

Harvardx-MovieLens

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MovieLens Project
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#Executive Summary

1(a). Introduction

In this project, we will look into the MovieLens dataset and create a movie recommendation system. We will also try to predict the movie ratings based on the given variables. For this specific project, we will use the MovieLens 10M dataset with 6 variables. To get an idea of what each variable means, you can check the link in the footnote.¹ In this project, we will go through the preprocessing activity to modify the data so that we can create a good model. Then, we will divide the dataset into the testing and training dataset. Also, we will try to test the value of the RMSE with different parameters. Lastly, we will evaluate the value of the RMSE.

1(b). Goal of project

The goal of this project is to create a movie recommendation system using the code given above. The dataset is a subset of the data used in the Netflix challenge. It consists of 10000054 ratings, 10681, and 71567 users as seen from the grouplens website. Out of the 10M datapoints, we will divide it into training and testing data. We will then create our prediction using the RMSE with a goal of minimizing the value of the RMSE ideally below 0.86490. RMSE itself is the measure of how far the data diverged away from the regression line. Therefore, to make our model more accurate, we will aim for the lowest RMSE value.

#Directions You will use the following code to generate your datasets. Develop your algorithm using the edx set. For a final test of your algorithm, predict movie ratings in the validation set as if they were unknown. RMSE will be used to evaluate how close your predictions are to the true values in the validation set.

Important: The validation data should NOT be used for training your algorithm and should ONLY be used for evaluating the RMSE of your final algorithm. You should split the edx data into separate training and test sets to design and test your algorithm.

Also remember that by accessing this site, you are agreeing to the terms of the edX Honor Code. This means you are expected to submit your own work and can be removed from the course for substituting another student's work as your own.

1(c). Loading the dataset ##Code given from the Harvardx capstone course

```
# Create test and validation sets
#####
# Create edx set, validation set
#####

# Note: this process could take a couple of minutes

if(!require(tidyverse)) install.packages("tidyverse", repos = "http://cran.us.r-project.org")

## Loading required package: tidyverse

## -- Attaching packages ----- tidyverse

## v ggplot2 3.3.0      v purrr  0.3.4
## v tibble  3.0.1      v dplyr  0.8.5
## v tidyr   1.0.3      v stringr 1.4.0
## v readr   1.3.1      v forcats 0.5.0

## -- Conflicts ----- tidyverse_c
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

¹<https://grouplens.org/datasets/movielens/10m/>

```

if(!require(caret)) install.packages("caret", repos = "http://cran.us.r-project.org")

## Loading required package: caret

## Loading required package: lattice

##
## Attaching package: 'caret'

## The following object is masked from 'package:purrr':
##
## lift

if(!require(data.table)) install.packages("data.table", repos = "http://cran.us.r-project.org")

## Loading required package: data.table

##
## Attaching package: 'data.table'

## The following objects are masked from 'package:dplyr':
##
## between, first, last

## The following object is masked from 'package:purrr':
##
## transpose

if(!require(dplyr)) install.packages("dplyr", repos = "http://cran.us.r-project.org")
if(!require(kknn)) install.packages("kknn", repos = "http://cran.us.r-project.org")

## Loading required package: kknn

##
## Attaching package: 'kknn'

## The following object is masked from 'package:caret':
##
## contr.dummy

#Load the packages into library
library(tidyverse)
library(caret)
library(data.table)
library(dplyr)
library(kknn)
# MovieLens 10M dataset:
# https://grouplens.org/datasets/movielens/10m/
# http://files.grouplens.org/datasets/movielens/ml-10m.zip

```

```

dl <- tempfile()
download.file("http://files.grouplens.org/datasets/movielens/ml-10m.zip", dl)

ratings <- fread(text = gsub("::", "\t", readLines(unzip(dl, "ml-10M100K/ratings.dat"))),
  col.names = c("userId", "movieId", "rating", "timestamp"))

movies <- str_split_fixed(readLines(unzip(dl, "ml-10M100K/movies.dat")), "\\::", 3)
colnames(movies) <- c("movieId", "title", "genres")
movies <- as.data.frame(movies) %>% mutate(movieId = as.numeric(levels(movieId))[movieId],
  title = as.character(title),
  genres = as.character(genres))

movielens <- left_join(ratings, movies, by = "movieId")

# Validation set will be 10% of MovieLens data
set.seed(1, sample.kind="Rounding")

# if using R 3.5 or earlier, use 'set.seed(1)' instead
test_index <- createDataPartition(
  y = movielens$rating,
  times = 1,
  p = 0.1,
  list = FALSE)

# Splitting
edx <- movielens[-test_index,] #train
temp <- movielens[test_index,] #test

# Make sure userId and movieId in validation set are also in edx set
validation <- temp %>%
  semi_join(edx, by = "movieId") %>%
  semi_join(edx, by = "userId")

# Add rows removed from validation set back into edx set
removed <- anti_join(temp, validation)
edx <- rbind(edx, removed)

#Cleaning the environment...
rm(dl, ratings, movies, test_index, temp, movielens, removed)

#You should run all the codes above, if somehow you can't get the complete data after you view it 'view(edx)'
and 'view(validation)', then below is an alternative.

#Alternative method to load the dataset in case the code above doesn't work.
#This code depends on where you store edx.rds and validation.rds.
#The link to these files will be provided in the footnote below.[2]
edx <- readRDS("~/Downloads/edx.rds")
validation <- readRDS("~/Downloads/validation.rds")
set.seed(1, sample.kind="Rounding")

## Warning in set.seed(1, sample.kind = "Rounding"): non-uniform 'Rounding' sampler
## used

```

#Method and Analysis ##Initial data analysis 2(a).Initial data exploration ##This is not necessary, but it is a good practice to be familiar with the dataset.

#Data structure and size

```
str(edx)
```

```
## 'data.frame': 9000055 obs. of 6 variables:
## $ userId : int 1 1 1 1 1 1 1 1 1 1 ...
## $ movieId : num 122 185 292 316 329 355 356 362 364 370 ...
## $ rating : num 5 5 5 5 5 5 5 5 5 5 ...
## $ timestamp: int 838985046 838983525 838983421 838983392 838983392 838984474 838983653 838984885 838984885 838984885 ...
## $ title : chr "Boomerang (1992)" "Net, The (1995)" "Outbreak (1995)" "Stargate (1994)" ...
## $ genres : chr "Comedy|Romance" "Action|Crime|Thriller" "Action|Drama|Sci-Fi|Thriller" "Action|Drama|Sci-Fi|Thriller" ...
```

#Names of different columns

```
names(edx)
```

```
## [1] "userId" "movieId" "rating" "timestamp" "title" "genres"
```

#Top 6 data

```
head(edx)
```

```
##   userId movieId rating timestamp title
## 1      1     122      5 838985046 Boomerang (1992)
## 2      1     185      5 838983525 Net, The (1995)
## 4      1     292      5 838983421 Outbreak (1995)
## 5      1     316      5 838983392 Stargate (1994)
## 6      1     329      5 838983392 Star Trek: Generations (1994)
## 7      1     355      5 838984474 Flintstones, The (1994)
##
##           genres
## 1      Comedy|Romance
## 2      Action|Crime|Thriller
## 4      Action|Drama|Sci-Fi|Thriller
## 5      Action|Adventure|Sci-Fi
## 6      Action|Adventure|Drama|Sci-Fi
## 7      Children|Comedy|Fantasy
```

#Check for missing values

#This is an important step because otherwise we have to remove the missing values.

```
sum(is.na(edx))
```

```
## [1] 0
```

2(b). Graph of variables

#Plots to see data characteristic

#This next two lines will be necessary to make the graph, however, it will be explained later.

