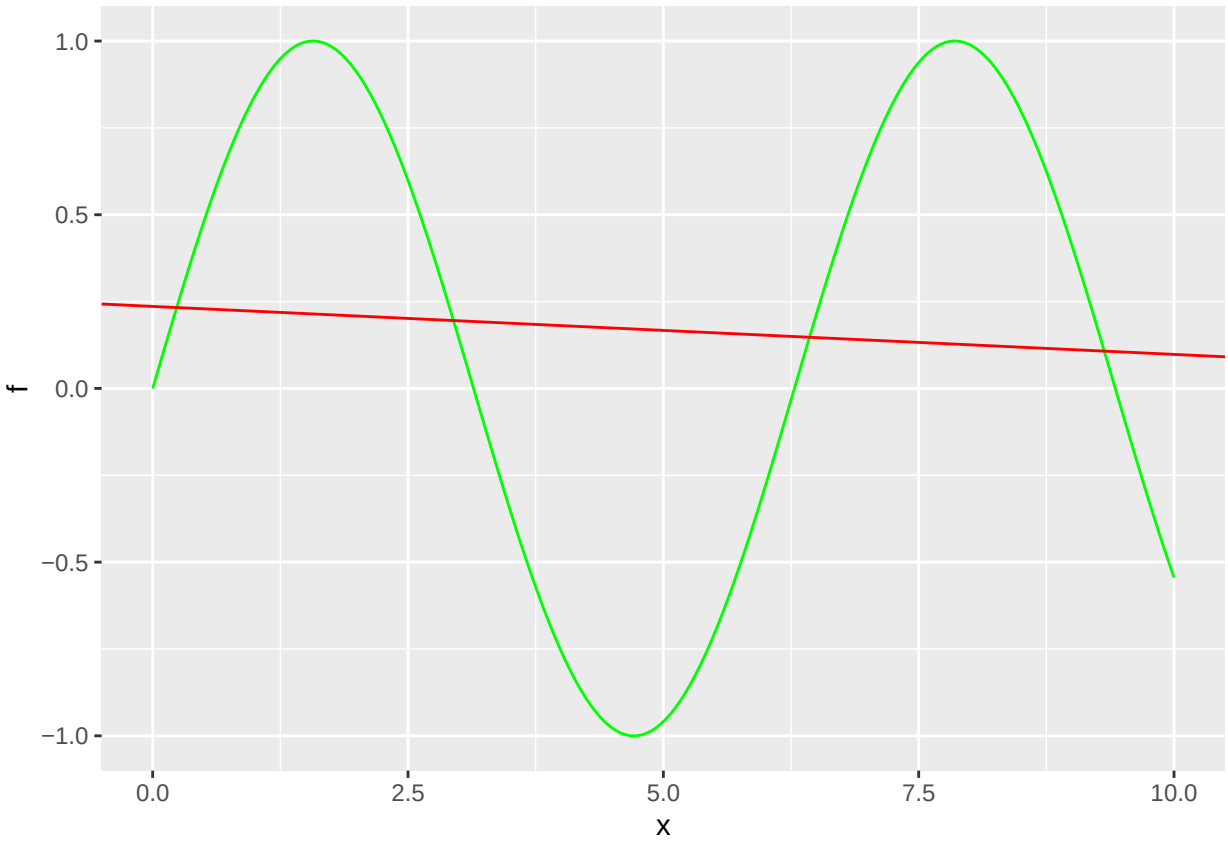

```
ggplot(f_x_df, aes(x, f)) +
  geom_line(col = "green") +
  geom_point(aes(x, y), data = data.frame(x = x_trains[1, ], y = y_trains[1, ]), col = "blue") +
  geom_point(aes(x, y), data = data.frame(x = x_trains[2, ], y = y_trains[2, ]), col = "darkgreen") +
  geom_point(aes(x, y), data = data.frame(x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




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

```
## [1] 0.5856522
```

```
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(-1, 1)
```

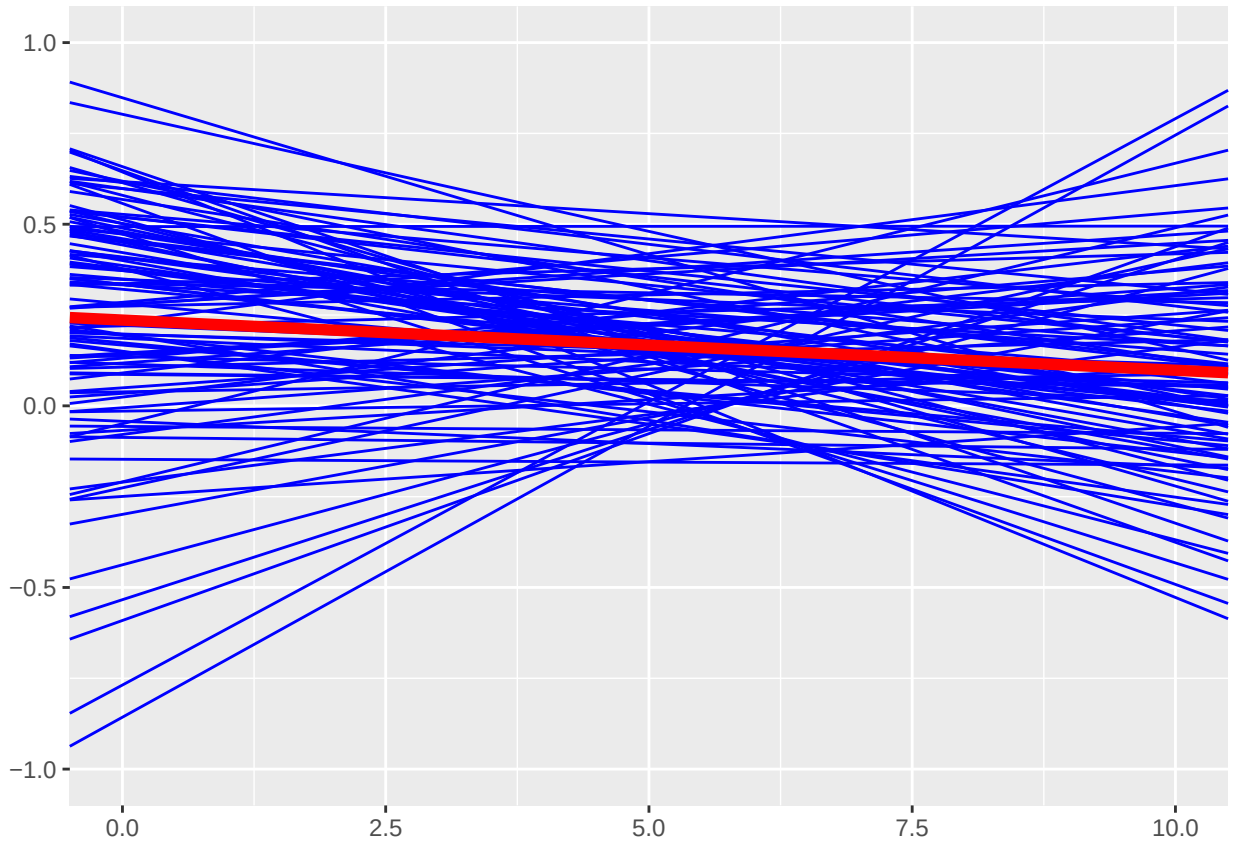



```
x = seq(x_min, x_max, length.out = resolution)
g_avg_x = g_average[1] + g_average[2] * x
f = sin(x)
biases = f - g_avg_x
expe_bias_g_sq = mean(biases^2)
expe_bias_g_sq
```

```
## [1] 0.4414822
```

```
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 = "red", lwd = 2) +
  ylim(-1, 1)
```

```
## 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] 0.05256852
```

```
mse
```

```
## [1] 0.5856522
```

```
sigma^2
```

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

```
expe_bias_g_sq
```

```
## [1] 0.4414822
```

```
expe_var_g
```

```
## [1] 0.05256852
```

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

```
## [1] 0.5840507
```

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

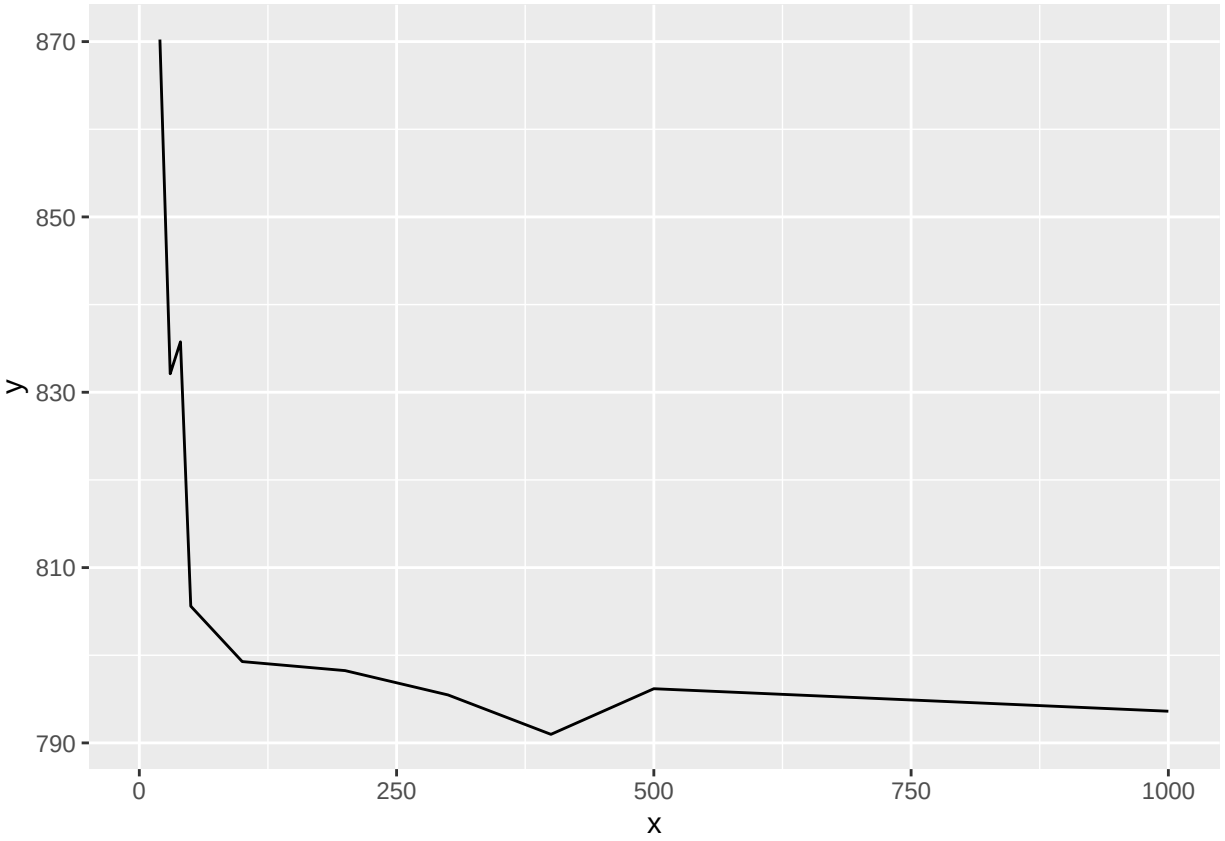
Take a sample of n = 2000 observations from the diamonds data.

```
pacman::p_load(dplyr)
diamond_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`. Plot it.

```
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_model = randomForest(price ~ ., data = diamond_samp, ntree = num_trees[i])
  oob_se_by_num_trees[i] = sd(diamond_samp$price - rf_model$predicted)
}

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

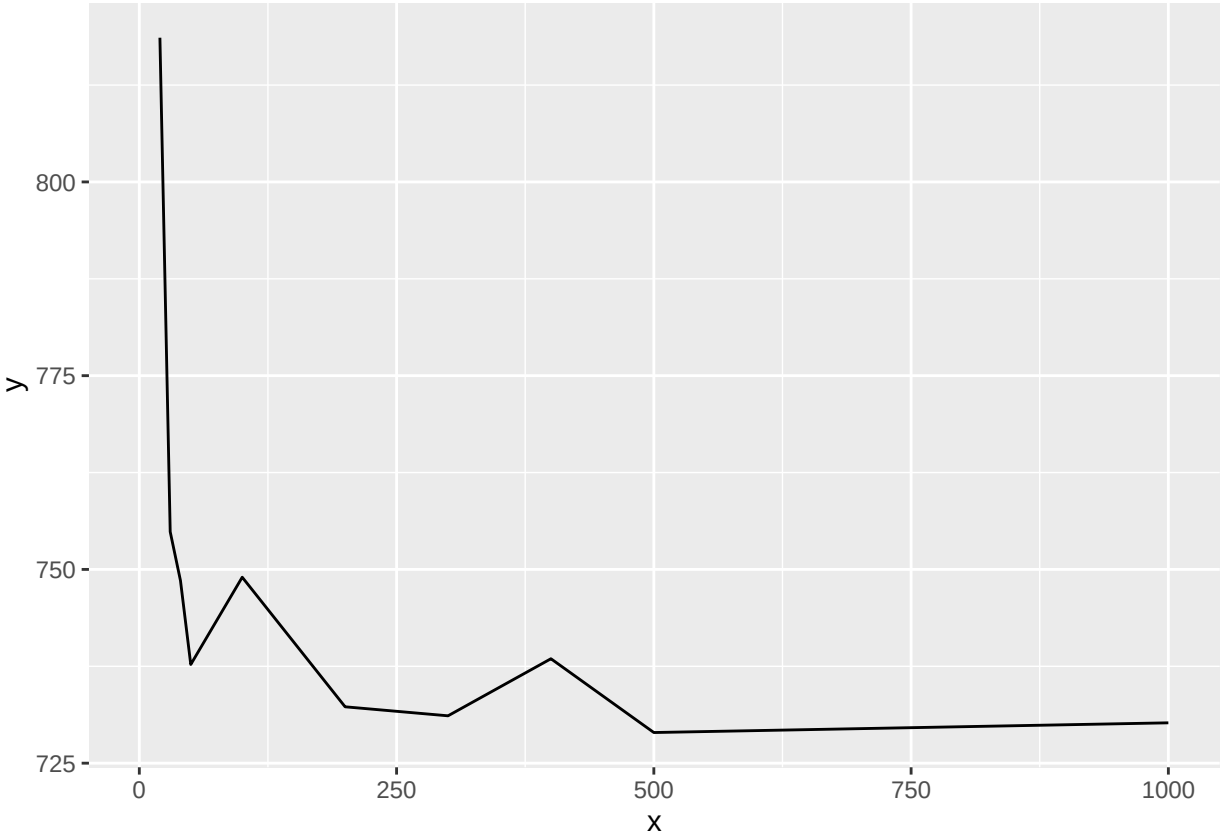
```
## Warning: Removed 4 row(s) containing missing values (geom_path).
```



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.

```
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_model = randomForest(price ~ ., data = diamond_samp, ntree = num_trees[i], mtry = ncol(diamond_samp
  oob_se_by_num_trees_bag[i] = sd(diamond_samp$price - rf_model$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?

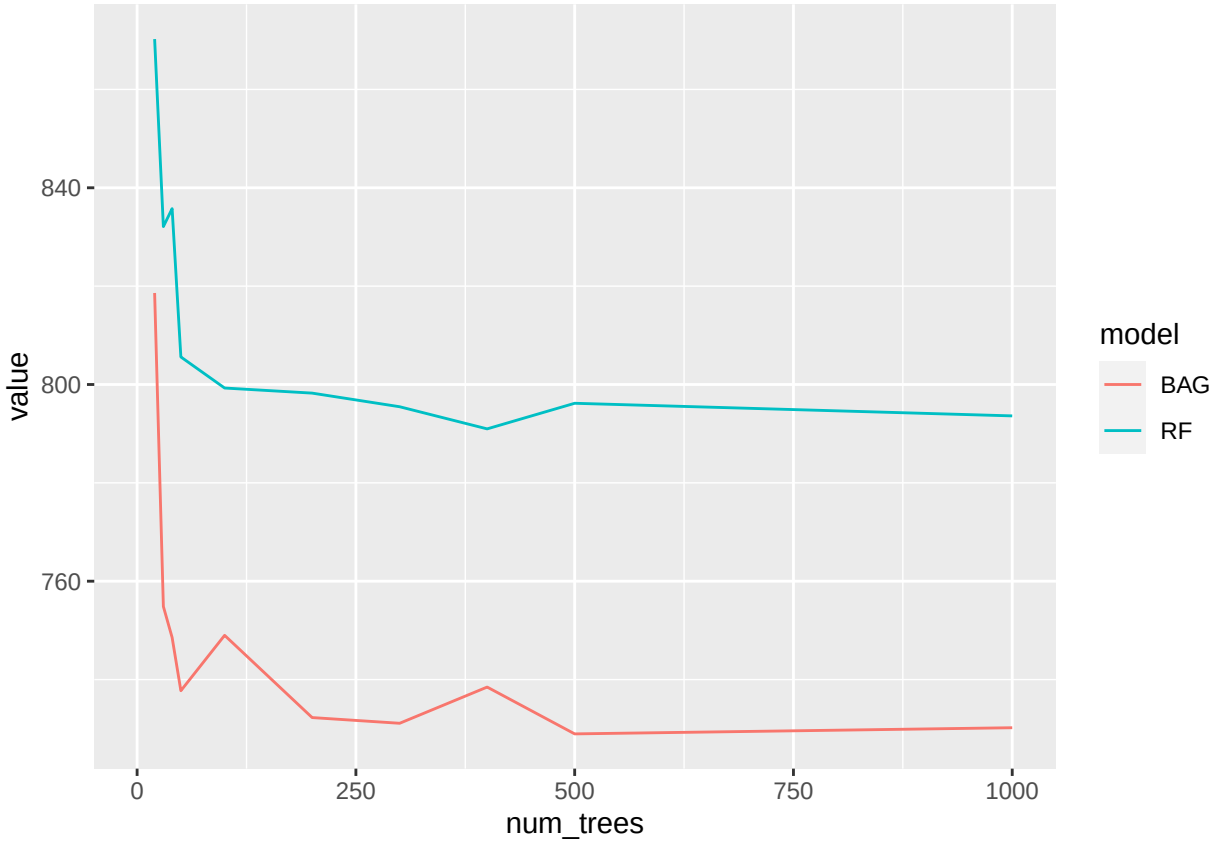
```
((oob_se_by_num_trees - oob_se_by_num_trees_bag) / oob_se_by_num_trees_bag) *100
```

```
##  [1]        NA        NA        NA        NA  6.306630 10.233639 11.649161
##  [8]  9.199762  6.714193  9.009569  8.803677  7.109556  9.222901  8.683952
```

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

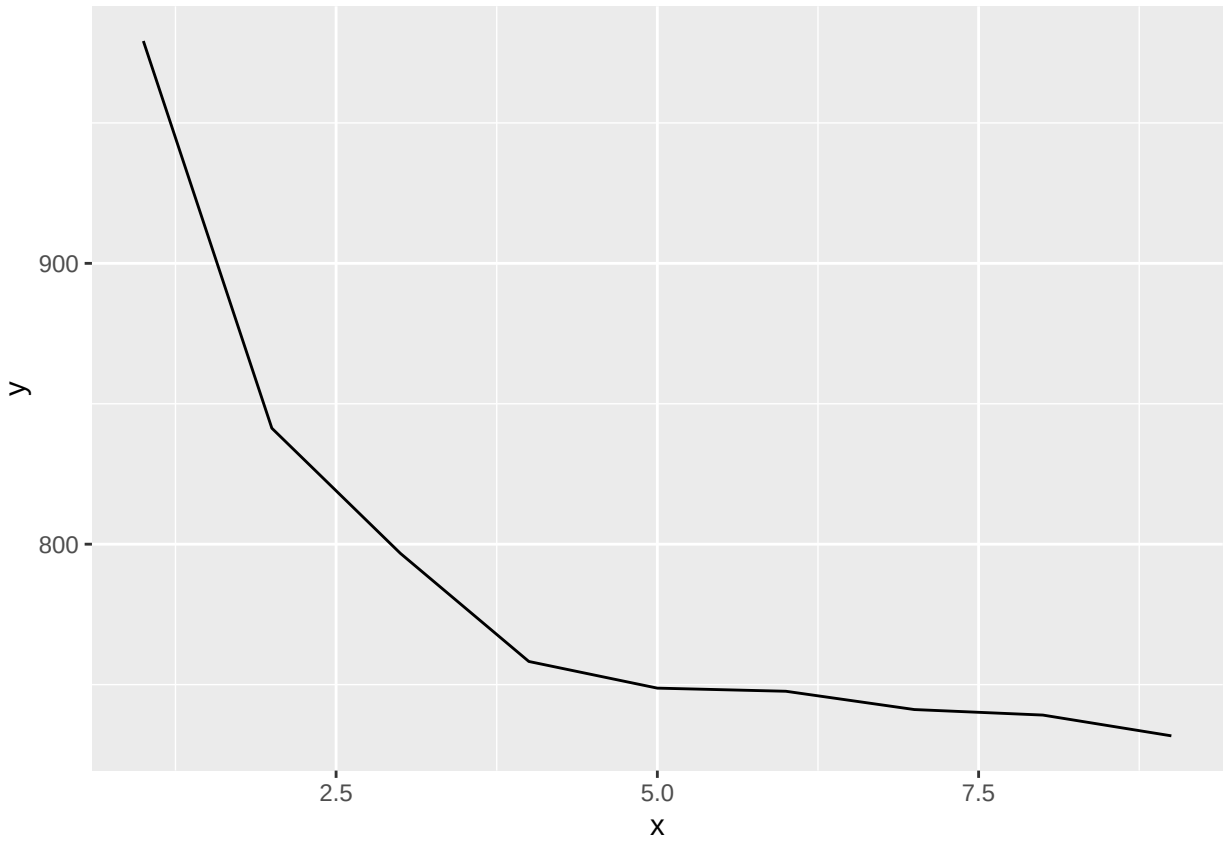
```
ggplot(rbind(data.frame(num_trees = num_trees, value = oob_se_by_num_trees, model = "RF" ), data.frame(
  geom_line(aes(x = num_trees, y = value, color = model))
```

```
## 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 bootstrap s_e for all mtry values.