```
org_data<- read_csv("~/Downloads/theMovies_train.csv")
```

```
## Parsed with column specification:
```

```
## cols(
```

```
##   .default = col_double(),
```

```
##   Title = col_character()
```

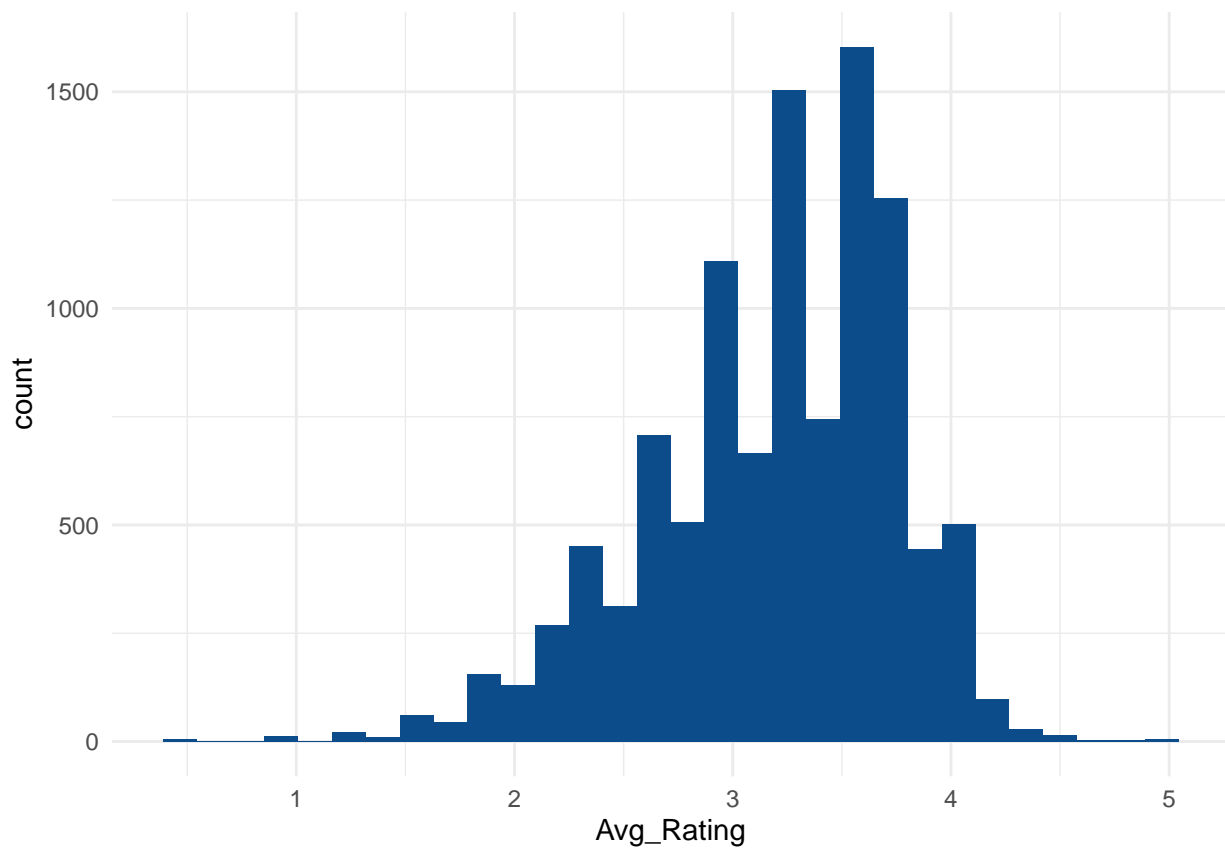
```
## )
```

```
## See spec(...) for full column specifications.
```

```
org_test<- read_csv("~/Downloads/theMovies_test.csv")
```

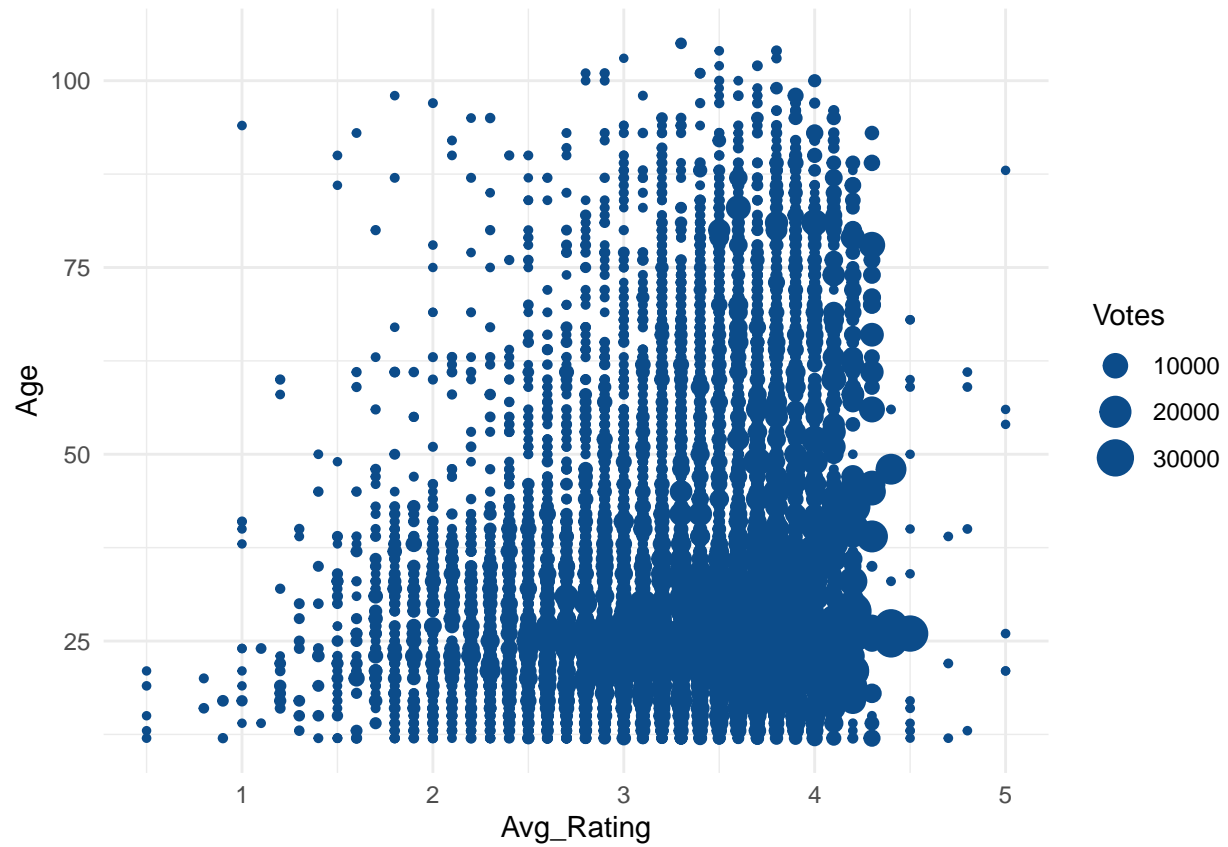
```
## Parsed with column specification:  
## cols(  
##   .default = col_double(),  
##   Title = col_character()  
## )  
## See spec(...) for full column specifications.
```

```
#Distribution of Avg_Rating  
ggplot(org_data) +  
  aes(x = Avg_Rating) +  
  geom_histogram(bins = 30L, fill = "#0c4c8a") +  
  theme_minimal()
```

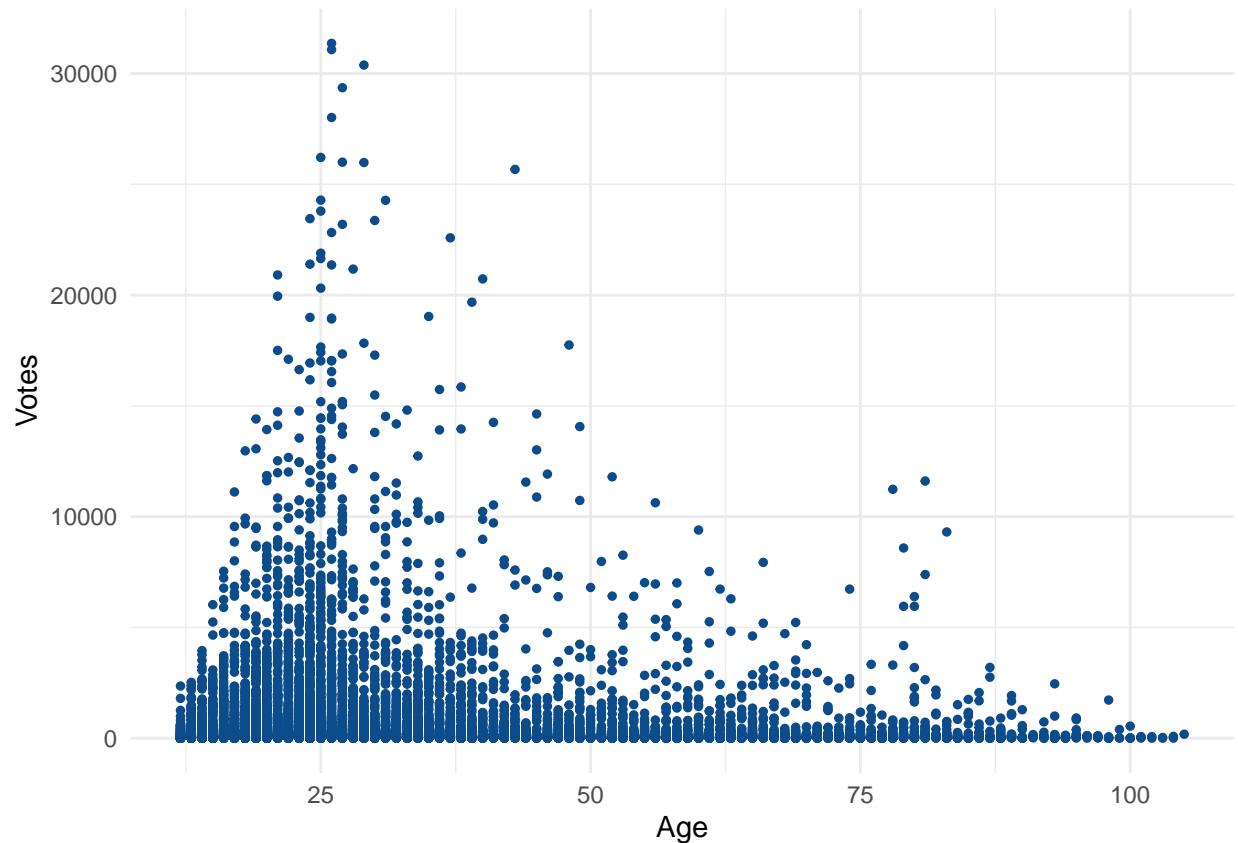


#We can see that the ratings tend to be above 3. There are more movies rated above three than below 3.

```
#Age vs Avg_Rating adjusted with votes  
##We can see that recent movies are rated better than old movies.  
ggplot(org_data) +  
  aes(x = Avg_Rating, y = Age, size = Votes) +  
  geom_point(colour = "#0c4c8a") +  
  theme_minimal()
```



```
#Voters vs Age graph  
##We can see that recent movies have higher votes  
ggplot(org_data) +  
  aes(x = Age, y = Votes) +  
  geom_point(size = 1L, colour = "#0c4c8a") +  
  theme_minimal()
```

This is what we want to do in the preprocessing process. We will try to predict the ratings with the variables by organizing them this way.

```
#####
#Organize your data (EDX)
#We will organize the data in the format as given below for observation.
#We will first organize the based on movies and then we will try to predict the average rating by movie.
#1-the movie is categorized in that genres, 0- movie not part of that genres
#Avg_Rating; Age_of_movie; Drama; Comedy; Thriller; Romance; ... Audience;
#      4.3;          30;      1;      0;          1;          0; ... 40000;
```

```
#Install random forest package if needed.
```

```
if(!require(randomForest)){
  install.packages("randomForest")
  library(randomForest)
}
```

```
## Loading required package: randomForest
```

```
## randomForest 4.6-14
```

```
## Type rfNews() to see new features/changes/bug fixes.
```

```
##
```

```
## Attaching package: 'randomForest'
```

```
## The following object is masked from 'package:dplyr':
##
##      combine

## The following object is masked from 'package:ggplot2':
##
##      margin
```

2(c). Brief description of model

To reach our purpose, we will use random forest and KNN algorithm to create our predictions.

To clearly understand random forest we have to first understand the idea of decision trees. Decision tree is a method to find our predicted values based on our classification decision, which is generally a yes/no question. Though a decision tree may be accurate, it does not really serve the goal of machine learning if we only use one tree. Random forest combines multiple decision trees to make it more accurate especially when the algorithm is tested to new datas. In random forest, we will generally select the number of trees that will maximise the accuracy of the model. The goal of random forest is to create a model with better accuracy than random guessing. We will start to organize the data by creating unique characters for each genres, separating the movieIDs, and creating the training and testing dataset. Then we will find the value of the RMSE.

K-nearest neighbor or the KNN model relies on the idea of proximity, in which similar datapoints are close to each other or “neighbors”. This means that new datapoints will be assigned a value based on their proximity with other values. In order to create predictions with this model, we have to first find the best value of K or the number of neighbors to include in the dataset. Generally the value of k is defined by the formula $k = \sqrt{N}$, with N being the number of samples in training set. A value of K that is too large will result in high bias.²

2(d). Preprocessing and data cleaning

```
##Organizing Data
#The data will be organize with the following codes. However, to avoid loading this all over again, whi

#Discover all the different genres
genres = paste(edx$genres, collapse="|") %>%
  strsplit("\\|")
#Remove the equal genres. Remove the replication
genres = genres[[1]] %>% unique
#calculate the age of the movies
getYear = function(tt){
  temp = strsplit(tt, "\\(")[[1]]
  temp = strsplit(temp[length(temp)], "\\)")[[1]]
  return(as.numeric(temp))
}
#Select the genres of each movie
getGenres = function(list_genres){
  temp = paste(list_genres, collapse="|")
  temp = unique(strsplit(temp, "\\|")[[1]])
  return(temp)
}

#separate the movieIDs
mov = edx$movieId %>% unique
```

²<https://towardsdatascience.com/a-simple-introduction-to-k-nearest-neighbors-algorithm-b3519ed98e>

```

#Preparing the data about the movies.We will name the columns.
org_data = data.frame(matrix(0, length(mov), length(genres) + 5))
names(org_data) = c("Movie_ID", "Title", "Avg_Rating", "Age", "Votes", genres)
names(org_data)[c(12,21,25)] = c("Sci-Fi", "Film_Noir", "None")
#Filling the information about all the movies
for (i in 1:length(mov)){
  org_data$Movie_ID[i] = mov[i]
  focus = which(edx$movieId == mov[i])
  org_data$Title[i] = names(table(edx$title[focus]))
  org_data$Avg_Rating[i] = round(mean(edx$rating[focus]), 1)
  org_data$Age[i] = 2020 - getYear(org_data$Title[i])
  org_data$Votes[i] = length(focus)
  who = 5 + match(getGenres(edx$genres[focus]), genres)
  org_data[i,who] = 1
}

```

2(e). Random forest model

We will start to do our model-specific codes. We will begin by creating the training and testing data. Here, 70% will be for the training set and 30% will be for the testing set.