```
mtrys = 1:(ncol(diamond_samp)-1)
oob_se_by_mtrys= array(NA, length(mtrys))
for(i in 1:length(mtrys)){
  rf_mod = randomForest(price ~., data = diamond_samp, mtry = mtrys[i])
  oob_se_by_mtrys[i] = sd(diamond_samp$price - rf_mod$predicted)
}

ggplot(data.frame(x = mtrys, y = oob_se_by_mtrys)) +
  geom_line(aes(x = x, y = y))
```




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

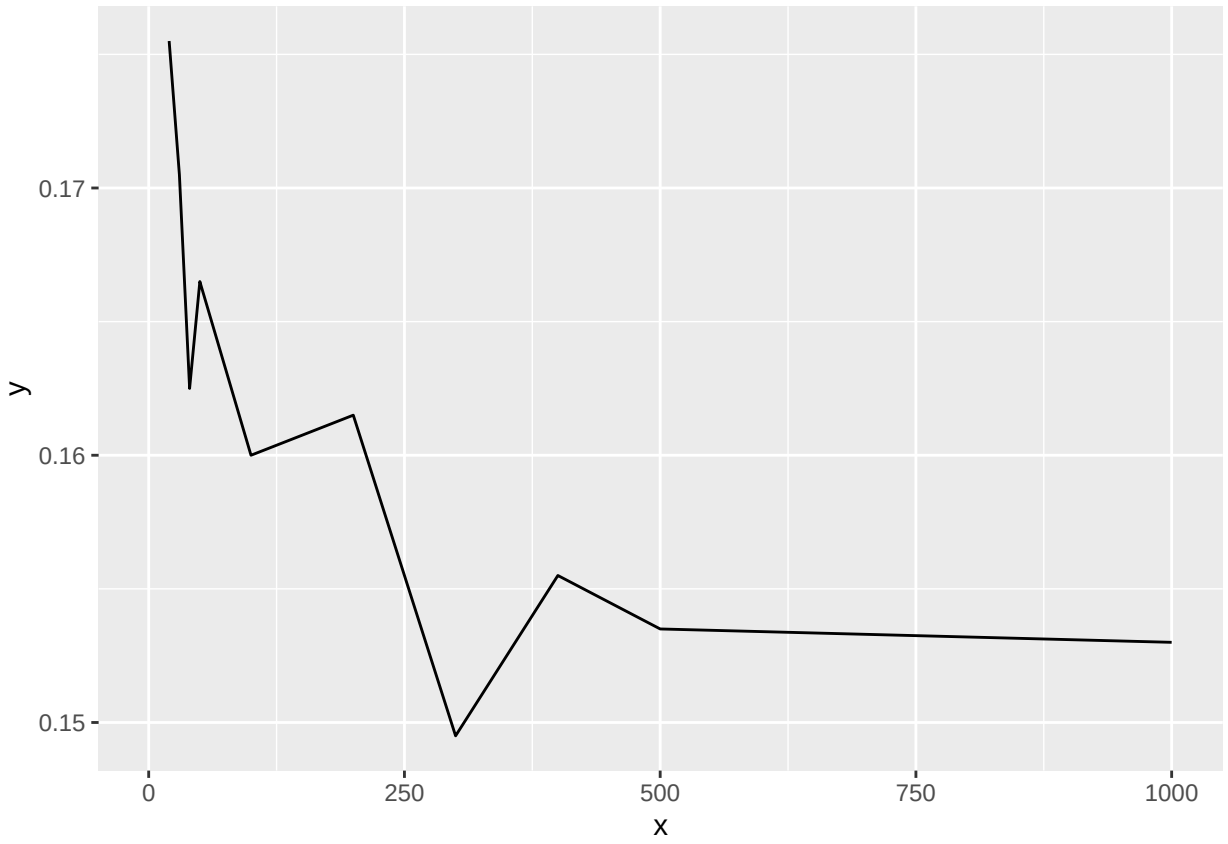
Take a sample of n = 2000 observations from the adult data.

```
pacman::p_load_gh("coatles/ucidata")
data(adult)
adult = na.omit(adult)
adult_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.

```
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_model = randomForest(income ~ ., data = adult_samp, ntree = num_trees[i])
  oob_me_by_num_trees[i] = mean(adult_samp$income !=  rf_model$predicted)
}

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

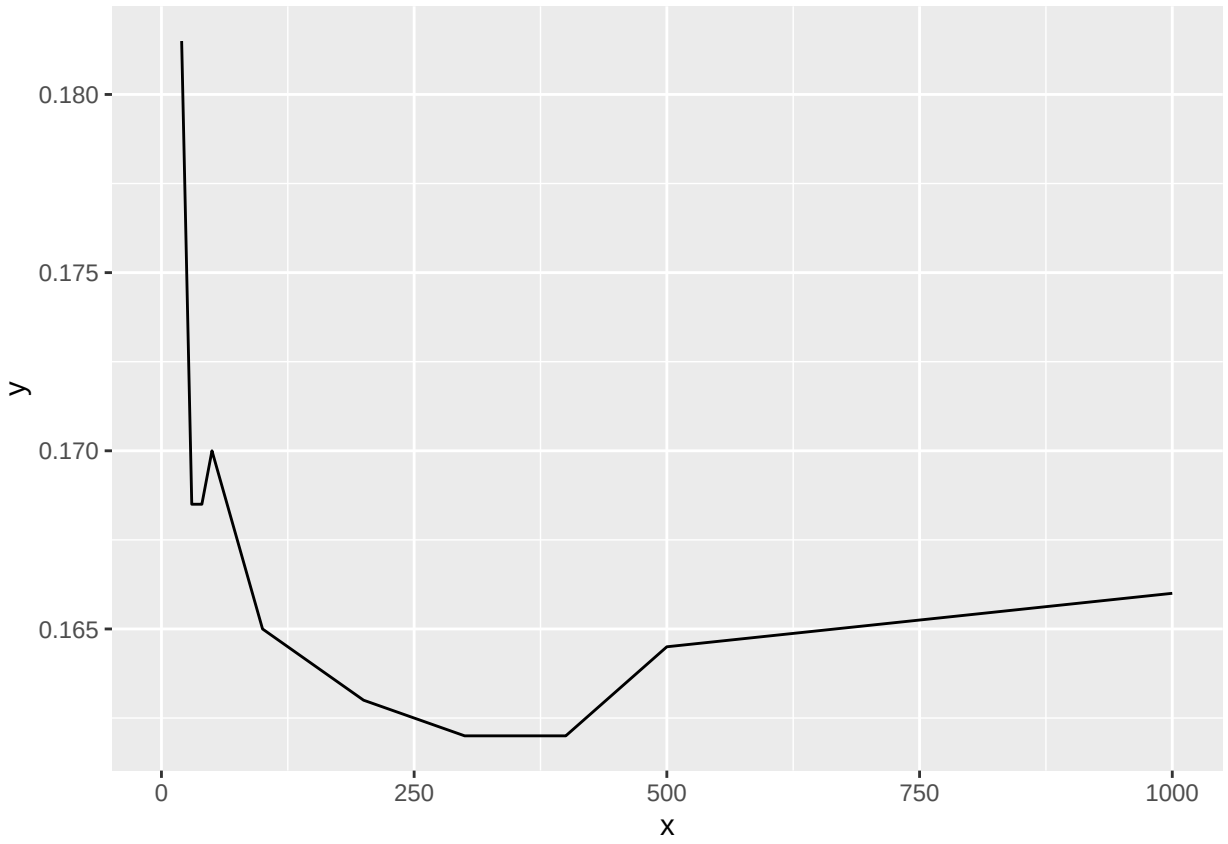
```
## Warning: Removed 4 row(s) containing missing values (geom_path).
```



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.

```
oob_me_by_num_trees_bag = array(NA, length(num_trees))

for(i in 1:length(num_trees)){
  rf_model = randomForest(income ~ ., data = adult_samp, ntree = num_trees[i], mtry = ncol(adult_samp) -
  oob_me_by_num_trees_bag[i] = mean(adult_samp$income !=  rf_model$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?

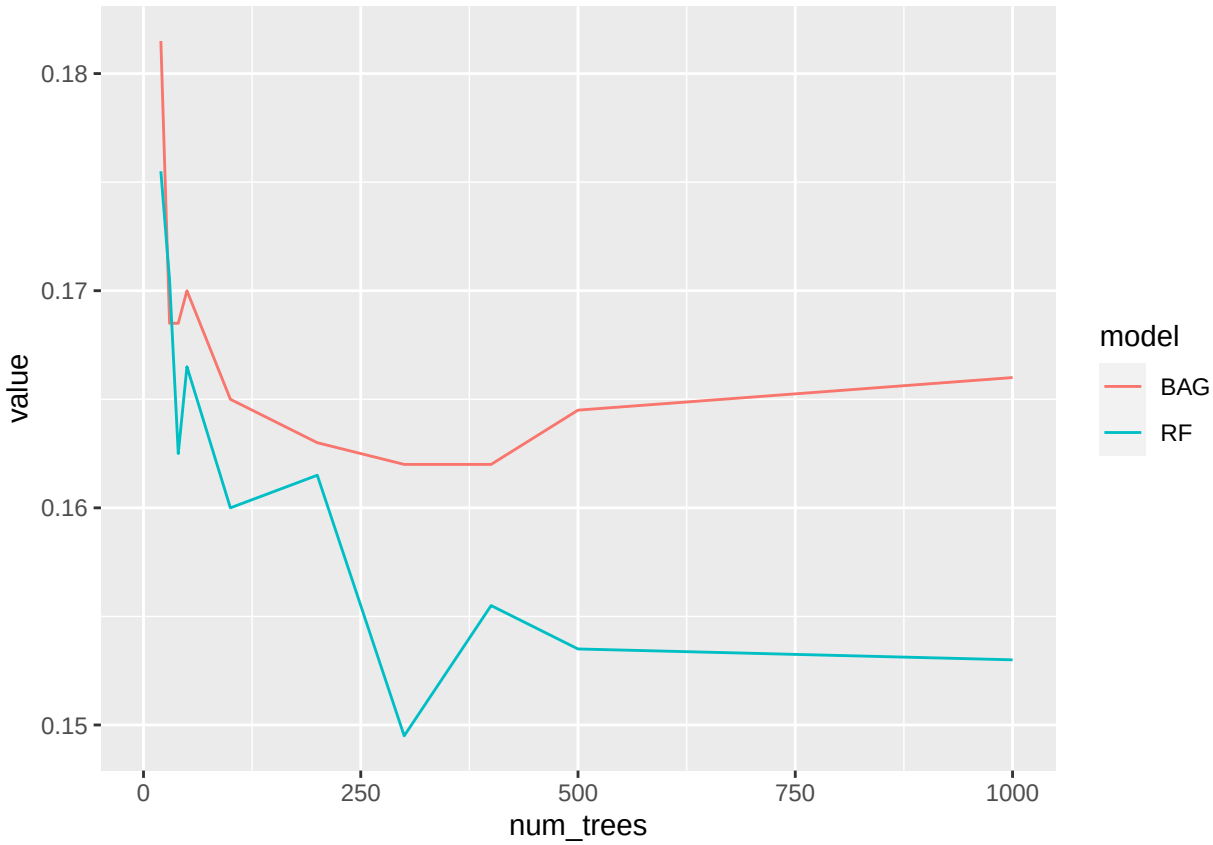
```
((oob_me_by_num_trees - oob_me_by_num_trees_bag) / oob_me_by_num_trees_bag) *100
```

```
##  [1]         NA         NA         NA         NA -3.3057851  1.1869436
##  [7] -3.5608309 -2.0588235 -3.0303030 -0.9202454 -7.7160494 -4.0123457
## [13] -6.6869301 -7.8313253
```

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).
```

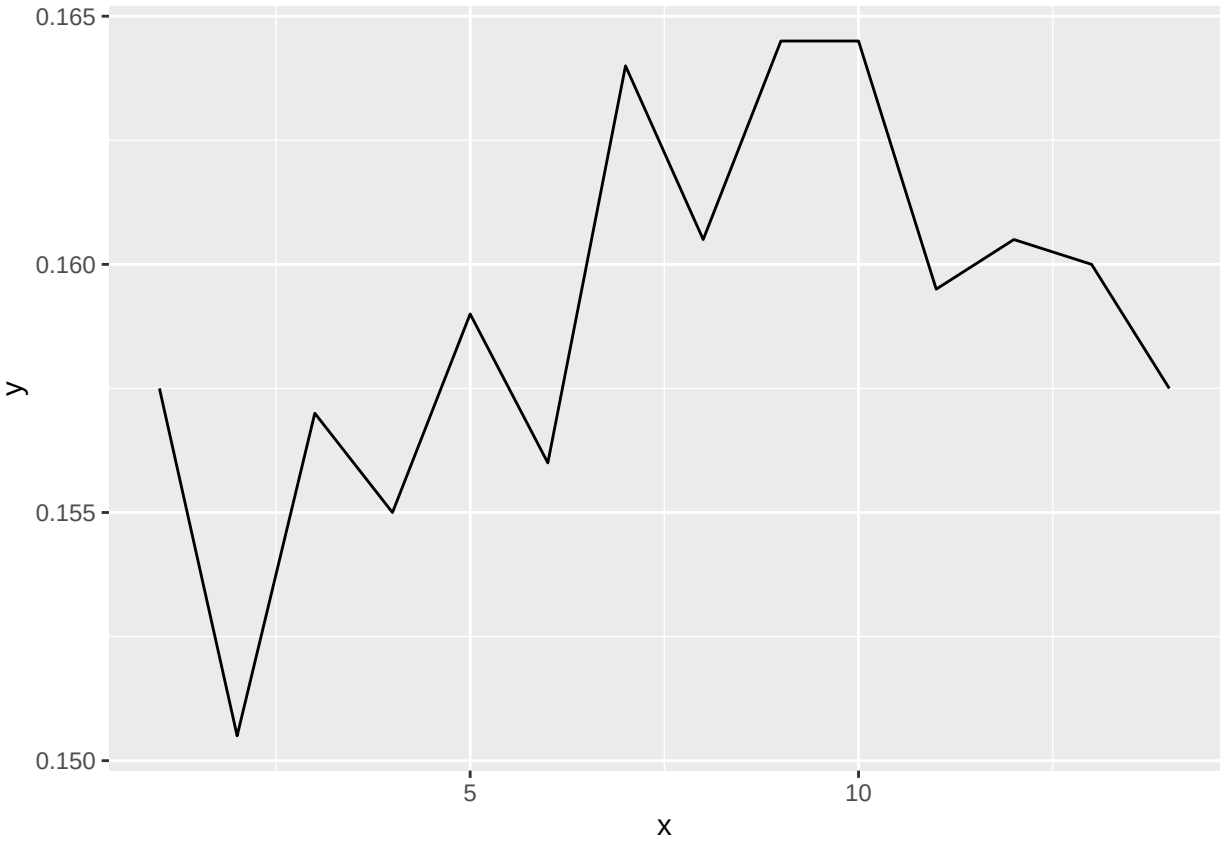


Build RF models for 500 trees using different `mtry` values: 1, 2, ... the maximum (see above as maximum is defined by the specific RF algorithm implementation).

```
mtrys = 1:(ncol(adult_samp)-1)
oob_me_by_mtrys= array(NA, length(mtrys))
for(i in 1:length(mtrys)){
  rf_model = randomForest(income ~., data = adult_samp, mtry = mtrys[i])
  oob_me_by_mtrys[i] = mean(adult_samp$income != rf_model$predicted)
}
```

Plot oob misclassification error by `mtry`.

```
ggplot(data.frame(x = mtrys, y = oob_me_by_mtrys)) +
  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 `num_ols_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`.

```
random_bagged_ols = function(X, y, num_ols_models = 100, mtry = NULL){
  if (is.null(mtry) || mtry >= p){
    mtry = (.5)(ncol(X))
  }
  lm_mods = array(NA, length(num_ols_models))
  n_train = (.10)(nrow(X))

  for(i in 1:length(num_ols_models)){
    bootstrap_indices = sample(1:n_train, replace = TRUE)
    selected_features = sample(1:mtry, replace = TRUE)
    lm_mods[i] = lm(y[bootstrap_indices] ~ X[, selected_features], X[bootstrap_indices])
  }

  lm_mods
}
```

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

```
pacman::p_load(MASS)
MASS::Boston
```

```
##         crim    zn indus chas    nox    rm   age     dis rad tax ptratio  black
```

```
##    0.00632  18.0  2.31    0 0.5380 6.575  65.2  4.0900   1 296    15.3 396.90
##    0.02731   0.0  7.07    0 0.4690 6.421  78.9  4.9671   2 242    17.8 396.90
##    0.02729   0.0  7.07    0 0.4690 7.185  61.1  4.9671   2 242    17.8 392.83
##    0.03237   0.0  2.18    0 0.4580 6.998  45.8  6.0622   3 222    18.7 394.63
##    0.06905   0.0  2.18    0 0.4580 7.147  54.2  6.0622   3 222    18.7 396.90
##    0.02985   0.0  2.18    0 0.4580 6.430  58.7  6.0622   3 222    18.7 394.12
##    0.08829  12.5  7.87    0 0.5240 6.012  66.6  5.5605   5 311    15.2 395.60
##    0.14455  12.5  7.87    0 0.5240 6.172  96.1  5.9505   5 311    15.2 396.90
##    0.21124  12.5  7.87    0 0.5240 5.631 100.0  6.0821   5 311    15.2 386.63
##    0.17004  12.5  7.87    0 0.5240 6.004  85.9  6.5921   5 311    15.2 386.71
##    0.22489  12.5  7.87    0 0.5240 6.377  94.3  6.3467   5 311    15.2 392.52
##    0.11747  12.5  7.87    0 0.5240 6.009  82.9  6.2267   5 311    15.2 396.90
##    0.09378  12.5  7.87    0 0.5240 5.889  39.0  5.4509   5 311    15.2 390.50
##    0.62976   0.0  8.14    0 0.5380 5.949  61.8  4.7075   4 307    21.0 396.90
##    0.63796   0.0  8.14    0 0.5380 6.096  84.5  4.4619   4 307    21.0 380.02
##    0.62739   0.0  8.14    0 0.5380 5.834  56.5  4.4986   4 307    21.0 395.62
##    1.05393   0.0  8.14    0 0.5380 5.935  29.3  4.4986   4 307    21.0 386.85
##    0.78420   0.0  8.14    0 0.5380 5.990  81.7  4.2579   4 307    21.0 386.75
##    0.80271   0.0  8.14    0 0.5380 5.456  36.6  3.7965   4 307    21.0 288.99
##    0.72580   0.0  8.14    0 0.5380 5.727  69.5  3.7965   4 307    21.0 390.95
##    1.25179   0.0  8.14    0 0.5380 5.570  98.1  3.7979   4 307    21.0 376.57
##    0.85204   0.0  8.14    0 0.5380 5.965  89.2  4.0123   4 307    21.0 392.53
##    1.23247   0.0  8.14    0 0.5380 6.142  91.7  3.9769   4 307    21.0 396.90
##    0.98843   0.0  8.14    0 0.5380 5.813 100.0  4.0952   4 307    21.0 394.54
##    0.75026   0.0  8.14    0 0.5380 5.924  94.1  4.3996   4 307    21.0 394.33
##    0.84054   0.0  8.14    0 0.5380 5.599  85.7  4.4546   4 307    21.0 303.42
##    0.67191   0.0  8.14    0 0.5380 5.813  90.3  4.6820   4 307    21.0 376.88
##    0.95577   0.0  8.14    0 0.5380 6.047  88.8  4.4534   4 307    21.0 306.38
##    0.77299   0.0  8.14    0 0.5380 6.495  94.4  4.4547   4 307    21.0 387.94
##    1.00245   0.0  8.14    0 0.5380 6.674  87.3  4.2390   4 307    21.0 380.23
##    1.13081   0.0  8.14    0 0.5380 5.713  94.1  4.2330   4 307    21.0 360.17
##    1.35472   0.0  8.14    0 0.5380 6.072 100.0  4.1750   4 307    21.0 376.73
##    1.38799   0.0  8.14    0 0.5380 5.950  82.0  3.9900   4 307    21.0 232.60
##    1.15172   0.0  8.14    0 0.5380 5.701  95.0  3.7872   4 307    21.0 358.77
##    1.61282   0.0  8.14    0 0.5380 6.096  96.9  3.7598   4 307    21.0 248.31
##    0.06417   0.0  5.96    0 0.4990 5.933  68.2  3.3603   5 279    19.2 396.90
##    0.09744   0.0  5.96    0 0.4990 5.841  61.4  3.3779   5 279    19.2 377.56
##    0.08014   0.0  5.96    0 0.4990 5.850  41.5  3.9342   5 279    19.2 396.90
##    0.17505   0.0  5.96    0 0.4990 5.966  30.2  3.8473   5 279    19.2 393.43
##    0.02763  75.0  2.95    0 0.4280 6.595  21.8  5.4011   3 252    18.3 395.63
##    0.03359  75.0  2.95    0 0.4280 7.024  15.8  5.4011   3 252    18.3 395.62
##    0.12744   0.0  6.91    0 0.4480 6.770   2.9  5.7209   3 233    17.9 385.41
##    0.14150   0.0  6.91    0 0.4480 6.169   6.6  5.7209   3 233    17.9 383.37
##    0.15936   0.0  6.91    0 0.4480 6.211   6.5  5.7209   3 233    17.9 394.46
##    0.12269   0.0  6.91    0 0.4480 6.069  40.0  5.7209   3 233    17.9 389.39
##    0.17142   0.0  6.91    0 0.4480 5.682  33.8  5.1004   3 233    17.9 396.90
##    0.18836   0.0  6.91    0 0.4480 5.786  33.3  5.1004   3 233    17.9 396.90
##    0.22927   0.0  6.91    0 0.4480 6.030  85.5  5.6894   3 233    17.9 392.74
##    0.25387   0.0  6.91    0 0.4480 5.399  95.3  5.8700   3 233    17.9 396.90
##    0.21977   0.0  6.91    0 0.4480 5.602  62.0  6.0877   3 233    17.9 396.90
##    0.08873  21.0  5.64    0 0.4390 5.963  45.7  6.8147   4 243    16.8 395.56
##    0.04337  21.0  5.64    0 0.4390 6.115  63.0  6.8147   4 243    16.8 393.97
##    0.05360  21.0  5.64    0 0.4390 6.511  21.1  6.8147   4 243    16.8 396.90
##    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
```

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## 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
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## 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
```

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## 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
## 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
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## 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
## 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
```

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## 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
## 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
```

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## 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
## 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
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## 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
## 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 medv
## 1    4.98 24.0
## 2    9.14 21.6
## 3    4.03 34.7
## 4    2.94 33.4
## 5    5.33 36.2
## 6    5.21 28.7
## 7   12.43 22.9
## 8   19.15 27.1
## 9   29.93 16.5
## 10  17.10 18.9
## 11  20.45 15.0
## 12  13.27 18.9
## 13  15.71 21.7
## 14   8.26 20.4
## 15  10.26 18.2
## 16   8.47 19.9
## 17   6.58 23.1
## 18  14.67 17.5
## 19  11.69 20.2
## 20  11.28 18.2
## 21  21.02 13.6
## 22  13.83 19.6
## 23  18.72 15.2
## 24  19.88 14.5
## 25  16.30 15.6
## 26  16.51 13.9
## 27  14.81 16.6
## 28  17.28 14.8
## 29  12.80 18.4
## 30  11.98 21.0
## 31  22.60 12.7
## 32  13.04 14.5
## 33  27.71 13.2
```