```

#####
test_index <- createDataPartition(
  y = org_data$Avg_Rating,
  times = 1,
  p = 0.3, #30% for test
  list = FALSE)

org_train <- org_data[-test_index,]
org_test <- org_data[test_index,]

#Install randomForest if needed
if(!require(randomForest)){
  install.packages("randomForest")
  library(randomForest)
}

#if the code above doesn't run, run these two codes instead.
# org_data = read.csv("theMovies_train.csv")
# org_test = read.csv("theMovies_test.csv")

#Transform the genres columns in factors
for (i in 6:25){
  org_train[,i] = as.factor(org_train[,i])
  org_test[,i] = as.factor(org_test[,i])
}

library(reshape)

##
## Attaching package: 'reshape'

## The following object is masked from 'package:data.table':
##
## melt

```

```
## The following object is masked from 'package:dplyr':  
##  
##      rename
```

```
## The following objects are masked from 'package:tidyr':  
##  
##      expand, smiths
```

```
library(tidyverse)  
  
org_data_melt <- melt(data = org_data, measure.vars = names(org_data)[6:25]) %>%  
  filter(value == 1) %>%  
  select(!value)  
  
org_test_melt <- melt(data = org_test, measure.vars = names(org_test)[6:25]) %>%  
  filter(value == 1) %>%  
  select(!value)  
  
#We will create 'my_pred' which will predict the average rating based on movies.  
rf_mov = randomForest(Avg_Rating ~ ., data=org_train[,-c(1,2,25)])  
  
my_pred = predict(rf_mov, org_test[,-c(1,2,25)])  
  
if(!require(MLmetrics)){  
  install.packages("MLmetrics")  
  library(MLmetrics)  
}
```

```
## Loading required package: MLmetrics
```

```
##  
## Attaching package: 'MLmetrics'
```

```
## The following objects are masked from 'package:caret':  
##  
##      MAE, RMSE
```

```
## The following object is masked from 'package:base':  
##  
##      Recall
```

```
#We'll create 'rf_rmse' to store the value of RMSE for random forest. Then, we'll print the value.  
rf_rmse = RMSE(my_pred, org_test$Avg_Rating)  
rf_rmse
```

```
## [1] 0.456029
```

Knn

2(f). KNN algorithm

```
train <- org_train[,-c(1,2,25)]
test <- org_test[,-c(1,2,25)]

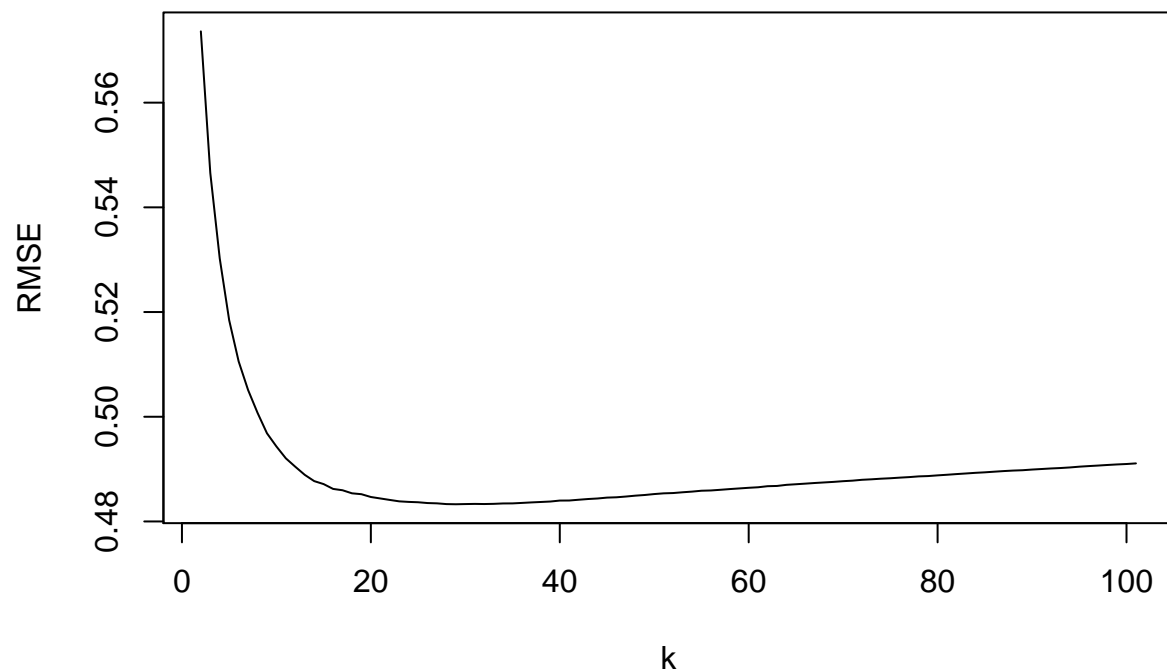
results = list(k = rep(0,100), rmse = rep(0,100))

for (i in 2:101){
  my_kknn <- kknn(Avg_Rating ~ .,
                  train,
                  test,
                  k = i)

  my_rmse = RMSE(my_kknn$fitted.values, test$Avg_Rating)
  my_rmse

  results$k[i] = i
  results$rmse[i] = my_rmse
}
```

```
# K vs Accuracy
#Here we will try to find the best value of k.
results$k = results$k[-1]
results$rmse = results$rmse[-1]
plot(results$k, results$rmse, type="l",
      xlab="k", ylab="RMSE")
```



```
best.K = results$k[which.min(results$rmse)]
best.K
```

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

```
best_kknn <- kknn(Avg_Rating ~ .,
                  train,
                  test,
                  k = best.K)

kknn_rmse = RMSE(best_kknn$fitted.values, test$Avg_Rating)
kknn_rmse
```

```
## [1] 0.4832858
```

```
#Results
```

3(a).Insights and findings

```
rf_rmse
```

```
## [1] 0.456029
```

```
kknrmse
```

```
## [1] 0.4832858
```

RMSE is the measure of the standard error of the predictions error. So, the lower the RMSE, the better it is since that means that our residuals are less extreme. The general formula of RMSE is: $\sqrt{((y_{\text{predicted}} - y_{\text{observed}})^2 / n)}$. Our RMSE result for random forest is 0.456029 and 0.4832858 for KNN which is really good since this means that our predictions are closer to the regression line since the lesser the RMSE the better. This shows that our prediction that we generated with random forest is proven to be successful in achieving our goal. However, as we can see, the value of RMSE is lower for the random forest model this is because the random forest model is more robust and it is an ensemble learning method that aggregates many decision trees which makes it a very good model.