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## 34  18.35 13.1
## 35  20.34 13.5
## 36   9.68 18.9
## 37  11.41 20.0
## 38   8.77 21.0
## 39  10.13 24.7
## 40   4.32 30.8
## 41   1.98 34.9
## 42   4.84 26.6
## 43   5.81 25.3
## 44   7.44 24.7
## 45   9.55 21.2
## 46  10.21 19.3
## 47  14.15 20.0
## 48  18.80 16.6
## 49  30.81 14.4
## 50  16.20 19.4
## 51  13.45 19.7
## 52   9.43 20.5
## 53   5.28 25.0
## 54   8.43 23.4
## 55  14.80 18.9
## 56   4.81 35.4
## 57   5.77 24.7
## 58   3.95 31.6
## 59   6.86 23.3
## 60   9.22 19.6
## 61  13.15 18.7
## 62  14.44 16.0
## 63   6.73 22.2
## 64   9.50 25.0
## 65   8.05 33.0
## 66   4.67 23.5
## 67  10.24 19.4
## 68   8.10 22.0
## 69  13.09 17.4
## 70   8.79 20.9
## 71   6.72 24.2
## 72   9.88 21.7
## 73   5.52 22.8
## 74   7.54 23.4
## 75   6.78 24.1
## 76   8.94 21.4
## 77  11.97 20.0
## 78  10.27 20.8
## 79  12.34 21.2
## 80   9.10 20.3
## 81   5.29 28.0
## 82   7.22 23.9
## 83   6.72 24.8
## 84   7.51 22.9
## 85   9.62 23.9
## 86   6.53 26.6
## 87  12.86 22.5
```

```
## 88   8.44 22.2
## 89   5.50 23.6
## 90   5.70 28.7
## 91   8.81 22.6
## 92   8.20 22.0
## 93   8.16 22.9
## 94   6.21 25.0
## 95  10.59 20.6
## 96   6.65 28.4
## 97  11.34 21.4
## 98   4.21 38.7
## 99   3.57 43.8
## 100  6.19 33.2
## 101  9.42 27.5
## 102  7.67 26.5
## 103 10.63 18.6
## 104 13.44 19.3
## 105 12.33 20.1
## 106 16.47 19.5
## 107 18.66 19.5
## 108 14.09 20.4
## 109 12.27 19.8
## 110 15.55 19.4
## 111 13.00 21.7
## 112 10.16 22.8
## 113 16.21 18.8
## 114 17.09 18.7
## 115 10.45 18.5
## 116 15.76 18.3
## 117 12.04 21.2
## 118 10.30 19.2
## 119 15.37 20.4
## 120 13.61 19.3
## 121 14.37 22.0
## 122 14.27 20.3
## 123 17.93 20.5
## 124 25.41 17.3
## 125 17.58 18.8
## 126 14.81 21.4
## 127 27.26 15.7
## 128 17.19 16.2
## 129 15.39 18.0
## 130 18.34 14.3
## 131 12.60 19.2
## 132 12.26 19.6
## 133 11.12 23.0
## 134 15.03 18.4
## 135 17.31 15.6
## 136 16.96 18.1
## 137 16.90 17.4
## 138 14.59 17.1
## 139 21.32 13.3
## 140 18.46 17.8
## 141 24.16 14.0
```

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## 142 34.41 14.4
## 143 26.82 13.4
## 144 26.42 15.6
## 145 29.29 11.8
## 146 27.80 13.8
## 147 16.65 15.6
## 148 29.53 14.6
## 149 28.32 17.8
## 150 21.45 15.4
## 151 14.10 21.5
## 152 13.28 19.6
## 153 12.12 15.3
## 154 15.79 19.4
## 155 15.12 17.0
## 156 15.02 15.6
## 157 16.14 13.1
## 158  4.59 41.3
## 159  6.43 24.3
## 160  7.39 23.3
## 161  5.50 27.0
## 162  1.73 50.0
## 163  1.92 50.0
## 164  3.32 50.0
## 165 11.64 22.7
## 166  9.81 25.0
## 167  3.70 50.0
## 168 12.14 23.8
## 169 11.10 23.8
## 170 11.32 22.3
## 171 14.43 17.4
## 172 12.03 19.1
## 173 14.69 23.1
## 174  9.04 23.6
## 175  9.64 22.6
## 176  5.33 29.4
## 177 10.11 23.2
## 178  6.29 24.6
## 179  6.92 29.9
## 180  5.04 37.2
## 181  7.56 39.8
## 182  9.45 36.2
## 183  4.82 37.9
## 184  5.68 32.5
## 185 13.98 26.4
## 186 13.15 29.6
## 187  4.45 50.0
## 188  6.68 32.0
## 189  4.56 29.8
## 190  5.39 34.9
## 191  5.10 37.0
## 192  4.69 30.5
## 193  2.87 36.4
## 194  5.03 31.1
## 195  4.38 29.1
```

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## 196  2.97 50.0
## 197  4.08 33.3
## 198  8.61 30.3
## 199  6.62 34.6
## 200  4.56 34.9
## 201  4.45 32.9
## 202  7.43 24.1
## 203  3.11 42.3
## 204  3.81 48.5
## 205  2.88 50.0
## 206 10.87 22.6
## 207 10.97 24.4
## 208 18.06 22.5
## 209 14.66 24.4
## 210 23.09 20.0
## 211 17.27 21.7
## 212 23.98 19.3
## 213 16.03 22.4
## 214  9.38 28.1
## 215 29.55 23.7
## 216  9.47 25.0
## 217 13.51 23.3
## 218  9.69 28.7
## 219 17.92 21.5
## 220 10.50 23.0
## 221  9.71 26.7
## 222 21.46 21.7
## 223  9.93 27.5
## 224  7.60 30.1
## 225  4.14 44.8
## 226  4.63 50.0
## 227  3.13 37.6
## 228  6.36 31.6
## 229  3.92 46.7
## 230  3.76 31.5
## 231 11.65 24.3
## 232  5.25 31.7
## 233  2.47 41.7
## 234  3.95 48.3
## 235  8.05 29.0
## 236 10.88 24.0
## 237  9.54 25.1
## 238  4.73 31.5
## 239  6.36 23.7
## 240  7.37 23.3
## 241 11.38 22.0
## 242 12.40 20.1
## 243 11.22 22.2
## 244  5.19 23.7
## 245 12.50 17.6
## 246 18.46 18.5
## 247  9.16 24.3
## 248 10.15 20.5
## 249  9.52 24.5
```

```
## 250  6.56 26.2
## 251  5.90 24.4
## 252  3.59 24.8
## 253  3.53 29.6
## 254  3.54 42.8
## 255  6.57 21.9
## 256  9.25 20.9
## 257  3.11 44.0
## 258  5.12 50.0
## 259  7.79 36.0
## 260  6.90 30.1
## 261  9.59 33.8
## 262  7.26 43.1
## 263  5.91 48.8
## 264 11.25 31.0
## 265  8.10 36.5
## 266 10.45 22.8
## 267 14.79 30.7
## 268  7.44 50.0
## 269  3.16 43.5
## 270 13.65 20.7
## 271 13.00 21.1
## 272  6.59 25.2
## 273  7.73 24.4
## 274  6.58 35.2
## 275  3.53 32.4
## 276  2.98 32.0
## 277  6.05 33.2
## 278  4.16 33.1
## 279  7.19 29.1
## 280  4.85 35.1
## 281  3.76 45.4
## 282  4.59 35.4
## 283  3.01 46.0
## 284  3.16 50.0
## 285  7.85 32.2
## 286  8.23 22.0
## 287 12.93 20.1
## 288  7.14 23.2
## 289  7.60 22.3
## 290  9.51 24.8
## 291  3.33 28.5
## 292  3.56 37.3
## 293  4.70 27.9
## 294  8.58 23.9
## 295 10.40 21.7
## 296  6.27 28.6
## 297  7.39 27.1
## 298 15.84 20.3
## 299  4.97 22.5
## 300  4.74 29.0
## 301  6.07 24.8
## 302  9.50 22.0
## 303  8.67 26.4
```

```
## 304  4.86 33.1
## 305  6.93 36.1
## 306  8.93 28.4
## 307  6.47 33.4
## 308  7.53 28.2
## 309  4.54 22.8
## 310  9.97 20.3
## 311 12.64 16.1
## 312  5.98 22.1
## 313 11.72 19.4
## 314  7.90 21.6
## 315  9.28 23.8
## 316 11.50 16.2
## 317 18.33 17.8
## 318 15.94 19.8
## 319 10.36 23.1
## 320 12.73 21.0
## 321  7.20 23.8
## 322  6.87 23.1
## 323  7.70 20.4
## 324 11.74 18.5
## 325  6.12 25.0
## 326  5.08 24.6
## 327  6.15 23.0
## 328 12.79 22.2
## 329  9.97 19.3
## 330  7.34 22.6
## 331  9.09 19.8
## 332 12.43 17.1
## 333  7.83 19.4
## 334  5.68 22.2
## 335  6.75 20.7
## 336  8.01 21.1
## 337  9.80 19.5
## 338 10.56 18.5
## 339  8.51 20.6
## 340  9.74 19.0
## 341  9.29 18.7
## 342  5.49 32.7
## 343  8.65 16.5
## 344  7.18 23.9
## 345  4.61 31.2
## 346 10.53 17.5
## 347 12.67 17.2
## 348  6.36 23.1
## 349  5.99 24.5
## 350  5.89 26.6
## 351  5.98 22.9
## 352  5.49 24.1
## 353  7.79 18.6
## 354  4.50 30.1
## 355  8.05 18.2
## 356  5.57 20.6
## 357 17.60 17.8
```

```
## 358 13.27 21.7
## 359 11.48 22.7
## 360 12.67 22.6
## 361  7.79 25.0
## 362 14.19 19.9
## 363 10.19 20.8
## 364 14.64 16.8
## 365  5.29 21.9
## 366  7.12 27.5
## 367 14.00 21.9
## 368 13.33 23.1
## 369  3.26 50.0
## 370  3.73 50.0
## 371  2.96 50.0
## 372  9.53 50.0
## 373  8.88 50.0
## 374 34.77 13.8
## 375 37.97 13.8
## 376 13.44 15.0
## 377 23.24 13.9
## 378 21.24 13.3
## 379 23.69 13.1
## 380 21.78 10.2
## 381 17.21 10.4
## 382 21.08 10.9
## 383 23.60 11.3
## 384 24.56 12.3
## 385 30.63  8.8
## 386 30.81  7.2
## 387 28.28 10.5
## 388 31.99  7.4
## 389 30.62 10.2
## 390 20.85 11.5
## 391 17.11 15.1
## 392 18.76 23.2
## 393 25.68  9.7
## 394 15.17 13.8
## 395 16.35 12.7
## 396 17.12 13.1
## 397 19.37 12.5
## 398 19.92  8.5
## 399 30.59  5.0
## 400 29.97  6.3
## 401 26.77  5.6
## 402 20.32  7.2
## 403 20.31 12.1
## 404 19.77  8.3
## 405 27.38  8.5
## 406 22.98  5.0
## 407 23.34 11.9
## 408 12.13 27.9
## 409 26.40 17.2
## 410 19.78 27.5
## 411 10.11 15.0
```

```
## 412 21.22 17.2
## 413 34.37 17.9
## 414 20.08 16.3
## 415 36.98  7.0
## 416 29.05  7.2
## 417 25.79  7.5
## 418 26.64 10.4
## 419 20.62  8.8
## 420 22.74  8.4
## 421 15.02 16.7
## 422 15.70 14.2
## 423 14.10 20.8
## 424 23.29 13.4
## 425 17.16 11.7
## 426 24.39  8.3
## 427 15.69 10.2
## 428 14.52 10.9
## 429 21.52 11.0
## 430 24.08  9.5
## 431 17.64 14.5
## 432 19.69 14.1
## 433 12.03 16.1
## 434 16.22 14.3
## 435 15.17 11.7
## 436 23.27 13.4
## 437 18.05  9.6
## 438 26.45  8.7
## 439 34.02  8.4
## 440 22.88 12.8
## 441 22.11 10.5
## 442 19.52 17.1
## 443 16.59 18.4
## 444 18.85 15.4
## 445 23.79 10.8
## 446 23.98 11.8
## 447 17.79 14.9
## 448 16.44 12.6
## 449 18.13 14.1
## 450 19.31 13.0
## 451 17.44 13.4
## 452 17.73 15.2
## 453 17.27 16.1
## 454 16.74 17.8
## 455 18.71 14.9
## 456 18.13 14.1
## 457 19.01 12.7
## 458 16.94 13.5
## 459 16.23 14.9
## 460 14.70 20.0
## 461 16.42 16.4
## 462 14.65 17.7
## 463 13.99 19.5
## 464 10.29 20.2
## 465 13.22 21.4
```

```
## 466 14.13 19.9
## 467 17.15 19.0
## 468 21.32 19.1
## 469 18.13 19.1
## 470 14.76 20.1
## 471 16.29 19.9
## 472 12.87 19.6
## 473 14.36 23.2
## 474 11.66 29.8
## 475 18.14 13.8
## 476 24.10 13.3
## 477 18.68 16.7
## 478 24.91 12.0
## 479 18.03 14.6
## 480 13.11 21.4
## 481 10.74 23.0
## 482  7.74 23.7
## 483  7.01 25.0
## 484 10.42 21.8
## 485 13.34 20.6
## 486 10.58 21.2
## 487 14.98 19.1
## 488 11.45 20.6
## 489 18.06 15.2
## 490 23.97  7.0
## 491 29.68  8.1
## 492 18.07 13.6
## 493 13.35 20.1
## 494 12.01 21.8
## 495 13.59 24.5
## 496 17.60 23.1
## 497 21.14 19.7
## 498 14.10 18.3
## 499 12.92 21.2
## 500 15.10 17.5
## 501 14.33 16.8
## 502  9.67 22.4
## 503  9.08 20.6
## 504  5.64 23.9
## 505  6.48 22.0
## 506  7.88 11.9
```

```
y = Boston$medv
X = Boston
X$medv = NULL
```

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`.

```
puncher = function(M, prob_missing){
  for(i in 1:nrow(M)){
    for(j in 1:ncol(M)) {
      if(runif(1) < prob_missing) {
         M[i,j] = NA
        }
```

```
      }
    }
    M
}
```

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

```
Xmiss = puncher(X, .10)
Xmiss
```

```
##         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  NA 296    15.3 396.90
## 2    0.02731    NA  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      NA   3 222    18.7 394.63
## 5    0.06905   0.0  2.18    0 0.4580 7.147  54.2  6.0622   3 222      NA 396.90
## 6    0.02985   0.0  2.18   NA 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   NA     NA 6.172  96.1      NA   5 311    15.2 396.90
## 9    0.21124    NA    NA    0 0.5240 5.631 100.0  6.0821   5  NA    15.2 386.63
## 10   0.17004    NA  7.87    0 0.5240 6.004  85.9      NA   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   NA 0.5240 6.009    NA  6.2267   5 311    15.2 396.90
## 13   0.09378  12.5  7.87    0 0.5240 5.889    NA  5.4509   5 311      NA 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    NA    0 0.5380 6.096  84.5  4.4619   4 307    21.0     NA
## 16   0.62739   0.0  8.14    0 0.5380    NA  56.5  4.4986   4 307    21.0 395.62
## 17   1.05393    NA  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  NA 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    NA  4.0123   4 307    21.0 392.53
## 23        NA   0.0    NA    0 0.5380 6.142  91.7  3.9769   4 307    21.0 396.90
## 24   0.98843   0.0  8.14    0     NA 5.813 100.0  4.0952   4  NA    21.0 394.54
## 25   0.75026   0.0  8.14    0 0.5380 5.924  94.1  4.3996   4  NA    21.0 394.33
## 26   0.84054   0.0  8.14    0 0.5380 5.599  85.7  4.4546   4  NA      NA 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    NA  8.14    0 0.5380 6.495  94.4  4.4547   4  NA    21.0 387.94
## 30   1.00245   0.0  8.14    0     NA 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      NA   4 307    21.0     NA
## 33   1.38799    NA  8.14    0 0.5380 5.950  82.0      NA  NA 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      NA   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    NA  41.5  3.9342   5 279    19.2 396.90
## 39   0.17505   0.0  5.96    0 0.4990 5.966  30.2      NA   5  NA    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    NA  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   NA 0.4480 6.211   6.5  5.7209   3 233    17.9 394.46
```

```
## 45       NA   0.0  6.91    0 0.4480 6.069  40.0  5.7209   3 233    17.9 389.39
## 46   0.17142   0.0    NA   NA 0.4480 5.682  33.8  5.1004   3  NA    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    NA  5.6894   3 233    17.9 392.74
## 49   0.25387   0.0  6.91    0 0.4480    NA  95.3  5.8700   3 233    17.9 396.90
## 50   0.21977    NA  6.91    0 0.4480 5.602  62.0  6.0877   3 233    17.9 396.90
## 51       NA  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       NA  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    NA  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     NA 7.249  21.9  8.6966   5 226    17.9 395.93
## 57   0.02055  85.0  0.74   NA 0.4100 6.383  35.7      NA   2 313      NA 396.90
## 58   0.01432 100.0    NA    0     NA 6.816  40.5      NA   5 256    15.1 392.90
## 59   0.15445  25.0  5.13    0 0.4530    NA    NA  7.8148   8 284    19.7 390.68
## 60   0.10328  25.0  5.13   NA 0.4530 5.927    NA  6.9320   8 284    19.7 396.90
## 61   0.14932    NA  5.13    0 0.4530 5.741  66.2  7.2254   8 284      NA 395.11
## 62   0.17171  25.0  5.13    0     NA 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       NA    NA  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       NA    NA  3.37    0 0.3980 6.290  17.8  6.6115  NA 337    16.1 396.90
## 67   0.04379  80.0  3.37    0 0.3980    NA  31.1  6.6115   4  NA      NA 396.90
## 68   0.05789  12.5  6.07   NA     NA 5.878  21.4      NA   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    NA 10.81   NA 0.4130 6.417   6.6  5.2873  NA 305    19.2 383.73
## 72   0.15876   0.0 10.81   NA 0.4130 5.961  17.5  5.2873   4 305    19.2     NA
## 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    NA   6.0  4.2515   5 398    18.7 394.92
## 76   0.09512   0.0    NA    0 0.4370 6.286  45.0  4.5026   5 398    18.7     NA
## 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   NA 0.4260 6.727  33.5  5.4007   4 281      NA 396.90
## 82   0.04462  25.0  4.86    0     NA    NA  70.4  5.4007   4  NA    19.0 395.63
## 83   0.03659  25.0  4.86    0 0.4260 6.302  32.2      NA  NA 281    19.0 396.90
## 84   0.03551  25.0  4.86    0     NA 6.167  46.7  5.4007   4 281    19.0 390.64
## 85       NA   0.0  4.49    0 0.4490    NA  48.0  4.7794   3 247    18.5 396.90
## 86   0.05735   0.0  4.49    0     NA 6.630    NA  4.4377   3 247    18.5 392.30
## 87   0.05188   0.0  4.49    0 0.4490 6.015  45.1      NA   3 247      NA 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       NA   0.0  3.41   NA     NA 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  NA    17.8 392.18
## 92   0.03932   0.0  3.41    0 0.4890 6.405  73.9  3.0921   2  NA    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      NA 357.98
## 97   0.11504   0.0  2.89    0     NA 6.163  69.6  3.4952   2 276    18.0 391.83
## 98   0.12083   0.0    NA    0     NA 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      NA 393.53
## 100  0.06860   0.0  2.89   NA 0.4450 7.416  62.5      NA  NA 276    18.0 396.90
## 101  0.14866   0.0  8.56    0 0.5200 6.727  79.9  2.7778   5 384      NA 394.76
## 102  0.11432   0.0  8.56    0 0.5200    NA  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       NA    NA  8.56    0 0.5200    NA  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  NA    20.9 395.24
## 110       NA   0.0  8.56    0 0.5200    NA  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    NA  92.9      NA   6 432    17.8 394.95
## 114  0.22212    NA 10.01   NA 0.5470 6.092  95.4  2.5480   6 432    17.8 396.90
## 115  0.14231   0.0 10.01    0     NA 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    NA    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     NA
## 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      NA   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      NA   2 188    19.1 385.02
## 127       NA   0.0 25.65   NA 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  NA    21.2 396.90
## 130  0.88125   0.0 21.89   NA 0.6240 5.637  94.7  1.9799   4 437    21.2     NA
## 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  NA 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       NA   0.0 21.89    0     NA 5.822  95.4  2.4699   4 437    21.2 388.69
## 135       NA   0.0 21.89    0 0.6240 5.757    NA  2.3460   4  NA    21.2 262.76
## 136  0.55778   0.0 21.89    0 0.6240 6.335  98.2  2.1107   4 437    21.2     NA
## 137  0.32264   0.0 21.89    0 0.6240 5.942  93.5  1.9669   4  NA    21.2 378.25
## 138       NA   0.0 21.89    0     NA 6.454  98.4  1.8498  NA 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       NA   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     NA    NA  93.6  1.6119   4 437    21.2 388.08
## 142  1.62864   0.0 21.89    0 0.6240 5.019    NA  1.4394   4 437    21.2 396.90
## 143  3.32105   0.0 19.58   NA 0.8710    NA 100.0  1.3216   5 403    14.7     NA
## 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   NA     NA 4.903    NA  1.3459   5 403    14.7 396.90
## 146  2.37934   0.0 19.58    0 0.8710    NA 100.0  1.4191   5 403    14.7 172.91
## 147  2.15505   0.0 19.58    0 0.8710 5.628 100.0      NA   5 403    14.7     NA
## 148  2.36862   0.0 19.58    0 0.8710    NA  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     NA 6.122  97.3  1.6180   5 403    14.7     NA
## 152  1.49632   0.0 19.58    0 0.8710 5.404 100.0      NA   5 403    14.7 341.60
```

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## 153  1.12658   0.0 19.58    1 0.8710 5.012  88.0  1.6102  NA 403    14.7 343.28
## 154  2.14918   0.0 19.58    0     NA 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      NA   5 403    14.7 321.02
## 156       NA   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     NA 5.272  94.0  1.7364   5 403    14.7  88.63
## 158  1.22358    NA 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    NA  1.7659  NA 403      NA 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      NA   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       NA   0.0 19.58    1 0.6050 8.375  93.9  2.1620   5  NA    14.7     NA
## 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     NA
## 167  2.01019   0.0 19.58   NA 0.6050 7.929  96.2  2.0459   5 403    14.7     NA
## 168       NA   0.0 19.58    0 0.6050 5.877  79.2  2.4259   5 403      NA 227.61
## 169  2.30040   0.0 19.58    0 0.6050    NA  96.1  2.1000   5 403    14.7 297.09
## 170  2.44953   0.0 19.58   NA 0.6050 6.402  95.2  2.2625   5 403    14.7     NA
## 171  1.20742   0.0 19.58   NA 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   NA 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  NA 296    16.6 390.96
## 177  0.07022   0.0  4.05    0 0.5100 6.020  47.2  3.5549  NA  NA    16.6 393.23
## 178  0.05425   0.0  4.05   NA 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    NA    0     NA 6.980  58.4      NA   3 193    17.8 396.90
## 181  0.06588   0.0  2.46    0 0.4880 7.765  83.3  2.7410  NA 193    17.8 395.56
## 182  0.06888   0.0  2.46   NA 0.4880 6.144  62.2  2.5979   3 193    17.8 396.90
## 183       NA   0.0  2.46    0 0.4880 7.155  92.2  2.7006   3  NA    17.8 394.12
## 184  0.10008   0.0  2.46    0 0.4880 6.563  95.6  2.8470   3 193      NA 396.90
## 185  0.08308   0.0  2.46    0 0.4880 5.604    NA  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   NA 0.4370 7.185    NA  4.5667   5 398      NA 396.90
## 191  0.09068  45.0  3.44    0 0.4370 6.951  21.5  6.4798   5 398    15.2     NA
## 192       NA  45.0  3.44    0 0.4370    NA  30.8  6.4798   5 398    15.2 389.71
## 193  0.08664  45.0  3.44    0 0.4370    NA  26.3  6.4798   5 398    15.2 390.49
## 194  0.02187  60.0  2.93    0 0.4010 6.800    NA      NA   1 265    15.6 393.37
## 195  0.01439  60.0  2.93    0     NA    NA  18.8  6.2196   1 265    15.6 376.70
## 196  0.01381  80.0  0.46    0 0.4220 7.875    NA  5.6484   4 255    14.4 394.23
## 197  0.04011  80.0  1.52    0 0.4040 7.287  34.1  7.3090  NA 329    12.6 396.90
## 198  0.04666    NA  1.52    0 0.4040    NA  36.6  7.3090   2  NA    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    NA    NA  7.6534   3 402    17.0 384.30
## 202  0.03445  82.5  2.03    0 0.4150    NA    NA  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       NA  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
```