```
#Conclusion
```

4(a). Summary of findings

From this we can conclude that movieID, Genres set (binary variables), age of the movie, and total of votes is a good factor to predict movie ratings. Also, we can see that the accuracy of the random forest model is better than the KNN algorithm. However, these two predictions aren't so far from each other.

4(b). Limitations of model

Random forest is an ensemble learning technique that uses multiple decision trees which makes it accurate. However, the model is complicated and it is hard to really find the optimal amount of trees that will maximise the accuracy of the model. Also, compared to decision trees, it takes way more time to train the dataset. Moreover, it is also less interpretable since some of the features are left out in the model. A huge number of trees may also be costly to implement. KNN's limitation is it is more noisy than random forest. It is more sensitive to missing values and outliers. Also, it may be difficult to determine the best value of K.

4(c). Future work The data conveys several insights, however, there are still more things to explore from this dataset. Although the dataset is very large, it has very little variables which makes it harder to interpret and create relationships between each variables. Therefore, in order to create claims and strengthen the results of the findings here, there should be more research and we should try to observe similar relationship from other related datasets. Also, we might try to implement more models to see which one works best and modify the parameters.

6(a). Citations and credits

Credit to dataset owner: F. Maxwell Harper and Joseph A. Konstan. 2015. The MovieLens Datasets: History and Context. ACM Transactions on Interactive Intelligent Systems (TiiS) 5, 4, Article 19 (December 2015), 19 pages. DOI=<http://dx.doi.org/10.1145/2827872>

```
#Citations
```

Subramanian, Dhilip. "A Simple Introduction to K-Nearest Neighbors Algorithm." Medium, Towards Data Science, 3 Jan. 2020, towardsdatascience.com/a-simple-introduction-to-k-nearest-neighbors-algorithm-b3519ed98e.

```
#Footnote:
```

```
#Environment
```

```
print("Operating System:")
```

```
## [1] "Operating System:"
```

```
version
```

```
##  
## platform      x86_64-apple-darwin17.0  
## arch          x86_64  
## os            darwin17.0  
## system        x86_64, darwin17.0  
## status  
## major         4  
## minor         0.0  
## year          2020  
## month         04  
## day           24  
## svn rev       78286  
## language      R  
## version.string R version 4.0.0 (2020-04-24)  
## nickname      Arbor Day
```

```
print("All installed packages")
```

```
## [1] "All installed packages"
```

```
installed.packages()
```

```
##           Package  
## arules      "arules"  
## askpass     "askpass"  
## assertthat  "assertthat"  
## backports   "backports"  
## base        "base"  
## base64enc   "base64enc"  
## BH          "BH"  
## bitops      "bitops"  
## boot        "boot"  
## Boruta      "Boruta"  
## brew        "brew"  
## broom       "broom"  
## callr       "callr"  
## caret       "caret"  
## caTools     "caTools"  
## cellranger  "cellranger"  
## class       "class"  
## cli         "cli"  
## clipr       "clipr"  
## cluster     "cluster"  
## codetools   "codetools"  
## colorspace  "colorspace"  
## commonmark  "commonmark"  
## compare     "compare"  
## compiler    "compiler"  
## covr        "covr"  
## crayon      "crayon"
```


## crosstalk	"crosstalk"
## curl	"curl"
## data.table	"data.table"
## datasets	"datasets"
## DBI	"DBI"
## dbplyr	"dbplyr"
## desc	"desc"
## devtools	"devtools"
## digest	"digest"
## dplyr	"dplyr"
## dslabs	"dslabs"
## DT	"DT"
## e1071	"e1071"
## ellipsis	"ellipsis"
## esquisse	"esquisse"
## evaluate	"evaluate"
## fansi	"fansi"
## farver	"farver"
## fastmap	"fastmap"
## FMEA	"FMEA"
## forcats	"forcats"
## foreach	"foreach"
## foreign	"foreign"
## fs	"fs"
## gbm	"gbm"
## gdata	"gdata"
## generics	"generics"
## ggplot2	"ggplot2"
## ggrepel	"ggrepel"
## ggvis	"ggvis"
## gh	"gh"
## git2r	"git2r"
## glue	"glue"
## gower	"gower"
## gplots	"gplots"
## graphics	"graphics"
## grDevices	"grDevices"
## grid	"grid"
## gridExtra	"gridExtra"
## gtable	"gtable"
## gtools	"gtools"
## haven	"haven"
## highr	"highr"
## HistData	"HistData"
## hms	"hms"
## htmltools	"htmltools"
## htmlwidgets	"htmlwidgets"
## httpuv	"httpuv"
## httr	"httr"
## igraph	"igraph"
## ini	"ini"
## ipred	"ipred"
## irlba	"irlba"
## isoband	"isoband"

## iterators	"iterators"
## jsonlite	"jsonlite"
## kableExtra	"kableExtra"
## KernSmooth	"KernSmooth"
## kkn	"kkn"
## knitr	"knitr"
## labeling	"labeling"
## Lahman	"Lahman"
## later	"later"
## lattice	"lattice"
## lava	"lava"
## lazyeval	"lazyeval"
## lifecycle	"lifecycle"
## lubridate	"lubridate"
## magrittr	"magrittr"
## markdown	"markdown"
## MASS	"MASS"
## Matrix	"Matrix"
## memoise	"memoise"
## methods	"methods"
## mgcv	"mgcv"
## mime	"mime"
## miniUI	"miniUI"
## MLmetrics	"MLmetrics"
## ModelMetrics	"ModelMetrics"
## modelr	"modelr"
## munsell	"munsell"
## nlme	"nlme"
## nnet	"nnet"
## numDeriv	"numDeriv"
## openssl	"openssl"
## parallel	"parallel"
## pdftools	"pdftools"
## pillar	"pillar"
## pkgbuild	"pkgbuild"
## pkgconfig	"pkgconfig"
## pkgload	"pkgload"
## plogr	"plogr"
## plyr	"plyr"
## praise	"praise"
## prettyunits	"prettyunits"
## pROC	"pROC"
## processx	"processx"
## proclim	"proclim"
## progress	"progress"
## promises	"promises"
## proxy	"proxy"
## ps	"ps"
## purrr	"purrr"
## qpdf	"qpdf"
## R6	"R6"
## randomForest	"randomForest"
## ranger	"ranger"
## raster	"raster"

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## rcmdcheck      "rcmdcheck"
## RColorBrewer   "RColorBrewer"
## Rcpp           "Rcpp"
## RcppEigen      "RcppEigen"
## RcppProgress   "RcppProgress"
## readr          "readr"
## readxl         "readxl"
## recipes        "recipes"
## recommenderlab "recommenderlab"
## recosystem     "recosystem"
## registry       "registry"
## rematch        "rematch"
## rematch2       "rematch2"
## remotes        "remotes"
## reprex         "reprex"
## reshape        "reshape"
## reshape2       "reshape2"
## rex            "rex"
## rlang           "rlang"
## rmarkdown      "rmarkdown"
## ROCR           "ROCR"
## roxygen2       "roxygen2"
## rpart          "rpart"
## rprojroot      "rprojroot"
## rstudioapi     "rstudioapi"
## rversions      "rversions"
## rvest          "rvest"
## scales         "scales"
## selectr        "selectr"
## sessioninfo    "sessioninfo"
## shiny          "shiny"
## shinyWidgets   "shinyWidgets"
## sourcetools    "sourcetools"
## sp             "sp"
## spatial        "spatial"
## splines        "splines"
## SQUAREM        "SQUAREM"
## stats          "stats"
## stats4         "stats4"
## stringi        "stringi"
## stringr        "stringr"
## survival       "survival"
## sys            "sys"
## tcltk          "tcltk"
## testthat       "testthat"
## tibble         "tibble"
## tidyr          "tidyr"
## tidyselect     "tidyselect"
## tidyverse      "tidyverse"
## timeDate       "timeDate"
## tinytex        "tinytex"
## titanic        "titanic"
## tools          "tools"
## tree           "tree"

```

```

## usethis      "usethis"
## utf8         "utf8"
## utils        "utils"
## vctrs         "vctrs"
## viridisLite  "viridisLite"
## webshot      "webshot"
## whisker      "whisker"
## withr        "withr"
## xfun          "xfun"
## xml2          "xml2"
## xopen        "xopen"
## xtable        "xtable"
## yaml          "yaml"
##              LibPath
## arules        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## askpass       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## assertthat    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## backports     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## base          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## base64enc     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## BH            "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## bitops        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## boot          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## Boruta        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## brew          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## broom         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## callr         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## caret         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## caTools       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## cellranger    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## class         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## cli           "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## clipr         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## cluster       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## codetools     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## colorspace    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## commonmark    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## compare       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## compiler      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## covr          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## crayon        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## crosstalk     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## curl          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## data.table    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## datasets      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## DBI           "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## dbplyr        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## desc          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## devtools      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## digest        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## dplyr         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## dslabs        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## DT            "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## e1071         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"

```

```

## ellipsis      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## esquisse     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## evaluate     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## fansi        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## farver       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## fastmap      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## FMEA         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## forcats      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## foreach      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## foreign      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## fs           "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## gbm          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## gdata        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## generics     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## ggplot2      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## ggrepel      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## ggvis        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## gh           "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## git2r        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## glue         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## gower        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## gplots       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## graphics     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## grDevices    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## grid         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## gridExtra    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## gtable       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## gtools       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## haven        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## highr        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## HistData     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## hms          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## htmltools    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## htmlwidgets  "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## httpuv       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## httr         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## igraph       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## ini          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## ipred        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## irlba        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## isoband      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## iterators    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## jsonlite     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## kableExtra   "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## KernSmooth   "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## kkn          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## knitr        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## labeling     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## Lahman       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## later        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## lattice      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## lava         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## lazyeval     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## lifecycle    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"

```

```

## lubridate      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## magrittr      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## markdown      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## MASS          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## Matrix        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## memoise       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## methods       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## mgcv          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## mime          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## miniUI        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## MLmetrics     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## ModelMetrics  "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## modelr        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
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## nnet          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## numDeriv      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## openssl       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## parallel      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## pdftools      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## pillar        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## pkgbuild      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## pkgconfig     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## pkgload       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## plogr         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## plyr          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## praise        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## prettyunits   "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## pROC          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## processx      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## prodlim       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## progress      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## promises      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## proxy         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## ps            "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## purrr         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## qpdf          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## R6            "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## randomForest  "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## ranger        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## raster        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## rcmdcheck     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## RColorBrewer  "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## Rcpp          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## RcppEigen     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## RcppProgress  "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## readr         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## readxl        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## recipes       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## recommenderlab "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## ecosystem     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## registry      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
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```

## remotes          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
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## reshape2       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## rex            "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## rlang          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## rmarkdown      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## ROCR           "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## roxygen2       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## rpart          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## rprojroot      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## rstudioapi     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## rversions      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## rvest          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## scales         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## selectr        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## sessioninfo    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## shiny          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## shinyWidgets   "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## sourcetools    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## sp             "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## spatial        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## splines        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## SQUAREM        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## stats          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## stats4         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## stringi        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## stringr        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## survival       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## sys            "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## tcltk          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## testthat       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## tibble         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## tidyr          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## tidyselect     "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## tidyverse      "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## timeDate       "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## tinytex        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## titanic        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## tools          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## tree           "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## usethis        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## utf8           "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## utils          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## vctrs          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## viridisLite    "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## webshot        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## whisker        "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## withr          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## xfun           "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## xml2           "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## xopen          "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## xtable         "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"
## yaml           "/Library/Frameworks/R.framework/Versions/4.0/Resources/library"

```

##	Version	Priority
## arules	"1.6-6"	NA
## askpass	"1.1"	NA
## assertthat	"0.2.1"	NA
## backports	"1.1.6"	NA
## base	"4.0.0"	"base"
## base64enc	"0.1-3"	NA
## BH	"1.72.0-3"	NA
## bitops	"1.0-6"	NA
## boot	"1.3-24"	"recommended"
## Boruta	"7.0.0"	NA
## brew	"1.0-6"	NA
## broom	"0.5.6"	NA
## callr	"3.4.3"	NA
## caret	"6.0-86"	NA
## caTools	"1.18.0"	NA
## cellranger	"1.1.0"	NA
## class	"7.3-16"	"recommended"
## cli	"2.0.2"	NA
## clipr	"0.7.0"	NA
## cluster	"2.1.0"	"recommended"
## codetools	"0.2-16"	"recommended"
## colorspace	"1.4-1"	NA
## commonmark	"1.7"	NA
## compare	"0.2-6"	NA
## compiler	"4.0.0"	"base"
## covr	"3.5.0"	NA
## crayon	"1.3.4"	NA
## crosstalk	"1.1.0.1"	NA
## curl	"4.3"	NA
## data.table	"1.12.8"	NA
## datasets	"4.0.0"	"base"
## DBI	"1.1.0"	NA
## dbplyr	"1.4.3"	NA
## desc	"1.2.0"	NA
## devtools	"2.3.0"	NA
## digest	"0.6.25"	NA
## dplyr	"0.8.5"	NA
## dslabs	"0.7.3"	NA
## DT	"0.13"	NA
## e1071	"1.7-3"	NA
## ellipsis	"0.3.0"	NA
## esquisse	"0.3.0"	NA
## evaluate	"0.14"	NA
## fansi	"0.4.1"	NA
## farver	"2.0.3"	NA
## fastmap	"1.0.1"	NA
## FMEA	"0.1.0"	NA
## forcats	"0.5.0"	NA
## foreach	"1.5.0"	NA
## foreign	"0.8-78"	"recommended"
## fs	"1.4.1"	NA
## gbm	"2.1.5"	NA
## gdata	"2.18.0"	NA

## generics	"0.0.2"	NA
## ggplot2	"3.3.0"	NA
## ggrepel	"0.8.2"	NA
## ggvis	"0.4.4.9000"	NA
## gh	"1.1.0"	NA
## git2r	"0.27.1"	NA
## glue	"1.4.0"	NA
## gower	"0.2.1"	NA
## gplots	"3.0.3"	NA
## graphics	"4.0.0"	"base"
## grDevices	"4.0.0"	"base"
## grid	"4.0.0"	"base"
## gridExtra	"2.3"	NA
## gtable	"0.3.0"	NA
## gtools	"3.8.2"	NA
## haven	"2.2.0"	NA
## highr	"0.8"	NA
## HistData	"0.8-6"	NA
## hms	"0.5.3"	NA
## htmltools	"0.4.0"	NA
## htmlwidgets	"1.5.1"	NA
## httpuv	"1.5.3.1"	NA
## httr	"1.4.1"	NA
## igraph	"1.2.5"	NA
## ini	"0.3.1"	NA
## ipred	"0.9-9"	NA
## irlba	"2.3.3"	NA
## isoband	"0.2.1"	NA
## iterators	"1.0.12"	NA
## jsonlite	"1.6.1"	NA
## kableExtra	"1.1.0"	NA
## KernSmooth	"2.23-16"	"recommended"
## kkn	"1.3.1"	NA
## knitr	"1.28"	NA
## labeling	"0.3"	NA
## Lahman	"3.0-2"	NA
## later	"1.0.0"	NA
## lattice	"0.20-41"	"recommended"
## lava	"1.6.7"	NA
## lazyeval	"0.2.2"	NA
## lifecycle	"0.2.0"	NA
## lubridate	"1.7.8"	NA
## magrittr	"1.5"	NA
## markdown	"1.1"	NA
## MASS	"7.3-51.5"	"recommended"
## Matrix	"1.2-18"	"recommended"
## memoise	"1.1.0"	NA
## methods	"4.0.0"	"base"
## mgcv	"1.8-31"	"recommended"
## mime	"0.9"	NA
## miniUI	"0.1.1.1"	NA
## MLmetrics	"1.1.1"	NA
## ModelMetrics	"1.2.2.2"	NA
## modelr	"0.1.7"	NA