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## 207  0.22969   0.0 10.59    0 0.4890    NA  52.5  4.3549   4 277    18.6 394.87
## 208  0.25199   0.0 10.59    0     NA 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  NA 277      NA 381.32
## 210  0.43571   0.0 10.59    1 0.4890 5.344 100.0      NA   4 277    18.6 396.90
## 211       NA   0.0 10.59   NA 0.4890 5.960  92.1  3.8771   4 277      NA     NA
## 212  0.37578   0.0 10.59   NA 0.4890 5.404  88.6  3.6650   4 277    18.6 395.24
## 213       NA    NA 10.59    1 0.4890 5.807  53.8      NA   4 277    18.6 390.94
## 214  0.14052   0.0 10.59    0 0.4890    NA  32.3  3.9454   4 277    18.6     NA
## 215  0.28955   0.0 10.59    0 0.4890 5.412   9.8  3.5875  NA 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       NA   0.0 13.89    0     NA 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       NA   0.0 13.89    1 0.5500 6.373  92.4      NA   5 276    16.4 393.74
## 221  0.35809   0.0  6.20    1 0.5070    NA  88.5  2.8617   8 307    17.4 391.70
## 222  0.40771   0.0  6.20    1 0.5070 6.164  91.3      NA   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  NA      NA 396.90
## 225  0.31533   0.0  6.20    0 0.5040    NA  78.3  2.8944   8 307    17.4 385.05
## 226  0.52693   0.0    NA    0 0.5040 8.725  83.0  2.8944  NA 307    17.4 382.00
## 227  0.38214   0.0  6.20   NA 0.5040 8.040  86.5  3.2157   8 307      NA 387.38
## 228  0.41238   0.0  6.20    0 0.5040 7.163  79.9  3.2157   8 307      NA 372.08
## 229  0.29819   0.0  6.20   NA 0.5040 7.686    NA  3.3751   8 307      NA 377.51
## 230  0.44178   0.0  6.20    0 0.5040 6.552  21.4  3.3751   8 307      NA 380.34
## 231  0.53700   0.0  6.20    0 0.5040 5.981  68.1      NA   8 307    17.4 378.35
## 232       NA   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  NA 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    NA    1 0.5070 6.726    NA  3.6519   8 307    17.4 360.20
## 236       NA   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    NA  6.20    0 0.5070    NA  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      NA   6  NA    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       NA    NA  4.93    0 0.4280    NA  52.9  7.0355   6 300    16.6 372.75
## 244  0.12757  30.0  4.93   NA 0.4280 6.393   7.8  7.0355   6 300    16.6 374.71
## 245       NA  22.0  5.86    0 0.4310 5.593    NA      NA   7 330    19.1 372.49
## 246  0.19133  22.0  5.86    0 0.4310 5.605  70.2  7.9549  NA 330    19.1 389.13
## 247  0.33983  22.0  5.86   NA 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    NA  5.86   NA 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  NA    19.1 393.74
## 251  0.14030  22.0    NA    0 0.4310 6.487  13.0  7.3967  NA 330    19.1 396.28
## 252  0.21409  22.0  5.86    0 0.4310 6.438   8.9  7.3967   7  NA    19.1 377.07
## 253  0.08221  22.0    NA    0 0.4310 6.957   6.8  8.9067  NA 330    19.1 386.09
## 254  0.36894  22.0  5.86   NA 0.4310 8.259   8.4  8.9067   7 330    19.1 396.90
## 255  0.04819  80.0  3.64    0 0.3920    NA  32.0      NA   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     NA
## 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      NA   5 264    13.0 383.29
## 260  0.65665  20.0  3.97    0     NA 6.842 100.0  2.0107  NA 264    13.0 391.93
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## 261       NA  20.0  3.97    0 0.6470 7.203  81.8  2.1121   5 264    13.0 392.80
## 262       NA  20.0    NA    0 0.6470 7.520  89.4  2.1398   5 264    13.0 388.37
## 263       NA  20.0  3.97    0 0.6470 8.398  91.5  2.2885   5 264      NA 386.86
## 264  0.82526  20.0  3.97    0 0.6470 7.327  94.5  2.0788   5  NA    13.0 393.42
## 265  0.55007  20.0  3.97    0 0.6470 7.206  91.6  1.9301   5 264      NA     NA
## 266  0.76162  20.0  3.97    0     NA 5.560  62.8  1.9865   5 264    13.0     NA
## 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      NA   3  NA      NA     NA
## 271       NA  20.0  6.96    0 0.4640 5.856  42.1  4.4290   3  NA    18.6 388.65
## 272  0.16211    NA  6.96    0 0.4640 6.240  16.3  4.4290  NA 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     NA
## 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    NA  6.41   NA 0.4470 6.482  32.1  4.1403   4 254    17.6 396.90
## 280  0.21038  20.0  3.33    0     NA 6.812  32.2  4.1007   5  NA    14.9 396.90
## 281  0.03578  20.0  3.33   NA 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   NA 0.4429 7.645  49.7  5.2119  NA 216    14.9     NA
## 284  0.01501  90.0  1.21    1 0.4010 7.923  24.8  5.8850   1 198    13.6 395.52
## 285       NA  90.0    NA    0 0.4000    NA  20.8  7.3073   1 285    15.3 394.72
## 286       NA  55.0  2.25    0     NA 6.453  31.9  7.3073   1  NA    15.3 394.72
## 287  0.01965  80.0  1.76   NA 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  NA    16.6 396.90
## 290       NA    NA  5.32    0     NA 6.565  22.9  7.3172   6  NA    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      NA 396.90
## 293  0.03615  80.0  4.95    0 0.4110 6.630  23.4  5.1167   4  NA    19.2 396.90
## 294  0.08265   0.0 13.92   NA 0.4370 6.127  18.4  5.5027  NA  NA    16.0 396.90
## 295  0.08199   0.0 13.92    0 0.4370 6.009  42.3  5.5027   4 289      NA 396.90
## 296  0.12932   0.0 13.92    0 0.4370 6.678  31.1  5.9604   4 289      NA 396.90
## 297  0.05372   0.0 13.92    0 0.4370 6.549    NA  5.9604   4 289    16.0 392.85
## 298  0.14103    NA 13.92    0 0.4370 5.790    NA  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     NA
## 300  0.05561  70.0  2.24    0 0.4000 7.041    NA      NA   5 358    14.8 371.58
## 301       NA  70.0  2.24    0 0.4000 6.871  47.4  7.8278   5 358      NA 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      NA 383.61
## 304       NA    NA  6.09   NA 0.4330 6.982  17.7  5.4917  NA 329    16.1     NA
## 305  0.05515  33.0  2.18    0 0.4720    NA  41.1  4.0220  NA 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     NA
## 307  0.07503  33.0  2.18    0 0.4720    NA  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      NA   4 304    18.4     NA
## 310  0.34940   0.0  9.90    0 0.5440    NA  76.7  3.1025   4 304    18.4 396.24
## 311  2.63548   0.0  9.90    0 0.5440 4.973    NA  2.5194   4 304    18.4     NA
## 312       NA   0.0  9.90    0 0.5440 6.122  52.8  2.6403   4 304    18.4 396.90
## 313  0.26169   0.0    NA    0 0.5440 6.023  90.4      NA   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
```

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## 315  0.36920   0.0  9.90    0 0.5440 6.567  87.3  3.6023   4 304      NA 395.69
## 316  0.25356   0.0    NA    0 0.5440    NA  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   NA 0.5440 6.382  67.2  3.5325  NA 304    18.4 395.21
## 320  0.47547   0.0  9.90   NA 0.5440 6.113  58.8  4.0019   4  NA    18.4 396.23
## 321  0.16760   0.0    NA    0 0.4930 6.426  52.3  4.5404   5 287      NA 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     NA
## 324  0.28392   0.0  7.38    0 0.4930 5.708  74.3  4.7211   5 287      NA 391.13
## 325  0.34109   0.0  7.38    0 0.4930 6.415  40.1  4.7211   5 287      NA 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   NA 0.4930 6.312  28.9      NA   5 287    19.6 396.90
## 328  0.24103   0.0  7.38   NA 0.4930 6.083  43.7      NA   5 287    19.6 396.90
## 329  0.06617    NA  3.24    0 0.4600 5.868  25.8      NA   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   NA 0.4600 6.144  32.2  5.8736   4 430      NA 368.57
## 332  0.05023  35.0  6.06    0 0.4379 5.706  28.4  6.6407   1  NA    16.9 394.02
## 333  0.03466  35.0  6.06    0 0.4379 6.031    NA  6.6407  NA 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
## 335  0.03738   0.0  5.19    0     NA 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  NA    20.2 396.90
## 337  0.03427   0.0    NA    0 0.5150 5.869  46.3  5.2311   5 224    20.2 396.90
## 338  0.03041    NA    NA    0 0.5150 5.895  59.6  5.6150  NA 224      NA     NA
## 339  0.03306   0.0  5.19    0 0.5150 6.059  37.3      NA   5 224    20.2     NA
## 340  0.05497   0.0  5.19    0 0.5150 5.985  45.4      NA   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     NA 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  NA    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      NA   4 280    17.0 390.94
## 350  0.02899  40.0  1.25    0     NA 6.939  34.5  8.7921   1 335    19.7 389.85
## 351  0.06211  40.0  1.25    0     NA 6.490  44.4  8.7921   1  NA    19.7 396.90
## 352  0.07950  60.0  1.69    0     NA 6.579  35.9 10.7103  NA 411    18.3 370.78
## 353  0.07244  60.0  1.69    0 0.4110    NA  18.5      NA   4 411    18.3 392.33
## 354  0.01709  90.0  2.02    0 0.4100 6.728  36.1      NA   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     NA
## 356  0.10659  80.0  1.91    0 0.4130 5.936  19.5 10.5857  NA 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   NA 0.7700 6.395  91.0  2.5052  NA 666    20.2 391.34
## 359  5.20177   0.0 18.10    1 0.7700 6.127  83.4      NA  24 666    20.2 395.43
## 360  4.26131   0.0 18.10    0 0.7700 6.112  81.3      NA  NA 666    20.2 390.74
## 361  4.54192   0.0 18.10    0     NA 6.398  88.0  2.5182  24 666      NA 374.56
## 362  3.83684   0.0 18.10    0 0.7700 6.251  91.1  2.2955  24 666      NA 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     NA
## 367       NA   0.0 18.10    0 0.7180 4.963  91.4  1.7523  24 666    20.2 316.03
## 368 13.52220   0.0    NA    0 0.6310 3.863 100.0  1.5106  24 666    20.2     NA
```

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## 369       NA   0.0 18.10    0 0.6310 4.970 100.0      NA  24  NA    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    NA 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    NA 100.0  1.1691  24 666    20.2 366.15
## 373  8.26725   0.0 18.10    1 0.6680    NA    NA  1.1296  24 666    20.2     NA
## 374 11.10810   0.0 18.10   NA 0.6680 4.906 100.0  1.1742  NA 666    20.2 396.90
## 375 18.49820   0.0 18.10    0 0.6680 4.138 100.0      NA  24 666    20.2     NA
## 376 19.60910   0.0 18.10    0 0.6710 7.313  97.9  1.3163  24  NA    20.2 396.90
## 377 15.28800   0.0 18.10    0 0.6710 6.649  93.3  1.3449  24 666      NA     NA
## 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    NA 18.10    0     NA 6.380    NA  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      NA 393.74
## 381 88.97620   0.0 18.10    0 0.6710 6.968    NA  1.4165  24 666    20.2 396.90
## 382       NA   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     NA 5.520    NA  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    NA 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
## 389 14.33370   0.0 18.10    0 0.7000 4.880 100.0  1.5895  24 666      NA 372.92
## 390  8.15174   0.0 18.10    0 0.7000    NA  98.9  1.7281  24 666    20.2 396.90
## 391  6.96215   0.0 18.10    0     NA 5.713  97.0  1.9265  24 666    20.2 394.43
## 392  5.29305   0.0 18.10   NA 0.7000 6.051  82.5  2.1678  24 666    20.2 378.38
## 393 11.57790   0.0    NA    0     NA 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   NA 0.6930 6.471  98.8  1.7257  24 666    20.2 391.98
## 397       NA   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   NA 0.6930 5.747  98.9  1.6334  24 666    20.2 393.10
## 399 38.35180   0.0    NA    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     NA
## 401 25.04610   0.0 18.10    0 0.6930 5.987 100.0      NA  24 666    20.2 396.90
## 402 14.23620   0.0 18.10    0 0.6930 6.343 100.0      NA  24 666    20.2 396.90
## 403  9.59571   0.0 18.10    0 0.6930 6.404 100.0  1.6390  24  NA    20.2 376.11
## 404       NA   0.0 18.10    0 0.6930 5.349    NA  1.7028  24 666    20.2 396.90
## 405 41.52920   0.0 18.10   NA 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    NA 18.10    0 0.6590 4.138 100.0  1.1781  24 666    20.2 370.22
## 408 11.95110   0.0    NA    0 0.6590 5.608 100.0      NA  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    NA 100.0  1.4655  NA 666    20.2 179.36
## 411 51.13580   0.0 18.10    0     NA 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      NA  24 666    20.2  35.05
## 413 18.81100   0.0 18.10    0 0.5970 4.628    NA  1.5539  NA 666    20.2  28.79
## 414       NA   0.0 18.10    0     NA 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      NA  24 666    20.2  88.27
## 416 18.08460   0.0    NA    0     NA 6.434 100.0  1.8347  24 666    20.2  27.25
## 417 10.83420    NA 18.10    0 0.6790 6.782  90.8  1.8195  24  NA    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    NA    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    NA  76.5      NA  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
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## 423 12.04820   0.0    NA    0     NA 5.648  87.6  1.9512  24 666    20.2 291.55
## 424  7.05042   0.0 18.10    0     NA 6.103  85.1  2.0218  24 666    20.2   2.52
## 425  8.79212    NA    NA    0     NA 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    NA  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    NA    0 0.6790    NA  95.6      NA  24 666    20.2  60.72
## 431       NA   0.0 18.10    0 0.5840 6.348  86.1  2.0527  24 666    20.2  83.45
## 432 10.06230   0.0    NA    0 0.5840 6.833  94.3  2.0882  24 666    20.2  81.33
## 433       NA   0.0 18.10    0 0.5840 6.425  74.8  2.2004  24  NA    20.2  97.95
## 434  5.58107   0.0 18.10    0 0.7130 6.436  87.9  2.3158  24  NA    20.2     NA
## 435       NA   0.0    NA    0 0.7130 6.208  95.0  2.2222  24  NA      NA 100.63
## 436 11.16040   0.0 18.10    0 0.7400 6.629  94.6  2.1247  NA  NA    20.2 109.85
## 437 14.42080   0.0 18.10    0 0.7400 6.461  93.3  2.0026  24  NA    20.2  27.49
## 438 15.17720   0.0 18.10   NA     NA 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  NA    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   NA 0.7400 5.818  92.4  1.8662  24 666    20.2 391.45
## 442       NA   0.0 18.10    0 0.7400 6.406    NA  2.0651  24 666    20.2 385.96
## 443  5.66637   0.0 18.10    0 0.7400 6.219 100.0  2.0048  NA 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    NA    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    NA 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    NA  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       NA   0.0 18.10    0 0.7130 7.393    NA  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     NA 6.525  86.5  2.4358  24 666    20.2     NA
## 457  4.66883   0.0 18.10    0 0.7130 5.976  87.9  2.5806  24 666      NA  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       NA   0.0 18.10    0     NA 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  NA    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     NA 6.376  88.4  2.5671  24 666    20.2 391.43
## 463  6.65492   0.0 18.10   NA 0.7130 6.317  83.0  2.7344  NA 666    20.2 396.90
## 464  5.82115   0.0 18.10    0 0.7130    NA  89.9  2.8016  24 666    20.2 393.82
## 465  7.83932   0.0 18.10    0 0.6550 6.209  65.4      NA  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    NA  2.5403  24 666    20.2 331.29
## 469 15.57570    NA 18.10   NA 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      NA 396.90
## 471       NA   0.0 18.10    0 0.5800 6.167  84.0  3.0334  24 666    20.2 396.90
## 472       NA   0.0    NA    0 0.5320 6.229  90.7  3.0993  24 666    20.2 395.33
## 473  3.56868    NA 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    NA    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  NA    20.2 302.76
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## 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  NA 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      NA  24 666    20.2 395.28
## 484  2.81838   0.0 18.10    0 0.5320 5.762    NA      NA  24 666    20.2 392.92
## 485  2.37857   0.0 18.10   NA 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  NA  NA      NA 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      NA 395.09
## 490  0.18337   0.0    NA    0 0.6090 5.414  98.3  1.7554   4 711      NA 344.05
## 491  0.20746   0.0 27.74   NA 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  NA 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   NA 0.5850 5.707    NA  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    NA  9.69    0 0.5850 5.670  28.8  2.7986   6 391    19.2 393.29
## 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   NA 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  NA    19.2 396.90
## 500  0.17783   0.0    NA    0 0.5850 5.569  73.5  2.3999   6  NA    19.2 395.77
## 501  0.22438   0.0  9.69   NA     NA 6.027  79.7      NA   6 391    19.2 396.90
## 502  0.06263    NA 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  NA 273    21.0 396.90
## 505  0.10959   0.0    NA    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  NA    21.0     NA
##     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     NA
## 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
## 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     NA
## 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     NA
## 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     NA
## 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     NA
## 92     NA
## 93   8.16
## 94   6.21
## 95  10.59
## 96   6.65
## 97     NA
## 98   4.21
## 99   3.57
## 100  6.19
## 101  9.42
## 102  7.67
## 103    NA
## 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    NA
## 120    NA
## 121 14.37
## 122 14.27
## 123 17.93
## 124    NA
## 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    NA
## 147 16.65
## 148 29.53
## 149 28.32
## 150 21.45
## 151 14.10
## 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    NA
## 178  6.29
## 179    NA
## 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    NA
## 196  2.97
## 197  4.08
## 198    NA
## 199  6.62
## 200  4.56
## 201  4.45
## 202  7.43
## 203    NA
## 204  3.81
## 205  2.88
## 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    NA
## 239  6.36
```

```
## 240  7.37
## 241    NA
## 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    NA
## 259    NA
## 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    NA
## 271 13.00
## 272  6.59
## 273    NA
## 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    NA
## 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    NA
## 302  9.50
## 303    NA
## 304    NA
## 305  6.93
## 306  8.93
## 307    NA
## 308  7.53
## 309  4.54
## 310  9.97
## 311 12.64
## 312  5.98
## 313 11.72
## 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    NA
## 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    NA
## 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    NA
## 362 14.19
## 363 10.19
## 364 14.64
## 365  5.29
## 366  7.12
## 367 14.00
## 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    NA
## 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    NA
## 410 19.78
## 411    NA
## 412 21.22
## 413 34.37
## 414    NA
## 415 36.98
## 416 29.05
## 417    NA
## 418 26.64
## 419 20.62
## 420 22.74
## 421 15.02
## 422 15.70
## 423 14.10
## 424    NA
## 425 17.16
## 426    NA
## 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    NA
## 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    NA
## 477 18.68
## 478 24.91
## 479 18.03
## 480 13.11
## 481    NA
## 482    NA
## 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
```

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.