## munsell	"0.5.0"	NA
## nlme	"3.1-147"	"recommended"
## nnet	"7.3-13"	"recommended"
## numDeriv	"2016.8-1.1"	NA
## openssl	"1.4.1"	NA
## parallel	"4.0.0"	"base"
## pdftools	"2.3"	NA
## pillar	"1.4.4"	NA
## pkgbuild	"1.0.8"	NA
## pkgconfig	"2.0.3"	NA
## pkgload	"1.0.2"	NA
## plogr	"0.2.0"	NA
## plyr	"1.8.6"	NA
## praise	"1.0.0"	NA
## prettyunits	"1.1.1"	NA
## pROC	"1.16.2"	NA
## processx	"3.4.2"	NA
## prodlim	"2019.11.13"	NA
## progress	"1.2.2"	NA
## promises	"1.1.0"	NA
## proxy	"0.4-24"	NA
## ps	"1.3.3"	NA
## purrr	"0.3.4"	NA
## qpdf	"1.1"	NA
## R6	"2.4.1"	NA
## randomForest	"4.6-14"	NA
## ranger	"0.12.1"	NA
## raster	"3.1-5"	NA
## rcmdcheck	"1.3.3"	NA
## RColorBrewer	"1.1-2"	NA
## Rcpp	"1.0.4.6"	NA
## RcppEigen	"0.3.3.7.0"	NA
## RcppProgress	"0.4.2"	NA
## readr	"1.3.1"	NA
## readxl	"1.3.1"	NA
## recipes	"0.1.12"	NA
## recommenderlab	"0.2-5"	NA
## recosystem	"0.4.3"	NA
## registry	"0.5-1"	NA
## rematch	"1.0.1"	NA
## rematch2	"2.1.2"	NA
## remotes	"2.1.1"	NA
## reprex	"0.3.0"	NA
## reshape	"0.8.8"	NA
## reshape2	"1.4.4"	NA
## rex	"1.2.0"	NA
## rlang	"0.4.6"	NA
## rmarkdown	"2.1.5"	NA
## ROCR	"1.0-11"	NA
## roxygen2	"7.1.0"	NA
## rpart	"4.1-15"	"recommended"
## rprojroot	"1.3-2"	NA
## rstudioapi	"0.11"	NA
## rversions	"2.0.2"	NA

## rvest	"0.3.5"	NA
## scales	"1.1.1"	NA
## selectr	"0.4-2"	NA
## sessioninfo	"1.1.1"	NA
## shiny	"1.4.0.2"	NA
## shinyWidgets	"0.5.2"	NA
## sourcetools	"0.1.7"	NA
## sp	"1.4-2"	NA
## spatial	"7.3-11"	"recommended"
## splines	"4.0.0"	"base"
## SQUAREM	"2020.2"	NA
## stats	"4.0.0"	"base"
## stats4	"4.0.0"	"base"
## stringi	"1.4.6"	NA
## stringr	"1.4.0"	NA
## survival	"3.1-12"	"recommended"
## sys	"3.3"	NA
## tcltk	"4.0.0"	"base"
## testthat	"2.3.2"	NA
## tibble	"3.0.1"	NA
## tidyr	"1.0.3"	NA
## tidyselect	"1.1.0"	NA
## tidyverse	"1.3.0"	NA
## timeDate	"3043.102"	NA
## tinytex	"0.23.1"	NA
## titanic	"0.1.0.9000"	NA
## tools	"4.0.0"	"base"
## tree	"1.0-40"	NA
## usethis	"1.6.1"	NA
## utf8	"1.1.4"	NA
## utils	"4.0.0"	"base"
## vctrs	"0.3.0"	NA
## viridisLite	"0.3.0"	NA
## webshot	"0.5.2"	NA
## whisker	"0.4"	NA
## withr	"2.2.0"	NA
## xfun	"0.13"	NA
## xml2	"1.3.2"	NA
## xopen	"1.0.0"	NA
## xtable	"1.8-4"	NA
## yaml	"2.2.1"	NA
##	Depends	
## arules	"R (>= 3.4.0), Matrix (>= 1.2-0)"	
## askpass	NA	
## assertthat	NA	
## backports	"R (>= 3.0.0)"	
## base	NA	
## base64enc	"R (>= 2.9.0)"	
## BH	NA	
## bitops	NA	
## boot	"R (>= 3.0.0), graphics, stats"	
## Boruta	NA	
## brew	NA	
## broom	"R (>= 3.1)"	

```

## callr                NA
## caret                "R (>= 3.2.0), lattice (>= 0.20), ggplot2"
## caTools              "R (>= 3.6.0)"
## cellranger           "R (>= 3.0.0)"
## class                "R (>= 3.0.0), stats, utils"
## cli                  "R (>= 2.10)"
## clipr               NA
## cluster              "R (>= 3.3.0)"
## codetools            "R (>= 2.1)"
## colorspace           "R (>= 3.0.0), methods"
## commonmark           NA
## compare              NA
## compiler             NA
## covr                 "R (>= 3.1.0), methods"
## crayon               NA
## crosstalk            NA
## curl                 "R (>= 3.0.0)"
## data.table           "R (>= 3.1.0)"
## datasets             NA
## DBI                  "methods, R (>= 3.0.0)"
## dbplyr               "R (>= 3.1)"
## desc                 "R (>= 3.1.0)"
## devtools             "R (>= 3.0.2), usethis (>= 1.6.0)"
## digest               "R (>= 3.1.0)"
## dplyr                "R (>= 3.2.0)"
## dslabs               "R (>= 3.1.2)"
## DT                   NA
## e1071                NA
## ellipsis             "R (>= 3.2)"
## esquisse             NA
## evaluate             "R (>= 3.0.2)"
## fansi                "R (>= 3.1.0)"
## farver               NA
## fastmap              NA
## FMEA                 NA
## forcats              "R (>= 3.2)"
## foreach              "R (>= 2.5.0)"
## foreign              "R (>= 4.0.0)"
## fs                   "R (>= 3.1)"
## gbm                  "R (>= 2.9.0)"
## gdata                "R (>= 2.3.0)"
## generics             "R (>= 3.1)"
## ggplot2              "R (>= 3.2)"
## ggrepel              "R (>= 3.0.0), ggplot2 (>= 2.2.0)"
## ggvis                "R (>= 3.0)"
## gh                   NA
## git2r                "R (>= 3.1)"
## glue                 "R (>= 3.1)"
## gower                NA
## gplots               "R (>= 3.0)"
## graphics             NA
## grDevices            NA
## grid                 NA
## gridExtra            NA