```
pacman::p_load(missForest)
pacman::p_load(tidyr)
for(i in 1:nrow(Xmiss)){
  for(j in 1:ncol(Xmiss)){
    if (is.na(Xmiss[i,j])) {
      X_mean_imp = Xmiss %>%
        replace_na(as.list(colMeans(Xmiss, na.rm = TRUE)))

      rf_mod = randomForest(X_mean_imp[,j] ~ ., data = X_mean_imp, ntree = 100)

      Xmiss[i,j] = predict(rf_mod, X_mean_imp[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?
```

```
Xmiss
```

```
##          crim        zn     indus       chas       nox       rm       age
## 1     0.006320  18.00000  2.310000 0.00000000 0.5380000 6.575000  65.20000
## 2     0.027310  11.75799  7.070000 0.00000000 0.4690000 6.421000  78.90000
## 3     0.027290   0.00000  7.070000 0.00000000 0.4690000 7.185000  61.10000
## 4     0.032370   0.00000  2.180000 0.00000000 0.4580000 6.998000  45.80000
## 5     0.069050   0.00000  2.180000 0.00000000 0.4580000 7.147000  54.20000
## 6     0.029850   0.00000  2.180000 0.06464206 0.4580000 6.430000  58.70000
## 7     0.088290  12.50000  7.870000 0.00000000 0.5240000 6.012000  66.60000
## 8     0.144550  12.50000  7.870000 0.06619170 0.5477089 6.172000  96.10000
## 9     0.211240  11.52751 11.041687 0.00000000 0.5240000 5.631000 100.00000
## 10    0.170040  11.11198  7.870000 0.00000000 0.5240000 6.004000  85.90000
## 11    0.224890  12.50000  7.870000 0.00000000 0.5240000 6.377000  94.30000
## 12    0.117470  12.50000  7.870000 0.06413358 0.5240000 6.009000  68.43444
## 13    0.093780  12.50000  7.870000 0.00000000 0.5240000 5.889000  68.86331
## 14    0.629760   0.00000  8.140000 0.00000000 0.5380000 5.949000  61.80000
## 15    0.637960   0.00000 10.699637 0.00000000 0.5380000 6.096000  84.50000
## 16    0.627390   0.00000  8.140000 0.00000000 0.5380000 6.268952  56.50000
## 17    1.053930  11.47933  8.140000 0.00000000 0.5380000 5.935000  29.30000
## 18    0.784200   0.00000  8.140000 0.00000000 0.5380000 5.990000  81.70000
## 19    0.802710   0.00000  8.140000 0.00000000 0.5380000 5.456000  36.60000
## 20    0.725800   0.00000  8.140000 0.00000000 0.5380000 5.727000  69.50000
## 21    1.251790   0.00000  8.140000 0.00000000 0.5380000 5.570000  98.10000
## 22    0.852040   0.00000  8.140000 0.00000000 0.5380000 5.965000  69.61575
## 23    3.554632   0.00000 10.815133 0.00000000 0.5380000 6.142000  91.70000
## 24    0.988430   0.00000  8.140000 0.00000000 0.5489061 5.813000 100.00000
## 25    0.750260   0.00000  8.140000 0.00000000 0.5380000 5.924000  94.10000
## 26    0.840540   0.00000  8.140000 0.00000000 0.5380000 5.599000  85.70000
## 27    0.671910   0.00000  8.140000 0.00000000 0.5380000 5.813000  90.30000
```

```
## 28   0.955770   0.00000  8.140000 0.00000000 0.5380000 6.047000  88.80000
## 29   0.772990  11.58869  8.140000 0.00000000 0.5380000 6.495000  94.40000
## 30   1.002450   0.00000  8.140000 0.00000000 0.5477826 6.674000  87.30000
## 31   1.130810   0.00000  8.140000 0.00000000 0.5380000 5.713000  94.10000
## 32   1.354720   0.00000  8.140000 0.00000000 0.5380000 6.072000 100.00000
## 33   1.387990  10.84757  8.140000 0.00000000 0.5380000 5.950000  82.00000
## 34   1.151720   0.00000  8.140000 0.00000000 0.5380000 5.701000  95.00000
## 35   1.612820   0.00000  8.140000 0.00000000 0.5380000 6.096000  96.90000
## 36   0.064170   0.00000  5.960000 0.00000000 0.4990000 5.933000  68.20000
## 37   0.097440   0.00000  5.960000 0.00000000 0.4990000 5.841000  61.40000
## 38   0.080140   0.00000  5.960000 0.00000000 0.4990000 6.275616  41.50000
## 39   0.175050   0.00000  5.960000 0.00000000 0.4990000 5.966000  30.20000
## 40   0.027630  75.00000  2.950000 0.00000000 0.4280000 6.595000  21.80000
## 41   0.033590  75.00000  2.950000 0.00000000 0.4280000 7.024000  15.80000
## 42   0.127440  11.91680  6.910000 0.00000000 0.4480000 6.770000   2.90000
## 43   0.141500   0.00000  6.910000 0.00000000 0.4480000 6.169000   6.60000
## 44   0.159360   0.00000  6.910000 0.06074930 0.4480000 6.211000   6.50000
## 45   3.551437   0.00000  6.910000 0.00000000 0.4480000 6.069000  40.00000
## 46   0.171420   0.00000 10.660828 0.06022763 0.4480000 5.682000  33.80000
## 47   0.188360   0.00000  6.910000 0.00000000 0.4480000 5.786000  33.30000
## 48   0.229270   0.00000  6.910000 0.00000000 0.4480000 6.030000  69.82151
## 49   0.253870   0.00000  6.910000 0.00000000 0.4480000 6.217406  95.30000
## 50   0.219770  11.57885  6.910000 0.00000000 0.4480000 5.602000  62.00000
## 51   3.511654  21.00000  5.640000 0.00000000 0.4390000 5.963000  45.70000
## 52   0.043370  21.00000  5.640000 0.00000000 0.4390000 6.115000  63.00000
## 53   3.449118  21.00000  5.640000 0.00000000 0.4390000 6.511000  21.10000
## 54   0.049810  21.00000  5.640000 0.00000000 0.4390000 6.263463  21.40000
## 55   0.013600  75.00000  4.000000 0.00000000 0.4100000 5.888000  47.60000
## 56   0.013110  90.00000  1.220000 0.00000000 0.5429467 7.249000  21.90000
## 57   0.020550  85.00000  0.740000 0.08812920 0.4100000 6.383000  35.70000
## 58   0.014320 100.00000 10.191096 0.00000000 0.5400133 6.816000  40.50000
## 59   0.154450  25.00000  5.130000 0.00000000 0.4530000 6.299274  67.10309
## 60   0.103280  25.00000  5.130000 0.06225756 0.4530000 5.927000  66.76393
## 61   0.149320  12.24077  5.130000 0.00000000 0.4530000 5.741000  66.20000
## 62   0.171710  25.00000  5.130000 0.00000000 0.5423160 5.966000  93.40000
## 63   0.110270  25.00000  5.130000 0.00000000 0.4530000 6.456000  67.80000
## 64   3.610234  12.77479  5.130000 0.00000000 0.4530000 6.762000  43.40000
## 65   0.019510  17.50000  1.380000 0.00000000 0.4161000 7.104000  59.50000
## 66   3.580764  19.46137  3.370000 0.00000000 0.3980000 6.290000  17.80000
## 67   0.043790  80.00000  3.370000 0.00000000 0.3980000 6.303677  31.10000
## 68   0.057890  12.50000  6.070000 0.06187593 0.5433544 5.878000  21.40000
## 69   0.135540  12.50000  6.070000 0.00000000 0.4090000 5.594000  36.80000
## 70   0.128160  12.50000  6.070000 0.00000000 0.4090000 5.885000  33.00000
## 71   0.088260  12.14165 10.810000 0.06092298 0.4130000 6.417000   6.60000
## 72   0.158760   0.00000 10.810000 0.06408568 0.4130000 5.961000  17.50000
## 73   0.091640   0.00000 10.810000 0.00000000 0.4130000 6.065000   7.80000
## 74   0.195390   0.00000 10.810000 0.00000000 0.4130000 6.245000   6.20000
## 75   0.078960   0.00000 12.830000 0.00000000 0.4370000 6.298161   6.00000
## 76   0.095120   0.00000 11.033780 0.00000000 0.4370000 6.286000  45.00000
## 77   0.101530   0.00000 12.830000 0.00000000 0.4370000 6.279000  74.50000
## 78   0.087070   0.00000 12.830000 0.00000000 0.4370000 6.140000  45.80000
## 79   0.056460   0.00000 12.830000 0.00000000 0.4370000 6.232000  53.70000
## 80   0.083870   0.00000 12.830000 0.00000000 0.4370000 5.874000  36.60000
## 81   0.041130  25.00000  4.860000 0.06279481 0.4260000 6.727000  33.50000
```

```
## 82   0.044620  25.00000  4.860000 0.00000000 0.5474721 6.282017  70.40000
## 83   0.036590  25.00000  4.860000 0.00000000 0.4260000 6.302000  32.20000
## 84   0.035510  25.00000  4.860000 0.00000000 0.5450268 6.167000  46.70000
## 85   3.582962   0.00000  4.490000 0.00000000 0.4490000 6.268524  48.00000
## 86   0.057350   0.00000  4.490000 0.00000000 0.5489190 6.630000  68.20644
## 87   0.051880   0.00000  4.490000 0.00000000 0.4490000 6.015000  45.10000
## 88   0.071510   0.00000  4.490000 0.00000000 0.4490000 6.121000  56.80000
## 89   0.056600   0.00000  3.410000 0.00000000 0.4890000 7.007000  86.30000
## 90   3.583696   0.00000  3.410000 0.06441285 0.5453102 7.079000  63.10000
## 91   0.046840   0.00000  3.410000 0.00000000 0.4890000 6.417000  66.10000
## 92   0.039320   0.00000  3.410000 0.00000000 0.4890000 6.405000  73.90000
## 93   0.042030  28.00000 15.040000 0.00000000 0.4640000 6.442000  53.60000
## 94   0.028750  28.00000 15.040000 0.00000000 0.4640000 6.211000  28.90000
## 95   0.042940  28.00000 15.040000 0.00000000 0.4640000 6.249000  77.30000
## 96   0.122040   0.00000  2.890000 0.00000000 0.4450000 6.625000  57.80000
## 97   0.115040   0.00000  2.890000 0.00000000 0.5463386 6.163000  69.60000
## 98   0.120830   0.00000 10.782132 0.00000000 0.5495447 8.069000  76.00000
## 99   0.081870   0.00000  2.890000 0.00000000 0.4450000 7.820000  36.90000
## 100  0.068600   0.00000  2.890000 0.06397577 0.4450000 7.416000  62.50000
## 101  0.148660   0.00000  8.560000 0.00000000 0.5200000 6.727000  79.90000
## 102  0.114320   0.00000  8.560000 0.00000000 0.5200000 6.282844  71.30000
## 103  0.228760   0.00000  8.560000 0.00000000 0.5200000 6.405000  85.40000
## 104  0.211610   0.00000  8.560000 0.00000000 0.5200000 6.137000  87.40000
## 105  0.139600   0.00000  8.560000 0.00000000 0.5200000 6.167000  90.00000
## 106  0.132620   0.00000  8.560000 0.00000000 0.5200000 5.851000  96.70000
## 107  0.171200   0.00000  8.560000 0.00000000 0.5200000 5.836000  91.90000
## 108  3.548880  11.12801  8.560000 0.00000000 0.5200000 6.265472  85.20000
## 109  0.128020   0.00000  8.560000 0.00000000 0.5200000 6.474000  97.10000
## 110  3.529258   0.00000  8.560000 0.00000000 0.5200000 6.271843  91.20000
## 111  0.107930   0.00000  8.560000 0.00000000 0.5200000 6.195000  54.40000
## 112  0.100840   0.00000 10.010000 0.00000000 0.5470000 6.715000  81.60000
## 113  0.123290   0.00000 10.010000 0.00000000 0.5470000 6.265711  92.90000
## 114  0.222120  10.79966 10.010000 0.06445684 0.5470000 6.092000  95.40000
## 115  0.142310   0.00000 10.010000 0.00000000 0.5534301 6.254000  84.20000
## 116  0.171340   0.00000 10.010000 0.00000000 0.5470000 5.928000  88.20000
## 117  0.131580   0.00000 10.871479 0.00000000 0.5470000 6.176000  72.50000
## 118  0.150980   0.00000 10.010000 0.00000000 0.5470000 6.021000  82.60000
## 119  0.130580   0.00000 10.010000 0.00000000 0.5470000 5.872000  73.10000
## 120  0.144760   0.00000 10.010000 0.00000000 0.5470000 5.731000  65.20000
## 121  0.068990   0.00000 25.650000 0.00000000 0.5810000 5.870000  69.70000
## 122  0.071650   0.00000 25.650000 0.00000000 0.5810000 6.004000  84.10000
## 123  0.092990   0.00000 25.650000 0.00000000 0.5810000 5.961000  92.90000
## 124  0.150380   0.00000 25.650000 0.00000000 0.5810000 5.856000  97.00000
## 125  0.098490   0.00000 25.650000 0.00000000 0.5810000 5.879000  95.80000
## 126  0.169020   0.00000 25.650000 0.00000000 0.5810000 5.986000  88.40000
## 127  3.313532   0.00000 25.650000 0.06382910 0.5810000 5.613000  95.60000
## 128  0.259150   0.00000 21.890000 0.00000000 0.6240000 5.693000  96.00000
## 129  0.325430   0.00000 21.890000 0.00000000 0.6240000 6.431000  98.80000
## 130  0.881250   0.00000 21.890000 0.06061603 0.6240000 5.637000  94.70000
## 131  0.340060   0.00000 21.890000 0.00000000 0.6240000 6.458000  98.90000
## 132  1.192940   0.00000 21.890000 0.00000000 0.6240000 6.326000  97.70000
## 133  0.590050   0.00000 21.890000 0.00000000 0.6240000 6.372000  97.90000
## 134  3.363084   0.00000 21.890000 0.00000000 0.5566955 5.822000  95.40000
## 135  3.452131   0.00000 21.890000 0.00000000 0.6240000 5.757000  70.47956
```

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## 136  0.557780   0.00000 21.890000 0.00000000 0.6240000 6.335000  98.20000
## 137  0.322640   0.00000 21.890000 0.00000000 0.6240000 5.942000  93.50000
## 138  3.486891   0.00000 21.890000 0.00000000 0.5600919 6.454000  98.40000
## 139  0.249800   0.00000 21.890000 0.00000000 0.6240000 5.857000  98.20000
## 140  3.283336   0.00000 21.890000 0.00000000 0.6240000 6.151000  97.90000
## 141  0.290900   0.00000 21.890000 0.00000000 0.5660527 6.208774  93.60000
## 142  1.628640   0.00000 21.890000 0.00000000 0.6240000 5.019000  71.94382
## 143  3.321050   0.00000 19.580000 0.07089206 0.8710000 6.203553 100.00000
## 144  4.097400   0.00000 19.580000 0.00000000 0.8710000 5.468000 100.00000
## 145  2.779740   0.00000 19.580000 0.08893035 0.5801609 4.903000  69.97330
## 146  2.379340   0.00000 19.580000 0.00000000 0.8710000 6.184240 100.00000
## 147  2.155050   0.00000 19.580000 0.00000000 0.8710000 5.628000 100.00000
## 148  2.368620   0.00000 19.580000 0.00000000 0.8710000 6.128632  95.70000
## 149  2.330990   0.00000 19.580000 0.00000000 0.8710000 5.186000  93.80000
## 150  2.733970   0.00000 19.580000 0.00000000 0.8710000 5.597000  94.90000
## 151  1.656600   0.00000 19.580000 0.00000000 0.5613590 6.122000  97.30000
## 152  1.496320   0.00000 19.580000 0.00000000 0.8710000 5.404000 100.00000
## 153  1.126580   0.00000 19.580000 1.00000000 0.8710000 5.012000  88.00000
## 154  2.149180   0.00000 19.580000 0.00000000 0.5695723 5.709000  98.50000
## 155  1.413850   0.00000 19.580000 1.00000000 0.8710000 6.129000  96.00000
## 156  3.657730   0.00000 19.580000 1.00000000 0.8710000 6.152000  82.60000
## 157  2.446680   0.00000 19.580000 0.00000000 0.5646400 5.272000  94.00000
## 158  1.223580  11.23736 19.580000 0.00000000 0.6050000 6.943000  97.40000
## 159  1.342840   0.00000 19.580000 0.00000000 0.6050000 6.066000 100.00000
## 160  1.425020   0.00000 19.580000 0.00000000 0.8710000 6.510000  72.88563
## 161  1.273460   0.00000 19.580000 1.00000000 0.6050000 6.250000  92.60000
## 162  1.463360   0.00000 19.580000 0.00000000 0.6050000 7.489000  90.80000
## 163  1.833770   0.00000 19.580000 1.00000000 0.6050000 7.802000  98.20000
## 164  3.412498   0.00000 19.580000 1.00000000 0.6050000 8.375000  93.90000
## 165  2.242360   0.00000 19.580000 0.00000000 0.6050000 5.854000  91.80000
## 166  2.924000   0.00000 19.580000 0.00000000 0.6050000 6.101000  93.00000
## 167  2.010190   0.00000 19.580000 0.11681052 0.6050000 7.929000  96.20000
## 168  3.599990   0.00000 19.580000 0.00000000 0.6050000 5.877000  79.20000
## 169  2.300400   0.00000 19.580000 0.00000000 0.6050000 6.277215  96.10000
## 170  2.449530   0.00000 19.580000 0.06224150 0.6050000 6.402000  95.20000
## 171  1.207420   0.00000 19.580000 0.07434670 0.6050000 5.875000  94.60000
## 172  2.313900   0.00000 19.580000 0.00000000 0.6050000 5.880000  97.30000
## 173  0.139140   0.00000  4.050000 0.07190167 0.5100000 5.572000  88.50000
## 174  0.091780   0.00000  4.050000 0.00000000 0.5100000 6.416000  84.10000
## 175  0.084470   0.00000  4.050000 0.00000000 0.5100000 5.859000  68.70000
## 176  0.066640   0.00000  4.050000 0.00000000 0.5100000 6.546000  33.10000
## 177  0.070220   0.00000  4.050000 0.00000000 0.5100000 6.020000  47.20000
## 178  0.054250   0.00000  4.050000 0.07225284 0.5100000 6.315000  73.40000
## 179  0.066420   0.00000  4.050000 0.00000000 0.5100000 6.860000  74.40000
## 180  0.057800   0.00000 11.007110 0.00000000 0.5447185 6.980000  58.40000
## 181  0.065880   0.00000  2.460000 0.00000000 0.4880000 7.765000  83.30000
## 182  0.068880   0.00000  2.460000 0.06275548 0.4880000 6.144000  62.20000
## 183  3.414213   0.00000  2.460000 0.00000000 0.4880000 7.155000  92.20000
## 184  0.100080   0.00000  2.460000 0.00000000 0.4880000 6.563000  95.60000
## 185  0.083080   0.00000  2.460000 0.00000000 0.4880000 5.604000  68.68525
## 186  0.060470   0.00000  2.460000 0.00000000 0.4880000 6.153000  68.80000
## 187  0.056020   0.00000  2.460000 0.00000000 0.4880000 7.831000  53.60000
## 188  0.078750  45.00000  3.440000 0.00000000 0.4370000 6.782000  41.10000
## 189  0.125790  45.00000  3.440000 0.00000000 0.4370000 6.556000  29.10000
```

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## 190  0.083700  45.00000  3.440000 0.06245308 0.4370000 7.185000  65.47416
## 191  0.090680  45.00000  3.440000 0.00000000 0.4370000 6.951000  21.50000
## 192  3.586354  45.00000  3.440000 0.00000000 0.4370000 6.304493  30.80000
## 193  0.086640  45.00000  3.440000 0.00000000 0.4370000 6.368318  26.30000
## 194  0.021870  60.00000  2.930000 0.00000000 0.4010000 6.800000  66.86614
## 195  0.014390  60.00000  2.930000 0.00000000 0.5389504 6.295435  18.80000
## 196  0.013810  80.00000  0.460000 0.00000000 0.4220000 7.875000  65.97657
## 197  0.040110  80.00000  1.520000 0.00000000 0.4040000 7.287000  34.10000
## 198  0.046660  19.63534  1.520000 0.00000000 0.4040000 6.401991  36.60000
## 199  0.037680  80.00000  1.520000 0.00000000 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 6.384850  63.59263
## 202  0.034450  82.50000  2.030000 0.00000000 0.4150000 6.355493  63.66044
## 203  0.021770  82.50000  2.030000 0.00000000 0.4150000 7.610000  15.70000
## 204  3.377507  95.00000  2.680000 0.00000000 0.4161000 7.853000  33.20000
## 205  0.020090  95.00000  2.680000 0.00000000 0.4161000 8.034000  31.90000
## 206  0.136420   0.00000 10.590000 0.00000000 0.4890000 5.891000  22.30000
## 207  0.229690   0.00000 10.590000 0.00000000 0.4890000 6.259173  52.50000
## 208  0.251990   0.00000 10.590000 0.00000000 0.5482091 5.783000  72.70000
## 209  0.135870   0.00000 10.590000 1.00000000 0.4890000 6.064000  59.10000
## 210  0.435710   0.00000 10.590000 1.00000000 0.4890000 5.344000 100.00000
## 211  3.459521   0.00000 10.590000 0.07724713 0.4890000 5.960000  92.10000
## 212  0.375780   0.00000 10.590000 0.07449162 0.4890000 5.404000  88.60000
## 213  3.632755  11.23131 10.590000 1.00000000 0.4890000 5.807000  53.80000
## 214  0.140520   0.00000 10.590000 0.00000000 0.4890000 6.268390  32.30000
## 215  0.289550   0.00000 10.590000 0.00000000 0.4890000 5.412000   9.80000
## 216  0.198020   0.00000 10.590000 0.00000000 0.4890000 6.182000  42.40000
## 217  0.045600   0.00000 13.890000 1.00000000 0.5500000 5.888000  56.00000
## 218  3.578132   0.00000 13.890000 0.00000000 0.5490014 6.642000  85.10000
## 219  0.110690   0.00000 13.890000 1.00000000 0.5500000 5.951000  93.80000
## 220  3.537633   0.00000 13.890000 1.00000000 0.5500000 6.373000  92.40000
## 221  0.358090   0.00000  6.200000 1.00000000 0.5070000 6.285557  88.50000
## 222  0.407710   0.00000  6.200000 1.00000000 0.5070000 6.164000  91.30000
## 223  0.623560   0.00000  6.200000 1.00000000 0.5070000 6.879000  77.70000
## 224  0.614700   0.00000  6.200000 0.00000000 0.5070000 6.618000  80.80000
## 225  0.315330   0.00000  6.200000 0.00000000 0.5040000 6.407073  78.30000
## 226  0.526930   0.00000 10.708581 0.00000000 0.5040000 8.725000  83.00000
## 227  0.382140   0.00000  6.200000 0.08648351 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 0.06475344 0.5040000 7.686000  67.86157
## 230  0.441780   0.00000  6.200000 0.00000000 0.5040000 6.552000  21.40000
## 231  0.537000   0.00000  6.200000 0.00000000 0.5040000 5.981000  68.10000
## 232  3.519940   0.00000  6.200000 0.00000000 0.5040000 7.412000  76.90000
## 233  0.575290   0.00000  6.200000 0.00000000 0.5070000 8.337000  73.30000
## 234  0.331470   0.00000  6.200000 0.00000000 0.5070000 8.247000  70.40000
## 235  0.447910   0.00000 10.718287 1.00000000 0.5070000 6.726000  69.61113
## 236  3.589139   0.00000  6.200000 0.00000000 0.5070000 6.086000  61.50000
## 237  0.520580   0.00000  6.200000 1.00000000 0.5070000 6.631000  76.50000
## 238  0.511830  11.20288  6.200000 0.00000000 0.5070000 6.280090  71.60000
## 239  0.082440  30.00000  4.930000 0.00000000 0.4280000 6.481000  18.50000
## 240  0.092520  30.00000  4.930000 0.00000000 0.4280000 6.606000  42.20000
## 241  0.113290  30.00000  4.930000 0.00000000 0.4280000 6.897000  54.30000
## 242  0.106120  30.00000  4.930000 0.00000000 0.4280000 6.095000  65.10000
## 243  3.542559  13.72663  4.930000 0.00000000 0.4280000 6.275583  52.90000
```

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## 244  0.127570  30.00000  4.930000 0.06390274 0.4280000 6.393000   7.80000
## 245  3.423344  22.00000  5.860000 0.00000000 0.4310000 5.593000  67.74364
## 246  0.191330  22.00000  5.860000 0.00000000 0.4310000 5.605000  70.20000
## 247  0.339830  22.00000  5.860000 0.06050869 0.4310000 6.108000  34.90000
## 248  0.196570  22.00000  5.860000 0.00000000 0.4310000 6.226000  79.20000
## 249  0.164390  12.57278  5.860000 0.06257865 0.4310000 6.433000  49.10000
## 250  0.190730  22.00000  5.860000 0.00000000 0.4310000 6.718000  17.50000
## 251  0.140300  22.00000 10.553718 0.00000000 0.4310000 6.487000  13.00000
## 252  0.214090  22.00000  5.860000 0.00000000 0.4310000 6.438000   8.90000
## 253  0.082210  22.00000 10.572533 0.00000000 0.4310000 6.957000   6.80000
## 254  0.368940  22.00000  5.860000 0.08405810 0.4310000 8.259000   8.40000
## 255  0.048190  80.00000  3.640000 0.00000000 0.3920000 6.307721  32.00000
## 256  0.035480  80.00000  3.640000 0.00000000 0.3920000 5.876000  19.10000
## 257  0.015380  90.00000  3.750000 0.00000000 0.3940000 7.454000  34.20000
## 258  0.611540  20.00000  3.970000 0.00000000 0.6470000 8.704000  86.90000
## 259  0.663510  20.00000  3.970000 0.00000000 0.6470000 7.333000 100.00000
## 260  0.656650  20.00000  3.970000 0.00000000 0.5612807 6.842000 100.00000
## 261  3.495627  20.00000  3.970000 0.00000000 0.6470000 7.203000  81.80000
## 262  3.495450  20.00000  9.240118 0.00000000 0.6470000 7.520000  89.40000
## 263  3.446627  20.00000  3.970000 0.00000000 0.6470000 8.398000  91.50000
## 264  0.825260  20.00000  3.970000 0.00000000 0.6470000 7.327000  94.50000
## 265  0.550070  20.00000  3.970000 0.00000000 0.6470000 7.206000  91.60000
## 266  0.761620  20.00000  3.970000 0.00000000 0.5577308 5.560000  62.80000
## 267  0.785700  20.00000  3.970000 0.00000000 0.6470000 7.014000  84.60000
## 268  0.578340  20.00000  3.970000 0.00000000 0.5750000 8.297000  67.00000
## 269  0.540500  20.00000  3.970000 0.00000000 0.5750000 7.470000  52.60000
## 270  0.090650  20.00000  6.960000 1.00000000 0.4640000 5.920000  61.50000
## 271  3.475049  20.00000  6.960000 0.00000000 0.4640000 5.856000  42.10000
## 272  0.162110  12.12301  6.960000 0.00000000 0.4640000 6.240000  16.30000
## 273  0.114600  20.00000  6.960000 0.00000000 0.4640000 6.538000  58.70000
## 274  0.221880  20.00000  6.960000 1.00000000 0.4640000 7.691000  51.80000
## 275  0.056440  40.00000  6.410000 1.00000000 0.4470000 6.758000  32.90000
## 276  0.096040  40.00000  6.410000 0.00000000 0.4470000 6.854000  42.80000
## 277  0.104690  40.00000  6.410000 1.00000000 0.4470000 7.267000  49.00000
## 278  0.061270  40.00000  6.410000 1.00000000 0.4470000 6.826000  27.60000
## 279  0.079780  13.35565  6.410000 0.09411726 0.4470000 6.482000  32.10000
## 280  0.210380  20.00000  3.330000 0.00000000 0.5447857 6.812000  32.20000
## 281  0.035780  20.00000  3.330000 0.06501439 0.4429000 7.820000  64.50000
## 282  0.037050  20.00000  3.330000 0.00000000 0.4429000 6.968000  37.20000
## 283  0.061290  20.00000  3.330000 0.06200739 0.4429000 7.645000  49.70000
## 284  0.015010  90.00000  1.210000 1.00000000 0.4010000 7.923000  24.80000
## 285  3.494115  90.00000  9.686266 0.00000000 0.4000000 6.295244  20.80000
## 286  3.435096  55.00000  2.250000 0.00000000 0.5415885 6.453000  31.90000
## 287  0.019650  80.00000  1.760000 0.06381260 0.3850000 6.230000  31.50000
## 288  0.038710  52.50000  5.320000 0.00000000 0.4050000 6.209000  31.30000
## 289  0.045900  52.50000  5.320000 0.00000000 0.4050000 6.315000  45.60000
## 290  3.538091  12.08050  5.320000 0.00000000 0.5440119 6.565000  22.90000
## 291  0.035020  80.00000  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  23.40000
## 294  0.082650   0.00000 13.920000 0.07304115 0.4370000 6.127000  18.40000
## 295  0.081990   0.00000 13.920000 0.00000000 0.4370000 6.009000  42.30000
## 296  0.129320   0.00000 13.920000 0.00000000 0.4370000 6.678000  31.10000
## 297  0.053720   0.00000 13.920000 0.00000000 0.4370000 6.549000  64.72192
```

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## 298  0.141030  12.16317 13.920000 0.00000000 0.4370000 5.790000  67.51731
## 299  0.064660  70.00000  2.240000 0.00000000 0.4000000 6.345000  20.10000
## 300  0.055610  70.00000  2.240000 0.00000000 0.4000000 7.041000  66.17846
## 301  3.424760  70.00000  2.240000 0.00000000 0.4000000 6.871000  47.40000
## 302  0.035370  34.00000  6.090000 0.00000000 0.4330000 6.590000  40.40000
## 303  0.092660  34.00000  6.090000 0.00000000 0.4330000 6.495000  18.40000
## 304  3.612558  13.12873  6.090000 0.07432294 0.4330000 6.982000  17.70000
## 305  0.055150  33.00000  2.180000 0.00000000 0.4720000 6.353882  41.10000
## 306  0.054790  33.00000  2.180000 0.00000000 0.4720000 6.616000  58.10000
## 307  0.075030  33.00000  2.180000 0.00000000 0.4720000 6.295987  71.90000
## 308  0.049320  33.00000  2.180000 0.00000000 0.4720000 6.849000  70.30000
## 309  0.492980   0.00000  9.900000 0.00000000 0.5440000 6.635000  82.50000
## 310  0.349400   0.00000  9.900000 0.00000000 0.5440000 6.290621  76.70000
## 311  2.635480   0.00000  9.900000 0.00000000 0.5440000 4.973000  69.05347
## 312  3.474363   0.00000  9.900000 0.00000000 0.5440000 6.122000  52.80000
## 313  0.261690   0.00000 10.872138 0.00000000 0.5440000 6.023000  90.40000
## 314  0.269380   0.00000  9.900000 0.00000000 0.5440000 6.266000  82.80000
## 315  0.369200   0.00000  9.900000 0.00000000 0.5440000 6.567000  87.30000
## 316  0.253560   0.00000 10.896836 0.00000000 0.5440000 6.270182  77.70000
## 317  0.318270   0.00000  9.900000 0.00000000 0.5440000 5.914000  83.20000
## 318  0.245220   0.00000  9.900000 0.00000000 0.5440000 5.782000  71.70000
## 319  0.402020   0.00000  9.900000 0.06437678 0.5440000 6.382000  67.20000
## 320  0.475470   0.00000  9.900000 0.06269116 0.5440000 6.113000  58.80000
## 321  0.167600   0.00000 10.800716 0.00000000 0.4930000 6.426000  52.30000
## 322  0.181590   0.00000  7.380000 0.00000000 0.4930000 6.376000  54.30000
## 323  0.351140   0.00000  7.380000 0.00000000 0.4930000 6.041000  49.90000
## 324  0.283920   0.00000  7.380000 0.00000000 0.4930000 5.708000  74.30000
## 325  0.341090   0.00000  7.380000 0.00000000 0.4930000 6.415000  40.10000
## 326  0.191860   0.00000  7.380000 0.00000000 0.4930000 6.431000  14.70000
## 327  0.303470   0.00000  7.380000 0.06323494 0.4930000 6.312000  28.90000
## 328  0.241030   0.00000  7.380000 0.06588796 0.4930000 6.083000  43.70000
## 329  0.066170  11.20205  3.240000 0.00000000 0.4600000 5.868000  25.80000
## 330  0.067240   0.00000  3.240000 0.00000000 0.4600000 6.333000  17.20000
## 331  0.045440   0.00000  3.240000 0.06280130 0.4600000 6.144000  32.20000
## 332  0.050230  35.00000  6.060000 0.00000000 0.4379000 5.706000  28.40000
## 333  0.034660  35.00000  6.060000 0.00000000 0.4379000 6.031000  64.52600
## 334  0.050830   0.00000  5.190000 0.00000000 0.5150000 6.316000  38.10000
## 335  0.037380   0.00000  5.190000 0.00000000 0.5462016 6.310000  38.50000
## 336  0.039610   0.00000  5.190000 0.00000000 0.5150000 6.037000  34.50000
## 337  0.034270   0.00000 10.709546 0.00000000 0.5150000 5.869000  46.30000
## 338  0.030410  11.78938 10.502256 0.00000000 0.5150000 5.895000  59.60000
## 339  0.033060   0.00000  5.190000 0.00000000 0.5150000 6.059000  37.30000
## 340  0.054970   0.00000  5.190000 0.00000000 0.5150000 5.985000  45.40000
## 341  0.061510   0.00000  5.190000 0.00000000 0.5150000 5.968000  58.50000
## 342  0.013010  35.00000  1.520000 0.00000000 0.4420000 7.241000  49.30000
## 343  0.024980   0.00000  1.890000 0.00000000 0.5180000 6.540000  59.70000
## 344  0.025430  55.00000  3.780000 0.00000000 0.4840000 6.696000  56.40000
## 345  0.030490  55.00000  3.780000 0.00000000 0.5343605 6.874000  28.10000
## 346  0.031130   0.00000  4.390000 0.00000000 0.4420000 6.014000  48.50000
## 347  0.061620   0.00000  4.390000 0.00000000 0.4420000 5.898000  52.30000
## 348  0.018700  85.00000  4.150000 0.00000000 0.4290000 6.516000  27.70000
## 349  0.015010  80.00000  2.010000 0.00000000 0.4350000 6.635000  29.70000
## 350  0.028990  40.00000  1.250000 0.00000000 0.5445991 6.939000  34.50000
## 351  0.062110  40.00000  1.250000 0.00000000 0.5448082 6.490000  44.40000
```

```
## 352  0.079500  60.00000  1.690000 0.00000000 0.5337459 6.579000  35.90000
## 353  0.072440  60.00000  1.690000 0.00000000 0.4110000 6.317941  18.50000
## 354  0.017090  90.00000  2.020000 0.00000000 0.4100000 6.728000  36.10000
## 355  0.043010  80.00000  1.910000 0.00000000 0.4130000 5.663000  21.90000
## 356  0.106590  80.00000  1.910000 0.00000000 0.4130000 5.936000  19.50000
## 357  8.982960   0.00000 18.100000 1.00000000 0.7700000 6.212000  97.40000
## 358  3.849700   0.00000 18.100000 0.08382412 0.7700000 6.395000  91.00000
## 359  5.201770   0.00000 18.100000 1.00000000 0.7700000 6.127000  83.40000
## 360  4.261310   0.00000 18.100000 0.00000000 0.7700000 6.112000  81.30000
## 361  4.541920   0.00000 18.100000 0.00000000 0.5567428 6.398000  88.00000
## 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   0.00000 18.100000 1.00000000 0.7700000 5.803000  89.00000
## 365  3.474280   0.00000 18.100000 1.00000000 0.7180000 8.780000  82.90000
## 366  4.555870   0.00000 18.100000 0.00000000 0.7180000 3.561000  87.90000
## 367  4.267954   0.00000 18.100000 0.00000000 0.7180000 4.963000  91.40000
## 368 13.522200   0.00000 11.131398 0.00000000 0.6310000 3.863000 100.00000
## 369  4.439096   0.00000 18.100000 0.00000000 0.6310000 4.970000 100.00000
## 370  5.669980   0.00000 18.100000 1.00000000 0.6310000 6.683000  96.80000
## 371  6.538760  10.97657 18.100000 1.00000000 0.6310000 7.016000  97.50000
## 372  9.232300   0.00000 18.100000 0.00000000 0.6310000 6.252433 100.00000
## 373  8.267250   0.00000 18.100000 1.00000000 0.6680000 6.354389  70.25072
## 374 11.108100   0.00000 18.100000 0.09410870 0.6680000 4.906000 100.00000
## 375 18.498200   0.00000 18.100000 0.00000000 0.6680000 4.138000 100.00000
## 376 19.609100   0.00000 18.100000 0.00000000 0.6710000 7.313000  97.90000
## 377 15.288000   0.00000 18.100000 0.00000000 0.6710000 6.649000  93.30000
## 378  9.823490   0.00000 18.100000 0.00000000 0.6710000 6.794000  98.80000
## 379 23.648200  11.29484 18.100000 0.00000000 0.5594793 6.380000  70.03770
## 380 17.866700   0.00000 18.100000 0.00000000 0.6710000 6.223000 100.00000
## 381 88.976200   0.00000 18.100000 0.00000000 0.6710000 6.968000  70.66135
## 382  5.857088   0.00000 18.100000 0.00000000 0.6710000 6.545000  99.10000
## 383  9.187020   0.00000 18.100000 0.00000000 0.7000000 5.536000 100.00000
## 384  7.992480   0.00000 18.100000 0.00000000 0.5630396 5.520000  70.02533
## 385 20.084900   0.00000 18.100000 0.00000000 0.7000000 4.368000  91.20000
## 386 16.811800  10.93488 18.100000 0.00000000 0.7000000 5.277000  98.10000
## 387 24.393800   0.00000 18.100000 0.00000000 0.7000000 4.652000 100.00000
## 388 22.597100   0.00000 18.100000 0.00000000 0.7000000 5.000000  89.50000
## 389 14.333700   0.00000 18.100000 0.00000000 0.7000000 4.880000 100.00000
## 390  8.151740   0.00000 18.100000 0.00000000 0.7000000 6.280694  98.90000
## 391  6.962150   0.00000 18.100000 0.00000000 0.5593134 5.713000  97.00000
## 392  5.293050   0.00000 18.100000 0.06470630 0.7000000 6.051000  82.50000
## 393 11.577900   0.00000 11.256137 0.00000000 0.5552905 5.036000  97.00000
## 394  8.644760   0.00000 18.100000 0.00000000 0.6930000 6.193000  92.60000
## 395 13.359800   0.00000 18.100000 0.00000000 0.6930000 5.887000  94.70000
## 396  8.716750   0.00000 18.100000 0.06377732 0.6930000 6.471000  98.80000
## 397  4.435105   0.00000 18.100000 0.00000000 0.6930000 6.405000  96.00000
## 398  7.672020   0.00000 18.100000 0.06447065 0.6930000 5.747000  98.90000
## 399 38.351800   0.00000 11.241264 0.00000000 0.6930000 5.453000 100.00000
## 400  9.916550   0.00000 18.100000 0.00000000 0.6930000 5.852000  77.80000
## 401 25.046100   0.00000 18.100000 0.00000000 0.6930000 5.987000 100.00000
## 402 14.236200   0.00000 18.100000 0.00000000 0.6930000 6.343000 100.00000
## 403  9.595710   0.00000 18.100000 0.00000000 0.6930000 6.404000 100.00000
## 404  4.887413   0.00000 18.100000 0.00000000 0.6930000 5.349000  69.74858
## 405 41.529200   0.00000 18.100000 0.06592166 0.6930000 5.531000  85.40000
```

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## 406 67.920800   0.00000 18.100000 0.00000000 0.6930000 5.683000 100.00000
## 407 20.716200  10.83725 18.100000 0.00000000 0.6590000 4.138000 100.00000
## 408 11.951100   0.00000 11.402709 0.00000000 0.6590000 5.608000 100.00000
## 409  7.403890   0.00000 18.100000 0.00000000 0.5970000 5.617000  97.90000
## 410 14.438300   0.00000 18.100000 0.00000000 0.5970000 6.204894 100.00000
## 411 51.135800   0.00000 18.100000 0.00000000 0.5595498 5.757000 100.00000
## 412 14.050700   0.00000 18.100000 0.00000000 0.5970000 6.657000 100.00000
## 413 18.811000   0.00000 18.100000 0.00000000 0.5970000 4.628000  70.43124
## 414  5.509990   0.00000 18.100000 0.00000000 0.5603100 5.155000 100.00000
## 415 45.746100   0.00000 18.100000 0.00000000 0.6930000 4.519000 100.00000
## 416 18.084600   0.00000 11.409492 0.00000000 0.5679813 6.434000 100.00000
## 417 10.834200  10.77944 18.100000 0.00000000 0.6790000 6.782000  90.80000
## 418 25.940600   0.00000 18.100000 0.00000000 0.6790000 5.304000  89.10000
## 419 73.534100   0.00000 11.315276 0.00000000 0.6790000 5.957000 100.00000
## 420 11.812300   0.00000 18.100000 0.00000000 0.7180000 6.259962  76.50000
## 421 11.087400   0.00000 18.100000 0.00000000 0.7180000 6.411000 100.00000
## 422  7.022590   0.00000 18.100000 0.00000000 0.7180000 6.006000  95.30000
## 423 12.048200   0.00000 11.264563 0.00000000 0.5582065 5.648000  87.60000
## 424  7.050420   0.00000 18.100000 0.00000000 0.5627854 6.103000  85.10000
## 425  8.792120  10.82655 11.269495 0.00000000 0.5603798 5.565000  70.60000
## 426 15.860300   0.00000 18.100000 0.00000000 0.6790000 5.896000  95.40000
## 427 12.247200   0.00000 18.100000 0.00000000 0.5840000 6.261477  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   0.00000 11.268805 0.00000000 0.6790000 6.251179  95.60000
## 431  4.382181   0.00000 18.100000 0.00000000 0.5840000 6.348000  86.10000
## 432 10.062300   0.00000 11.000508 0.00000000 0.5840000 6.833000  94.30000
## 433  3.971579   0.00000 18.100000 0.00000000 0.5840000 6.425000  74.80000
## 434  5.581070   0.00000 18.100000 0.00000000 0.7130000 6.436000  87.90000
## 435  4.383896   0.00000 11.155146 0.00000000 0.7130000 6.208000  95.00000
## 436 11.160400   0.00000 18.100000 0.00000000 0.7400000 6.629000  94.60000
## 437 14.420800   0.00000 18.100000 0.00000000 0.7400000 6.461000  93.30000
## 438 15.177200   0.00000 18.100000 0.06342990 0.5612089 6.152000 100.00000
## 439 13.678100   0.00000 18.100000 0.00000000 0.7400000 5.935000  87.90000
## 440  9.390630   0.00000 18.100000 0.00000000 0.7400000 5.627000  93.90000
## 441 22.051100   0.00000 18.100000 0.06371178 0.7400000 5.818000  92.40000
## 442  5.314824   0.00000 18.100000 0.00000000 0.7400000 6.406000  70.05734
## 443  5.666370   0.00000 18.100000 0.00000000 0.7400000 6.219000 100.00000
## 444  9.966540   0.00000 18.100000 0.00000000 0.7400000 6.485000 100.00000
## 445 12.802300   0.00000 11.123861 0.00000000 0.7400000 5.854000  96.60000
## 446 10.671800   0.00000 18.100000 0.00000000 0.7400000 6.459000  94.80000
## 447  6.288070   0.00000 18.100000 0.00000000 0.7400000 6.341000  96.40000
## 448  9.924850   0.00000 18.100000 0.00000000 0.7400000 6.251000  96.60000
## 449  9.329090  11.12185 18.100000 0.00000000 0.7130000 6.185000  98.70000
## 450  7.526010   0.00000 18.100000 0.00000000 0.7130000 6.417000  71.00190
## 451  6.717720   0.00000 18.100000 0.00000000 0.7130000 6.749000  92.60000
## 452  5.441140   0.00000 18.100000 0.00000000 0.7130000 6.655000  98.20000
## 453  5.090170   0.00000 18.100000 0.00000000 0.7130000 6.297000  91.80000
## 454  4.976155   0.00000 18.100000 0.00000000 0.7130000 7.393000  70.25352
## 455  9.513630   0.00000 18.100000 0.00000000 0.7130000 6.728000  94.10000
## 456  4.752370   0.00000 18.100000 0.00000000 0.5591393 6.525000  86.50000
## 457  4.668830   0.00000 18.100000 0.00000000 0.7130000 5.976000  87.90000
## 458  8.200580   0.00000 18.100000 0.00000000 0.7130000 5.936000  80.30000
## 459  4.050414   0.00000 18.100000 0.00000000 0.5579681 6.301000  83.70000
```

```
## 460  6.801170   0.00000 18.100000 0.00000000 0.7130000 6.081000  84.40000
## 461  4.812130   0.00000 18.100000 0.00000000 0.7130000 6.701000  90.00000
## 462  3.693110   0.00000 18.100000 0.00000000 0.5579561 6.376000  88.40000
## 463  6.654920   0.00000 18.100000 0.06231148 0.7130000 6.317000  83.00000
## 464  5.821150   0.00000 18.100000 0.00000000 0.7130000 6.292434  89.90000
## 465  7.839320   0.00000 18.100000 0.00000000 0.6550000 6.209000  65.40000
## 466  3.163600   0.00000 18.100000 0.00000000 0.6550000 5.759000  48.20000
## 467  3.774980   0.00000 18.100000 0.00000000 0.6550000 5.952000  84.70000
## 468  4.422280   0.00000 18.100000 0.00000000 0.5840000 6.003000  70.72384
## 469 15.575700  11.05995 18.100000 0.06403183 0.5800000 5.926000  71.00000
## 470 13.075100   0.00000 18.100000 0.00000000 0.5800000 5.713000  56.70000
## 471  4.158011   0.00000 18.100000 0.00000000 0.5800000 6.167000  84.00000
## 472  4.061623   0.00000 12.112818 0.00000000 0.5320000 6.229000  90.70000
## 473  3.568680  11.04191 18.100000 0.00000000 0.5800000 6.437000  75.00000
## 474  4.646890   0.00000 18.100000 0.00000000 0.6140000 6.980000  67.60000
## 475  8.055790   0.00000 11.259653 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 18.100000 0.00000000 0.6140000 6.484000  93.60000
## 478 15.023400   0.00000 18.100000 0.00000000 0.6140000 5.304000  97.30000
## 479 10.233000   0.00000 18.100000 0.00000000 0.6140000 6.185000  96.70000
## 480 14.333700   0.00000 18.100000 0.00000000 0.6140000 6.229000  88.00000
## 481  5.824010   0.00000 18.100000 0.00000000 0.5320000 6.242000  64.70000
## 482  5.708180   0.00000 18.100000 0.00000000 0.5320000 6.750000  74.90000
## 483  5.731160   0.00000 18.100000 0.00000000 0.5320000 7.061000  77.00000
## 484  2.818380   0.00000 18.100000 0.00000000 0.5320000 5.762000  69.41141
## 485  2.378570   0.00000 18.100000 0.06364367 0.5830000 5.871000  41.90000
## 486  3.673670   0.00000 18.100000 0.00000000 0.5830000 6.312000  51.90000
## 487  5.691750   0.00000 18.100000 0.00000000 0.5830000 6.114000  79.80000
## 488  4.835670   0.00000 18.100000 0.00000000 0.5830000 5.905000  53.20000
## 489  0.150860   0.00000 27.740000 0.00000000 0.6090000 5.454000  92.70000
## 490  0.183370   0.00000 11.658363 0.00000000 0.6090000 5.414000  98.30000
## 491  0.207460   0.00000 27.740000 0.06164135 0.6090000 5.093000  98.00000
## 492  0.105740   0.00000 27.740000 0.00000000 0.6090000 5.983000  98.80000
## 493  0.111320   0.00000 27.740000 0.00000000 0.6090000 5.983000  83.50000
## 494  0.173310   0.00000  9.690000 0.06365231 0.5850000 5.707000  68.61960
## 495  0.279570   0.00000  9.690000 0.00000000 0.5850000 5.926000  42.60000
## 496  0.178990  10.89917  9.690000 0.00000000 0.5850000 5.670000  28.80000
## 497  0.289600   0.00000  9.690000 0.00000000 0.5850000 5.390000  72.90000
## 498  0.268380   0.00000  9.690000 0.06420496 0.5850000 5.794000  70.60000
## 499  0.239120   0.00000  9.690000 0.00000000 0.5850000 6.019000  65.30000
## 500  0.177830   0.00000 11.068706 0.00000000 0.5850000 5.569000  73.50000
## 501  0.224380   0.00000  9.690000 0.06419683 0.5520149 6.027000  79.70000
## 502  0.062630  11.70675 11.930000 0.00000000 0.5730000 6.593000  69.10000
## 503  0.045270   0.00000 11.930000 0.00000000 0.5730000 6.120000  76.70000
## 504  0.060760   0.00000 11.930000 0.00000000 0.5730000 6.976000  91.00000
## 505  0.109590   0.00000 11.045246 0.00000000 0.5730000 6.794000  89.30000
## 506  0.047410   0.00000 11.930000 0.00000000 0.5730000 6.030000  80.80000
##          dis       rad      tax  ptratio    black    lstat
## 1    4.090000  9.172296 296.0000 15.30000 396.9000  4.98000
## 2    4.967100  2.000000 242.0000 17.80000 396.9000  9.14000
## 3    4.967100  2.000000 242.0000 17.80000 392.8300  4.03000
## 4    3.840103  3.000000 222.0000 18.70000 394.6300  2.94000
## 5    6.062200  3.000000 222.0000 18.46261 396.9000  5.33000
## 6    6.062200  3.000000 222.0000 18.70000 394.1200  5.21000
```

```
## 7    5.560500  5.000000 311.0000 15.20000 395.6000 12.43000
## 8    3.855883  5.000000 311.0000 15.20000 396.9000 19.15000
## 9    6.082100  5.000000 412.1878 15.20000 386.6300 29.93000
## 10   3.831113  5.000000 311.0000 15.20000 386.7100 17.10000
## 11   6.346700  5.000000 311.0000 15.20000 392.5200 20.45000
## 12   6.226700  5.000000 311.0000 15.20000 396.9000 13.27000
## 13   5.450900  5.000000 311.0000 18.59904 390.5000 15.71000
## 14   4.707500  4.000000 307.0000 21.00000 396.9000  8.26000
## 15   4.461900  4.000000 307.0000 21.00000 356.6126 10.26000
## 16   4.498600  4.000000 307.0000 21.00000 395.6200  8.47000
## 17   4.498600  4.000000 307.0000 21.00000 386.8500  6.58000
## 18   4.257900  4.000000 307.0000 21.00000 386.7500 14.67000
## 19   3.796500  4.000000 307.0000 21.00000 288.9900 11.69000
## 20   3.796500  9.573426 307.0000 21.00000 390.9500 11.28000
## 21   3.797900  4.000000 307.0000 21.00000 376.5700 21.02000
## 22   4.012300  4.000000 307.0000 21.00000 392.5300 13.83000
## 23   3.976900  4.000000 307.0000 21.00000 396.9000 18.72000
## 24   4.095200  4.000000 407.7461 21.00000 394.5400 19.88000
## 25   4.399600  4.000000 409.5742 21.00000 394.3300 16.30000
## 26   4.454600  4.000000 406.3323 18.88589 303.4200 16.51000
## 27   4.682000  4.000000 307.0000 21.00000 376.8800 14.81000
## 28   4.453400  4.000000 307.0000 21.00000 306.3800 17.28000
## 29   4.454700  4.000000 408.2806 21.00000 387.9400 12.80000
## 30   4.239000  4.000000 307.0000 21.00000 380.2300 11.98000
## 31   4.233000  4.000000 307.0000 21.00000 360.1700 22.60000
## 32   3.790691  4.000000 307.0000 21.00000 354.7192 13.04000
## 33   3.777194  9.795353 307.0000 21.00000 232.6000 27.71000
## 34   3.787200  4.000000 307.0000 21.00000 358.7700 13.15285
## 35   3.759800  4.000000 307.0000 21.00000 248.3100 20.34000
## 36   3.793815  5.000000 279.0000 19.20000 396.9000  9.68000
## 37   3.377900  5.000000 279.0000 19.20000 377.5600 11.41000
## 38   3.934200  5.000000 279.0000 19.20000 396.9000  8.77000
## 39   3.773270  5.000000 404.8779 19.20000 393.4300 10.13000
## 40   5.401100  3.000000 252.0000 18.30000 395.6300  4.32000
## 41   5.401100  3.000000 252.0000 18.30000 395.6200  1.98000
## 42   5.720900  3.000000 233.0000 17.90000 385.4100  4.84000
## 43   5.720900  3.000000 233.0000 17.90000 383.3700  5.81000
## 44   5.720900  3.000000 233.0000 17.90000 394.4600  7.44000
## 45   5.720900  3.000000 233.0000 17.90000 389.3900  9.55000
## 46   5.100400  3.000000 401.9042 17.90000 396.9000 10.21000
## 47   5.100400  3.000000 233.0000 17.90000 396.9000 14.15000
## 48   5.689400  3.000000 233.0000 17.90000 392.7400 18.80000
## 49   5.870000  3.000000 233.0000 17.90000 396.9000 30.81000
## 50   6.087700  3.000000 233.0000 17.90000 396.9000 16.20000
## 51   6.814700  4.000000 243.0000 16.80000 395.5600 13.45000
## 52   6.814700  4.000000 243.0000 16.80000 393.9700  9.43000
## 53   6.814700  4.000000 243.0000 16.80000 396.9000  5.28000
## 54   6.814700  4.000000 243.0000 16.80000 396.9000 12.13911
## 55   7.319700  3.000000 469.0000 21.10000 396.9000 14.80000
## 56   8.696600  5.000000 226.0000 17.90000 395.9300  4.81000
## 57   3.942177  2.000000 313.0000 18.53485 396.9000  5.77000
## 58   4.165306  5.000000 256.0000 15.10000 392.9000  3.95000
## 59   7.814800  8.000000 284.0000 19.70000 390.6800  6.86000
## 60   6.932000  8.000000 284.0000 19.70000 396.9000  9.22000
```

```
## 61   7.225400  8.000000 284.0000 18.60885 395.1100 13.15000
## 62   6.818500  8.000000 284.0000 19.70000 378.0800 14.44000
## 63   7.225500  8.000000 284.0000 19.70000 396.9000 12.45386
## 64   7.980900  8.000000 284.0000 19.70000 395.5800  9.50000
## 65   9.222900  3.000000 216.0000 18.60000 393.2400  8.05000
## 66   6.611500  9.243452 337.0000 16.10000 396.9000  4.67000
## 67   6.611500  4.000000 404.4848 18.41161 396.9000 10.24000
## 68   3.847054  4.000000 345.0000 18.90000 396.2100  8.10000
## 69   6.498000  4.000000 345.0000 18.90000 396.9000 13.09000
## 70   6.498000  4.000000 345.0000 18.90000 396.9000  8.79000
## 71   5.287300  9.392849 305.0000 19.20000 383.7300  6.72000
## 72   5.287300  4.000000 305.0000 19.20000 359.8630  9.88000
## 73   5.287300  4.000000 305.0000 19.20000 390.9100  5.52000
## 74   5.287300  4.000000 305.0000 19.20000 377.1700  7.54000
## 75   4.251500  5.000000 398.0000 18.70000 394.9200  6.78000
## 76   4.502600  5.000000 398.0000 18.70000 359.4353  8.94000
## 77   4.052200  5.000000 398.0000 18.70000 373.6600 11.97000
## 78   4.090500  5.000000 398.0000 18.70000 386.9600 10.27000
## 79   5.014100  5.000000 398.0000 18.70000 386.4000 12.34000
## 80   4.502600  5.000000 398.0000 18.70000 396.0600  9.10000
## 81   5.400700  4.000000 281.0000 18.51516 396.9000 12.28760
## 82   5.400700  4.000000 404.0441 19.00000 395.6300  7.22000
## 83   3.988149  9.130247 281.0000 19.00000 396.9000  6.72000
## 84   5.400700  4.000000 281.0000 19.00000 390.6400  7.51000
## 85   4.779400  3.000000 247.0000 18.50000 396.9000  9.62000
## 86   4.437700  3.000000 247.0000 18.50000 392.3000  6.53000
## 87   3.876398  3.000000 247.0000 18.45978 395.9900 12.86000
## 88   3.747600  3.000000 247.0000 18.50000 395.1500  8.44000
## 89   3.421700  2.000000 270.0000 17.80000 396.9000  5.50000
## 90   3.414500  2.000000 270.0000 17.80000 396.0600  5.70000
## 91   3.092300  2.000000 406.5611 17.80000 392.1800 12.43877
## 92   3.092100  2.000000 404.6644 17.80000 393.5500 12.52746
## 93   3.665900  4.000000 270.0000 18.20000 395.0100  8.16000
## 94   3.665900  4.000000 270.0000 18.20000 396.3300  6.21000
## 95   3.615000  4.000000 270.0000 18.20000 396.9000 10.59000
## 96   3.495200  2.000000 276.0000 18.44581 357.9800  6.65000
## 97   3.495200  2.000000 276.0000 18.00000 391.8300 12.45798
## 98   3.495200  2.000000 276.0000 18.00000 396.9000  4.21000
## 99   3.495200  2.000000 276.0000 18.41895 393.5300  3.57000
## 100  3.779030  8.906157 276.0000 18.00000 396.9000  6.19000
## 101  2.777800  5.000000 384.0000 18.61862 394.7600  9.42000
## 102  2.856100  5.000000 384.0000 20.90000 395.5800  7.67000
## 103  2.714700  5.000000 384.0000 20.90000  70.8000 12.81949
## 104  2.714700  5.000000 384.0000 20.90000 394.4700 13.44000
## 105  2.421000  5.000000 384.0000 20.90000 392.6900 12.33000
## 106  2.106900  5.000000 384.0000 20.90000 394.0500 16.47000
## 107  2.211000  5.000000 384.0000 20.90000 395.6700 18.66000
## 108  2.122400  5.000000 384.0000 20.90000 387.6900 14.09000
## 109  2.432900  5.000000 403.5972 20.90000 395.2400 12.27000
## 110  2.545100  5.000000 384.0000 20.90000 391.2300 15.55000
## 111  2.777800  5.000000 384.0000 20.90000 393.4900 13.00000
## 112  2.677500  6.000000 432.0000 17.80000 395.5900 10.16000
## 113  3.691180  6.000000 432.0000 17.80000 394.9500 16.21000
## 114  2.548000  6.000000 432.0000 17.80000 396.9000 17.09000
```

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## 115  2.256500  6.000000 432.0000 17.80000 388.7400 10.45000
## 116  2.463100  6.000000 432.0000 17.80000 344.9100 15.76000
## 117  2.730100  6.000000 432.0000 17.80000 393.3000 12.04000
## 118  2.747400  6.000000 432.0000 17.80000 394.5100 10.30000
## 119  2.477500  6.000000 432.0000 17.80000 338.6300 12.72370
## 120  2.759200  6.000000 432.0000 17.80000 359.0817 12.60750
## 121  2.257700  2.000000 188.0000 19.10000 389.1500 14.37000
## 122  2.197400  2.000000 188.0000 19.10000 377.6700 14.27000
## 123  2.086900  2.000000 188.0000 19.10000 378.0900 17.93000
## 124  3.694904  2.000000 188.0000 19.10000 370.3100 12.99681
## 125  2.006300  2.000000 188.0000 19.10000 379.3800 17.58000
## 126  3.644187  2.000000 188.0000 19.10000 385.0200 14.81000
## 127  1.757200  2.000000 188.0000 19.10000 359.2900 27.26000
## 128  1.788300  4.000000 437.0000 21.20000 392.1100 17.19000
## 129  1.812500  4.000000 417.6664 21.20000 396.9000 15.39000
## 130  1.979900  4.000000 437.0000 21.20000 358.4144 18.34000
## 131  2.118500  4.000000 437.0000 21.20000 395.0400 12.60000
## 132  2.271000  9.212966 437.0000 21.20000 396.9000 12.26000
## 133  2.327400  4.000000 437.0000 21.20000 385.7600 11.12000
## 134  2.469900  4.000000 437.0000 21.20000 388.6900 15.03000
## 135  2.346000  4.000000 414.6232 21.20000 262.7600 17.31000
## 136  2.110700  4.000000 437.0000 21.20000 358.8046 16.96000
## 137  1.966900  4.000000 417.4629 21.20000 378.2500 16.90000
## 138  1.849800  9.381268 437.0000 21.20000 394.0800 14.59000
## 139  1.668600  4.000000 437.0000 21.20000 392.0400 21.32000
## 140  1.668700  4.000000 437.0000 21.20000 396.9000 18.46000
## 141  1.611900  4.000000 437.0000 21.20000 388.0800 24.16000
## 142  1.439400  4.000000 437.0000 21.20000 396.9000 34.41000
## 143  1.321600  5.000000 403.0000 14.70000 359.2084 26.82000
## 144  1.411800  5.000000 403.0000 14.70000 396.9000 26.42000
## 145  1.345900  5.000000 403.0000 14.70000 396.9000 29.29000
## 146  1.419100  5.000000 403.0000 14.70000 172.9100 13.61555
## 147  3.596049  5.000000 403.0000 14.70000 354.0390 16.65000
## 148  1.460800  5.000000 403.0000 14.70000 391.7100 29.53000
## 149  1.529600  5.000000 403.0000 14.70000 356.9900 28.32000
## 150  1.525700  5.000000 403.0000 14.70000 351.8500 21.45000
## 151  1.618000  5.000000 403.0000 14.70000 354.9812 14.10000
## 152  3.660302  5.000000 403.0000 14.70000 341.6000 13.28000
## 153  1.610200  9.288406 403.0000 14.70000 343.2800 12.12000
## 154  1.623200  5.000000 403.0000 14.70000 261.9500 15.79000
## 155  3.640244  5.000000 403.0000 14.70000 321.0200 15.12000
## 156  1.745500  5.000000 403.0000 14.70000  88.0100 15.02000
## 157  1.736400  5.000000 403.0000 14.70000  88.6300 16.14000
## 158  1.877300  5.000000 403.0000 14.70000 363.4300  4.59000
## 159  1.757300  5.000000 403.0000 14.70000 353.8900  6.43000
## 160  1.765900  9.661900 403.0000 18.20194 364.3100  7.39000
## 161  1.798400  5.000000 403.0000 14.70000 338.9200  5.50000
## 162  3.615227  5.000000 403.0000 14.70000 374.4300  1.73000
## 163  2.040700  5.000000 403.0000 14.70000 389.6100  1.92000
## 164  2.162000  5.000000 407.7777 14.70000 356.5476  3.32000
## 165  2.422000  5.000000 403.0000 14.70000 395.1100 11.64000
## 166  2.283400  5.000000 403.0000 14.70000 357.1106  9.81000
## 167  2.045900  5.000000 403.0000 14.70000 357.9550  3.70000
## 168  2.425900  5.000000 403.0000 18.47928 227.6100 12.14000
```

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## 169  2.100000  5.000000 403.0000 14.70000 297.0900 11.10000
## 170  2.262500  5.000000 403.0000 14.70000 356.1739 11.32000
## 171  2.425900  5.000000 403.0000 14.70000 292.2900 14.43000
## 172  2.388700  5.000000 403.0000 14.70000 348.1300 12.03000
## 173  2.596100  5.000000 296.0000 16.60000 396.9000 14.69000
## 174  2.646300  5.000000 296.0000 16.60000 395.5000  9.04000
## 175  2.701900  5.000000 296.0000 16.60000 393.2300  9.64000
## 176  3.132300  9.454681 296.0000 16.60000 390.9600  5.33000
## 177  3.554900  9.237166 404.1709 16.60000 393.2300 12.49565
## 178  3.317500  5.000000 296.0000 16.60000 395.6000  6.29000
## 179  2.915300  5.000000 296.0000 16.60000 391.2700 12.21277
## 180  3.706700  3.000000 193.0000 17.80000 396.9000  5.04000
## 181  2.741000  8.744475 193.0000 17.80000 395.5600  7.56000
## 182  2.597900  3.000000 193.0000 17.80000 396.9000  9.45000
## 183  2.700600  3.000000 396.6772 17.80000 394.1200  4.82000
## 184  2.847000  3.000000 193.0000 18.45720 396.9000  5.68000
## 185  2.987900  3.000000 193.0000 17.80000 391.0000 13.98000
## 186  3.279700  3.000000 193.0000 17.80000 387.1100 13.15000
## 187  3.199200  3.000000 193.0000 17.80000 392.6300  4.45000
## 188  3.788600  5.000000 398.0000 15.20000 393.8700  6.68000
## 189  4.566700  5.000000 398.0000 15.20000 382.8400  4.56000
## 190  4.566700  5.000000 398.0000 18.28899 396.9000  5.39000
## 191  6.479800  5.000000 398.0000 15.20000 358.6727  5.10000
## 192  6.479800  5.000000 398.0000 15.20000 389.7100  4.69000
## 193  6.479800  5.000000 398.0000 15.20000 390.4900  2.87000
## 194  3.798154  1.000000 265.0000 15.60000 393.3700  5.03000
## 195  6.219600  1.000000 265.0000 15.60000 376.7000 12.19975
## 196  5.648400  4.000000 255.0000 14.40000 394.2300  2.97000
## 197  7.309000  8.391375 329.0000 12.60000 396.9000  4.08000
## 198  7.309000  2.000000 400.4895 12.60000 354.3100 12.33959
## 199  7.309000  2.000000 329.0000 12.60000 392.2000  6.62000
## 200  7.653400  3.000000 402.0000 17.00000 396.9000  4.56000
## 201  7.653400  3.000000 402.0000 17.00000 384.3000  4.45000
## 202  6.270000  2.000000 348.0000 14.70000 393.7700  7.43000
## 203  6.270000  2.000000 348.0000 14.70000 395.3800 11.93745
## 204  5.118000  4.000000 224.0000 14.70000 392.7800  3.81000
## 205  5.118000  4.000000 224.0000 14.70000 390.5500  2.88000
## 206  3.945400  4.000000 277.0000 18.60000 396.9000 10.87000
## 207  4.354900  4.000000 277.0000 18.60000 394.8700 10.97000
## 208  4.354900  4.000000 277.0000 18.60000 389.4300 18.06000
## 209  4.239200  9.075305 277.0000 18.48445 381.3200 14.66000
## 210  3.757877  4.000000 277.0000 18.60000 396.9000 23.09000
## 211  3.877100  4.000000 277.0000 18.49424 356.6418 17.27000
## 212  3.665000  4.000000 277.0000 18.60000 395.2400 23.98000
## 213  3.785765  4.000000 277.0000 18.60000 390.9400 16.03000
## 214  3.945400  4.000000 277.0000 18.60000 359.3993  9.38000
## 215  3.587500  9.312390 277.0000 18.60000 348.9300 29.55000
## 216  3.945400  4.000000 277.0000 18.60000 393.6300  9.47000
## 217  3.112100  5.000000 276.0000 16.40000 392.8000 13.51000
## 218  3.421100  5.000000 276.0000 16.40000 392.7800  9.69000
## 219  2.889300  5.000000 276.0000 16.40000 396.9000 17.92000
## 220  3.697880  5.000000 276.0000 16.40000 393.7400 10.50000
## 221  2.861700  8.000000 307.0000 17.40000 391.7000  9.71000
## 222  3.721824  8.000000 307.0000 17.40000 395.2400 21.46000
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## 223  3.272100  8.000000 307.0000 17.40000 390.3900  9.93000
## 224  3.272100  8.000000 406.4040 18.42430 396.9000  7.60000
## 225  2.894400  8.000000 307.0000 17.40000 385.0500  4.14000
## 226  2.894400  9.373429 307.0000 17.40000 382.0000  4.63000
## 227  3.215700  8.000000 307.0000 18.43151 387.3800  3.13000
## 228  3.215700  8.000000 307.0000 18.43127 372.0800  6.36000
## 229  3.375100  8.000000 307.0000 18.46729 377.5100  3.92000
## 230  3.375100  8.000000 307.0000 18.48139 380.3400  3.76000
## 231  3.707488  8.000000 307.0000 17.40000 378.3500 11.65000
## 232  3.671500  8.000000 307.0000 17.40000 376.1400  5.25000
## 233  3.838400  9.306739 307.0000 17.40000 385.9100  2.47000
## 234  3.651900  8.000000 307.0000 17.40000 378.9500  3.95000
## 235  3.651900  8.000000 307.0000 17.40000 360.2000  8.05000
## 236  3.651900  8.000000 307.0000 17.40000 376.7500 10.88000
## 237  4.148000  8.000000 307.0000 17.40000 388.4500  9.54000
## 238  4.148000  8.000000 307.0000 17.40000 390.0700 12.46510
## 239  6.189900  6.000000 300.0000 16.60000 379.4100  6.36000
## 240  3.906148  6.000000 406.7419 16.60000 383.7800  7.37000
## 241  6.336100  6.000000 300.0000 16.60000 391.2500 12.44570
## 242  6.336100  6.000000 300.0000 16.60000 394.6200 12.40000
## 243  7.035500  6.000000 300.0000 16.60000 372.7500 11.22000
## 244  7.035500  6.000000 300.0000 16.60000 374.7100  5.19000
## 245  4.201865  7.000000 330.0000 19.10000 372.4900 12.50000
## 246  7.954900  9.284639 330.0000 19.10000 389.1300 18.46000
## 247  8.055500  7.000000 330.0000 19.10000 390.1800  9.16000
## 248  8.055500  7.000000 330.0000 19.10000 376.1400 10.15000
## 249  7.826500  7.000000 330.0000 19.10000 374.7100  9.52000
## 250  7.826500  7.000000 402.7059 19.10000 393.7400  6.56000
## 251  7.396700  9.392911 330.0000 19.10000 396.2800  5.90000
## 252  7.396700  7.000000 405.2537 19.10000 377.0700  3.59000
## 253  8.906700  9.148175 330.0000 19.10000 386.0900  3.53000
## 254  8.906700  7.000000 330.0000 19.10000 396.9000  3.54000
## 255  4.198304  1.000000 315.0000 16.40000 392.8900  6.57000
## 256  9.220300  1.000000 315.0000 16.40000 395.1800  9.25000
## 257  6.336100  3.000000 244.0000 15.90000 359.5416  3.11000
## 258  1.801000  5.000000 264.0000 13.00000 389.7000 12.42101
## 259  3.479023  5.000000 264.0000 13.00000 383.2900 12.15738
## 260  2.010700  9.101551 264.0000 13.00000 391.9300  6.90000
## 261  2.112100  5.000000 264.0000 13.00000 392.8000  9.59000
## 262  2.139800  5.000000 264.0000 13.00000 388.3700  7.26000
## 263  2.288500  5.000000 264.0000 18.10548 386.8600  5.91000
## 264  2.078800  5.000000 392.3921 13.00000 393.4200 11.25000
## 265  1.930100  5.000000 264.0000 18.16525 360.1312  8.10000
## 266  1.986500  5.000000 264.0000 13.00000 357.4932 10.45000
## 267  2.132900  5.000000 264.0000 13.00000 384.0700 14.79000
## 268  2.421600  5.000000 264.0000 13.00000 384.5400  7.44000
## 269  2.872000  5.000000 264.0000 13.00000 390.3000  3.16000
## 270  3.846667  3.000000 404.9854 18.48599 359.3227 12.97277
## 271  4.429000  3.000000 403.8092 18.60000 388.6500 13.00000
## 272  4.429000  9.192041 223.0000 18.60000 396.9000  6.59000
## 273  3.917500  3.000000 223.0000 18.60000 394.9600 12.32380
## 274  4.366500  3.000000 223.0000 18.60000 390.7700  6.58000
## 275  4.077600  4.000000 254.0000 17.60000 396.9000  3.53000
## 276  4.267300  4.000000 254.0000 17.60000 360.1589  2.98000
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## 277  4.787200  4.000000 254.0000 17.60000 389.2500  6.05000
## 278  4.862800  4.000000 254.0000 17.60000 393.4500  4.16000
## 279  4.140300  4.000000 254.0000 17.60000 396.9000  7.19000
## 280  4.100700  5.000000 403.4492 14.90000 396.9000  4.85000
## 281  4.694700  5.000000 216.0000 14.90000 387.3100  3.76000
## 282  5.244700  5.000000 216.0000 14.90000 392.2300  4.59000
## 283  5.211900  8.906137 216.0000 14.90000 359.3310  3.01000
## 284  5.885000  1.000000 198.0000 13.60000 395.5200  3.16000
## 285  7.307300  1.000000 285.0000 15.30000 394.7200  7.85000
## 286  7.307300  1.000000 407.3631 15.30000 394.7200  8.23000
## 287  9.089200  1.000000 241.0000 18.20000 341.6000 12.39788
## 288  7.317200  6.000000 293.0000 16.60000 396.9000  7.14000
## 289  7.317200  6.000000 406.2950 16.60000 396.9000  7.60000
## 290  7.317200  6.000000 405.4618 16.60000 371.7200  9.51000
## 291  5.116700  4.000000 245.0000 19.20000 396.9000  3.33000
## 292  5.116700  4.000000 245.0000 18.58367 396.9000  3.56000
## 293  5.116700  4.000000 399.2853 19.20000 396.9000  4.70000
## 294  5.502700  9.002814 405.7641 16.00000 396.9000  8.58000
## 295  5.502700  4.000000 289.0000 18.44555 396.9000 10.40000
## 296  5.960400  4.000000 289.0000 18.44018 396.9000  6.27000
## 297  5.960400  4.000000 289.0000 16.00000 392.8500  7.39000
## 298  6.320000  4.000000 289.0000 16.00000 396.9000 15.84000
## 299  7.827800  5.000000 358.0000 14.80000 359.6688  4.97000
## 300  3.939841  5.000000 358.0000 14.80000 371.5800  4.74000
## 301  7.827800  5.000000 358.0000 18.25420 390.8600 11.87086
## 302  5.491700  7.000000 329.0000 16.10000 395.7500  9.50000
## 303  5.491700  7.000000 329.0000 18.54491 383.6100 12.12727
## 304  5.491700  9.277804 329.0000 16.10000 360.5015 12.17821
## 305  4.022000  8.478026 222.0000 18.40000 393.6800  6.93000
## 306  3.370000  7.000000 222.0000 18.40000 359.8685  8.93000
## 307  3.099200  7.000000 222.0000 18.40000 396.9000 12.19791
## 308  3.182700  7.000000 222.0000 18.40000 396.9000  7.53000
## 309  3.693887  4.000000 304.0000 18.40000 359.9830  4.54000
## 310  3.102500  4.000000 304.0000 18.40000 396.2400  9.97000
## 311  2.519400  4.000000 304.0000 18.40000 356.4853 12.64000
## 312  2.640300  4.000000 304.0000 18.40000 396.9000  5.98000
## 313  3.754688  4.000000 304.0000 18.40000 396.3000 11.72000
## 314  3.262800  4.000000 304.0000 18.40000 393.3900  7.90000
## 315  3.602300  4.000000 304.0000 18.47217 395.6900  9.28000
## 316  3.945000  4.000000 304.0000 18.40000 396.4200 11.50000
## 317  3.998600  4.000000 304.0000 18.40000 390.7000 18.33000
## 318  4.031700  4.000000 304.0000 18.40000 396.9000 15.94000
## 319  3.532500  9.359527 304.0000 18.40000 395.2100 10.36000
## 320  4.001900  4.000000 404.0303 18.40000 396.2300 12.73000
## 321  4.540400  5.000000 287.0000 18.52893 396.9000  7.20000
## 322  4.540400  5.000000 287.0000 19.60000 396.9000  6.87000
## 323  4.721100  5.000000 287.0000 19.60000 359.4924  7.70000
## 324  4.721100  5.000000 287.0000 18.53268 391.1300 11.74000
## 325  4.721100  5.000000 287.0000 18.53821 396.9000  6.12000
## 326  5.415900  5.000000 287.0000 19.60000 393.6800 12.04383
## 327  3.822592  5.000000 287.0000 19.60000 396.9000  6.15000
## 328  3.778587  5.000000 287.0000 19.60000 396.9000 12.79000
## 329  3.994349  4.000000 430.0000 16.90000 382.4400  9.97000
## 330  5.214600  4.000000 430.0000 16.90000 375.2100  7.34000
```

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## 331  5.873600  4.000000 430.0000 18.36413 368.5700  9.09000
## 332  6.640700  1.000000 403.2484 16.90000 394.0200 12.43000
## 333  6.640700  8.807142 304.0000 16.90000 362.2500  7.83000
## 334  6.458400  5.000000 224.0000 20.20000 389.7100  5.68000
## 335  6.458400  5.000000 224.0000 20.20000 389.4000  6.75000
## 336  5.985300  5.000000 396.6860 20.20000 396.9000  8.01000
## 337  5.231100  5.000000 224.0000 20.20000 396.9000  9.80000
## 338  5.615000  8.964908 224.0000 18.57116 359.8452 10.56000
## 339  3.909250  5.000000 224.0000 20.20000 359.9755  8.51000
## 340  3.805671  5.000000 224.0000 20.20000 396.9000  9.74000
## 341  4.812200  5.000000 224.0000 20.20000 396.9000  9.29000
## 342  7.037900  1.000000 284.0000 15.50000 394.7400  5.49000
## 343  6.266900  1.000000 422.0000 15.90000 389.9600  8.65000
## 344  5.732100  5.000000 370.0000 17.60000 396.9000  7.18000
## 345  6.465400  5.000000 370.0000 17.60000 387.9700 12.30424
## 346  8.013600  3.000000 403.3536 18.80000 385.6400 10.53000
## 347  8.013600  3.000000 352.0000 18.80000 364.6100 12.67000
## 348  8.535300  4.000000 351.0000 17.90000 392.4300  6.36000
## 349  3.936190  4.000000 280.0000 17.00000 390.9400  5.99000
## 350  8.792100  1.000000 335.0000 19.70000 389.8500  5.89000
## 351  8.792100  1.000000 402.7410 19.70000 396.9000  5.98000
## 352 10.710300  8.929698 411.0000 18.30000 370.7800  5.49000
## 353  4.212693  4.000000 411.0000 18.30000 392.3300  7.79000
## 354  4.008853  5.000000 187.0000 17.00000 384.4600  4.50000
## 355 10.585700  4.000000 334.0000 22.00000 360.1028  8.05000
## 356 10.585700  8.880058 334.0000 22.00000 376.0400  5.57000
## 357  2.122200 24.000000 666.0000 20.20000 377.7300 17.60000
## 358  2.505200 10.483537 666.0000 20.20000 391.3400 13.27000
## 359  3.635750 24.000000 666.0000 20.20000 395.4300 11.48000
## 360  3.656054 10.903259 666.0000 20.20000 390.7400 12.67000
## 361  2.518200 24.000000 666.0000 18.55937 374.5600 12.83206
## 362  2.295500 24.000000 666.0000 18.51744 350.6500 14.19000
## 363  2.103600 24.000000 666.0000 20.20000 380.7900 10.19000
## 364  1.904700 24.000000 666.0000 20.20000 353.0400 14.64000
## 365  1.904700 24.000000 666.0000 20.20000 354.5500  5.29000
## 366  1.613200 24.000000 666.0000 20.20000 352.3811  7.12000
## 367  1.752300 24.000000 666.0000 20.20000 316.0300 14.00000
## 368  1.510600 24.000000 666.0000 20.20000 355.8037 13.33000
## 369  3.587227 24.000000 422.2376 20.20000 375.5200  3.26000
## 370  1.356700 24.000000 666.0000 20.20000 375.3300  3.73000
## 371  1.202400 24.000000 666.0000 20.20000 392.0500  2.96000
## 372  1.169100 24.000000 666.0000 20.20000 366.1500  9.53000
## 373  1.129600 24.000000 666.0000 20.20000 354.3615  8.88000
## 374  1.174200 10.984630 666.0000 20.20000 396.9000 34.77000
## 375  3.699343 24.000000 666.0000 20.20000 333.8044 37.97000
## 376  1.316300 24.000000 425.7827 20.20000 396.9000 13.44000
## 377  1.344900 24.000000 666.0000 18.63016 361.0844 23.24000
## 378  1.358000 24.000000 666.0000 20.20000 396.9000 21.24000
## 379  1.386100 24.000000 666.0000 20.20000 396.9000 23.69000
## 380  1.386100 24.000000 666.0000 18.63721 393.7400 21.78000
## 381  1.416500 24.000000 666.0000 20.20000 396.9000 17.21000
## 382  1.519200 24.000000 666.0000 20.20000 396.9000 21.08000
## 383  1.580400 24.000000 666.0000 20.20000 396.9000 23.60000
## 384  1.533100 24.000000 666.0000 20.20000 396.9000 24.56000
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## 385  1.439500 24.000000 666.0000 20.20000 285.8300 30.63000
## 386  1.426100 24.000000 666.0000 20.20000 396.9000 30.81000
## 387  1.467200 24.000000 666.0000 20.20000 396.9000 28.28000
## 388  1.518400 24.000000 666.0000 20.20000 396.9000 31.99000
## 389  1.589500 24.000000 666.0000 18.61380 372.9200 30.62000
## 390  1.728100 24.000000 666.0000 20.20000 396.9000 20.85000
## 391  1.926500 24.000000 666.0000 20.20000 394.4300 17.11000
## 392  2.167800 24.000000 666.0000 20.20000 378.3800 18.76000
## 393  1.770000 24.000000 666.0000 20.20000 396.9000 13.71981
## 394  1.791200 24.000000 666.0000 20.20000 396.9000 15.17000
## 395  1.782100 24.000000 666.0000 20.20000 396.9000 16.35000
## 396  1.725700 24.000000 666.0000 20.20000 391.9800 17.12000
## 397  1.676800 24.000000 666.0000 20.20000 396.9000 19.37000
## 398  1.633400 24.000000 666.0000 20.20000 393.1000 19.92000
## 399  1.489600 24.000000 666.0000 20.20000 396.9000 30.59000
## 400  1.500400 24.000000 666.0000 20.20000 356.5856 29.97000
## 401  3.574636 24.000000 666.0000 20.20000 396.9000 26.77000
## 402  3.668930 24.000000 666.0000 20.20000 396.9000 20.32000
## 403  1.639000 24.000000 429.3565 20.20000 376.1100 20.31000
## 404  1.702800 24.000000 666.0000 20.20000 396.9000 19.77000
## 405  1.607400 24.000000 666.0000 20.20000 329.4600 27.38000
## 406  1.425400 24.000000 666.0000 20.20000 384.9700 22.98000
## 407  1.178100 24.000000 666.0000 20.20000 370.2200 23.34000
## 408  3.626630 24.000000 666.0000 20.20000 332.0900 12.13000
## 409  1.454700 24.000000 666.0000 20.20000 314.6400 13.41872
## 410  1.465500 11.118795 666.0000 20.20000 179.3600 19.78000
## 411  1.413000 24.000000 666.0000 20.20000   2.6000 13.66807
## 412  3.594585 24.000000 666.0000 20.20000  35.0500 21.22000
## 413  1.553900 11.608090 666.0000 20.20000  28.7900 34.37000
## 414  1.589400 24.000000 666.0000 20.20000 210.9700 13.11438
## 415  3.671564 24.000000 666.0000 20.20000  88.2700 36.98000
## 416  1.834700 24.000000 666.0000 20.20000  27.2500 29.05000
## 417  1.819500 24.000000 427.0991 20.20000  21.5700 13.34362
## 418  1.647500 24.000000 666.0000 20.20000 127.3600 26.64000
## 419  1.802600 24.000000 666.0000 20.20000  16.4500 20.62000
## 420  3.606961 24.000000 666.0000 20.20000  48.4500 22.74000
## 421  1.858900 24.000000 666.0000 20.20000 318.7500 15.02000
## 422  1.874600 24.000000 666.0000 20.20000 319.9800 15.70000
## 423  1.951200 24.000000 666.0000 20.20000 291.5500 14.10000
## 424  2.021800 24.000000 666.0000 20.20000   2.5200 13.04066
## 425  2.063500 24.000000 666.0000 20.20000   3.6500 17.16000
## 426  1.909600 24.000000 666.0000 20.20000   7.6800 13.41141
## 427  1.997600 24.000000 666.0000 20.20000  24.6500 15.69000
## 428  1.862900 24.000000 666.0000 20.20000  18.8200 14.52000
## 429  1.935600 24.000000 666.0000 20.20000  96.7300 21.52000
## 430  3.614871 24.000000 666.0000 20.20000  60.7200 24.08000
## 431  2.052700 24.000000 666.0000 20.20000  83.4500 17.64000
## 432  2.088200 24.000000 666.0000 20.20000  81.3300 19.69000
## 433  2.200400 24.000000 428.6012 20.20000  97.9500 12.03000
## 434  2.315800 24.000000 417.6760 20.20000 348.6903 16.22000
## 435  2.222200 24.000000 424.0056 18.66026 100.6300 15.17000
## 436  2.124700 10.895986 420.9050 20.20000 109.8500 23.27000
## 437  2.002600 24.000000 427.9353 20.20000  27.4900 18.05000
## 438  1.914200 24.000000 666.0000 20.20000   9.3200 26.45000
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## 439  1.820600 24.000000 439.0440 20.20000  68.9500 34.02000
## 440  1.817200 24.000000 666.0000 20.20000 396.9000 22.88000
## 441  1.866200 24.000000 666.0000 20.20000 391.4500 22.11000
## 442  2.065100 24.000000 666.0000 20.20000 385.9600 19.52000
## 443  2.004800 10.646508 666.0000 20.20000 395.6900 16.59000
## 444  1.978400 24.000000 666.0000 20.20000 386.7300 18.85000
## 445  1.895600 24.000000 666.0000 20.20000 240.5200 23.79000
## 446  1.987900 24.000000 666.0000 20.20000  43.0600 23.98000
## 447  2.072000 24.000000 666.0000 20.20000 318.0100 17.79000
## 448  2.198000 24.000000 666.0000 20.20000 388.5200 16.44000
## 449  2.261600 24.000000 666.0000 20.20000 396.9000 18.13000
## 450  2.185000 24.000000 666.0000 20.20000 304.2100 19.31000
## 451  2.323600 24.000000 666.0000 20.20000   0.3200 17.44000
## 452  2.355200 24.000000 666.0000 20.20000 355.2900 17.73000
## 453  2.368200 24.000000 666.0000 20.20000 385.0900 17.27000
## 454  2.452700 24.000000 666.0000 20.20000 375.8700 16.74000
## 455  2.496100 24.000000 666.0000 20.20000   6.6800 18.71000
## 456  2.435800 24.000000 666.0000 20.20000 355.2286 18.13000
## 457  2.580600 24.000000 666.0000 18.57297  10.4800 19.01000
## 458  2.779200 24.000000 666.0000 20.20000   3.5000 16.94000
## 459  2.783100 24.000000 666.0000 20.20000 272.2100 16.23000
## 460  2.717500 24.000000 432.1537 20.20000 396.9000 14.70000
## 461  2.597500 24.000000 666.0000 20.20000 255.2300 16.42000
## 462  2.567100 24.000000 666.0000 20.20000 391.4300 14.65000
## 463  2.734400 11.010365 666.0000 20.20000 396.9000 13.99000
## 464  2.801600 24.000000 666.0000 20.20000 393.8200 10.29000
## 465  3.574314 24.000000 666.0000 20.20000 396.9000 13.22000
## 466  3.066500 24.000000 666.0000 20.20000 334.4000 13.00915
## 467  2.871500 24.000000 666.0000 20.20000  22.0100 17.15000
## 468  2.540300 24.000000 666.0000 20.20000 331.2900 21.32000
## 469  2.908400 24.000000 666.0000 20.20000 368.7400 18.13000
## 470  2.823700 24.000000 666.0000 18.69759 396.9000 14.76000
## 471  3.033400 24.000000 666.0000 20.20000 396.9000 16.29000
## 472  3.099300 24.000000 666.0000 20.20000 395.3300 12.87000
## 473  2.896500 24.000000 666.0000 20.20000 393.3700 14.36000
## 474  2.532900 24.000000 666.0000 20.20000 374.6800 11.66000
## 475  2.429800 24.000000 666.0000 20.20000 352.5800 18.14000
## 476  2.206000 24.000000 435.2548 20.20000 302.7600 13.14536
## 477  2.305300 24.000000 666.0000 20.20000 396.2100 18.68000
## 478  2.100700 24.000000 666.0000 20.20000 349.4800 24.91000
## 479  2.170500 10.913013 666.0000 20.20000 379.7000 18.03000
## 480  1.951200 24.000000 666.0000 20.20000 383.3200 13.11000
## 481  3.424200 24.000000 666.0000 20.20000 396.9000 12.57993
## 482  3.331700 24.000000 666.0000 20.20000 393.0700 12.39652
## 483  3.670326 24.000000 666.0000 20.20000 395.2800  7.01000
## 484  3.680307 24.000000 666.0000 20.20000 392.9200 10.42000
## 485  3.724000 24.000000 666.0000 20.20000 370.7300 13.34000
## 486  3.991700  9.553683 411.9297 18.62391 388.6200 10.58000
## 487  3.545900 24.000000 666.0000 20.20000 392.6800 14.98000
## 488  3.152300 24.000000 666.0000 20.20000 388.2200 11.45000
## 489  1.820900  4.000000 711.0000 18.67425 395.0900 18.06000
## 490  1.755400  4.000000 711.0000 18.81301 344.0500 23.97000
## 491  1.822600  4.000000 711.0000 20.10000 318.4300 29.68000
## 492  1.868100  8.606768 711.0000 20.10000 390.1100 18.07000
```

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## 493  2.109900  4.000000 711.0000 20.10000 396.9000 13.35000
## 494  2.381700  6.000000 391.0000 19.20000 396.9000 12.01000
## 495  2.381700  6.000000 391.0000 19.20000 396.9000 13.59000
## 496  2.798600  6.000000 391.0000 19.20000 393.2900 17.60000
## 497  2.798600  6.000000 391.0000 19.20000 396.9000 21.14000
## 498  2.892700  6.000000 391.0000 19.20000 396.9000 14.10000
## 499  2.409100  6.000000 403.2790 19.20000 396.9000 12.92000
## 500  2.399900  6.000000 415.8603 19.20000 395.7700 15.10000
## 501  3.660962  6.000000 391.0000 19.20000 396.9000 14.33000
## 502  2.478600  1.000000 273.0000 21.00000 391.9900  9.67000
## 503  2.287500  1.000000 273.0000 21.00000 396.9000  9.08000
## 504  2.167500  8.748167 273.0000 21.00000 396.9000  5.64000
## 505  2.388900  1.000000 273.0000 21.00000 393.4500  6.48000
## 506  2.505000  1.000000 403.2414 21.00000 359.7096  7.88000
```