```

```

## gtable          "R (>= 3.0)"
## gtools          "methods, stats, utils"
## haven           "R (>= 3.2)"
## highr           "R (>= 3.2.3)"
## HistData        NA
## hms             NA
## htmltools       "R (>= 2.14.1)"
## htmlwidgets     NA
## httpuv          "R (>= 2.15.1)"
## httr            "R (>= 3.2)"
## igraph          "methods"
## ini             NA
## ipred           "R (>= 2.10)"
## irlba           "Matrix"
## isoband         NA
## iterators       "R (>= 2.5.0), utils"
## jsonlite        "methods"
## kableExtra      "R (>= 3.1.0)"
## KernSmooth      "R (>= 2.5.0), stats"
## kkn            "R (>= 2.10)"
## knitr           "R (>= 3.2.3)"
## labeling        NA
## Lahman          "R (>= 2.10)"
## later           NA
## lattice         "R (>= 3.0.0)"
## lava            "R (>= 3.0)"
## lazyeval        "R (>= 3.1.0)"
## lifecycle       "R (>= 3.2)"
## lubridate       "methods, R (>= 3.2)"
## magrittr        NA
## markdown        "R (>= 2.11.1)"
## MASS            "R (>= 3.1.0), grDevices, graphics, stats, utils"
## Matrix          "R (>= 3.2.0)"
## memoise         NA
## methods         NA
## mgcv            "R (>= 2.14.0), nlme (>= 3.1-64)"
## mime           NA
## miniUI          NA
## MLmetrics       "R (>= 2.10)"
## ModelMetrics    "R (>= 3.2.2)"
## modelr          "R (>= 3.2)"
## munsell         NA
## nlme            "R (>= 3.4.0)"
## nnet            "R (>= 3.0.0), stats, utils"
## numDeriv        "R (>= 2.11.1)"
## openssl         NA
## parallel        NA
## pdftools        NA
## pillar          NA
## pkgbuild        "R (>= 3.1)"
## pkgconfig       NA
## pkgload         NA
## plogr           NA
## plyr            "R (>= 3.1.0)"

```

```

## praise          NA
## prettyunits     NA
## pROC             "R (>= 2.14)"
## processx        NA
## prodlim         "R (>= 2.9.0)"
## progress        NA
## promises        NA
## proxy           "R (>= 3.4.0)"
## ps              "R (>= 3.1)"
## purrr           "R (>= 3.2)"
## qpdf           NA
## R6              "R (>= 3.0)"
## randomForest    "R (>= 3.2.2), stats"
## ranger          "R (>= 3.1)"
## raster          "sp (>= 1.2-0), R (>= 3.0.0)"
## rcmdcheck       NA
## RColorBrewer    "R (>= 2.0.0)"
## Rcpp            NA
## RcppEigen       "R (>= 2.15.1)"
## RcppProgress    NA
## readr           "R (>= 3.1)"
## readxl         NA
## recipes        "R (>= 3.1), dplyr"
## recommenderlab "R (>= 2.10.0), Matrix, arules, proxy, registry"
## recosystem      "R (>= 3.3.0), methods"
## registry        "R (>= 2.6.0)"
## rematch        NA
## rematch2       NA
## remotes        "R (>= 3.0.0)"
## reprex         "R (>= 3.1)"
## reshape        "R (>= 2.6.1)"
## reshape2       "R (>= 3.1)"
## rex            NA
## rlang          "R (>= 3.2.0)"
## rmarkdown      "R (>= 3.0)"
## ROCR           "R (>= 3.6)"
## roxygen2       "R (>= 3.2)"
## rpart          "R (>= 2.15.0), graphics, stats, grDevices"
## rprojroot      "R (>= 3.0.0)"
## rstudioapi     NA
## rversions      NA
## rvest          "R (>= 3.2), xml2"
## scales         "R (>= 3.2)"
## selectr        "R (>= 3.0)"
## sessioninfo    NA
## shiny          "R (>= 3.0.2), methods"
## shinyWidgets   "R (>= 3.1.0)"
## sourcetools    "R (>= 3.0.2)"
## sp             "R (>= 3.0.0), methods"
## spatial        "R (>= 3.0.0), graphics, stats, utils"
## splines        NA
## SQUAREM        "R (>= 3.0)"
## stats          NA
## stats4         NA

```

```

## stringi      "R (>= 2.14)"
## stringr      "R (>= 3.1)"
## survival     "R (>= 3.4.0)"
## sys          NA
## tcltk        NA
## testthat     "R (>= 3.1)"
## tibble       "R (>= 3.1.0)"
## tidyr        "R (>= 3.1)"
## tidyselect   "R (>= 3.2)"
## tidyverse    "R (>= 3.2)"
## timeDate     "R (>= 2.15.1), graphics, utils, stats, methods"
## tinytex      NA
## titanic      "R (>= 3.1.2)"
## tools        NA
## tree         "R (>= 3.6.0), grDevices, graphics, stats"
## usethis      "R (>= 3.2)"
## utf8         "R (>= 2.10)"
## utils        NA
## vctrs        "R (>= 3.2)"
## viridisLite  "R (>= 2.10)"
## webshot      "R (>= 3.0)"
## whisker      NA
## withr        "R (>= 3.2.0)"
## xfun         NA
## xml2         "R (>= 3.1.0)"
## xopen        "R (>= 3.1)"
## xtable       "R (>= 2.10.0)"
## yaml         NA
##             Imports
## arules       "stats, methods, graphics, utils"
## askpass      "sys (>= 2.1)"
## assertthat   "tools"
## backports    "utils"
## base         NA
## base64enc    NA
## BH           NA
## bitops       NA
## boot         NA
## Boruta       "ranger"
## brew         NA
## broom        "backports, dplyr, generics (>= 0.0.2), methods, nlme, purrr,\nreshape2, stringr, tibble"
## callr        "processx (>= 3.4.0), R6, utils"
## caret        "foreach, methods, plyr, ModelMetrics (>= 1.2.2.2), nlme,\nreshape2, stats, stats4, utils"
## caTools      "bitops"
## cellranger   "rematch, tibble"
## class        "MASS"
## cli          "assertthat, crayon (>= 1.3.4), glue, methods, utils, fansi"
## clipr        "utils"
## cluster      "graphics, grDevices, stats, utils"
## codetools    NA
## colorspace   "graphics, grDevices, stats"
## commonmark   NA
## compare      NA
## compiler     NA

```

```

## covr "digest, stats, utils, jsonlite, rex, httr, crayon, withr (>= \n1.0.2), yaml"
## crayon "grDevices, methods, utils"
## crosstalk "htmltools (>= 0.3.6), jsonlite, lazyeval, R6"
## curl NA
## data.table "methods"
## datasets NA
## DBI NA
## dbplyr "assertthat (>= 0.2.0), DBI (>= 1.0.0), dplyr (>= 0.8.0), glue\n(>= 1.2.0), lifecycle"
## desc "assertthat, utils, R6, crayon, rprojroot"
## devtools "callr (>= 3.4.3), cli (>= 2.0.2), covr (>= 3.5.0), crayon (>= \n1.3.4), desc (>= 1.2.0)"
## digest "utils"
## dplyr "ellipsis, assertthat (>= 0.2.0), glue (>= 1.3.0), magrittr (>= \n1.5), methods, pkgconfig"
## dslabs "ggplot2"
## DT "htmltools (>= 0.3.6), htmlwidgets (>= 1.3), jsonlite (>= \n0.9.16), magrittr, crosstalk"
## e1071 "graphics, grDevices, class, stats, methods, utils"
## ellipsis "rlang (>= 0.3.0)"
## esquisse "miniUI, rstudioapi, shiny (>= 1.0.0), htmltools, jsonlite,\nshinyWidgets (>= 0.4.1),
## evaluate "methods"
## fansi NA
## farver NA
## fastmap NA
## FMEA "ggplot2, dplyr, ggrepel, magrittr"
## forcats "ellipsis, magrittr, rlang, tibble"
## foreach "codetools, utils, iterators"
## foreign "methods, utils, stats"
## fs "methods"
## gbm "gridExtra, lattice, parallel, survival"
## gdata "gtools, stats, methods, utils"
## generics "methods"
## ggplot2 "digest, glue, grDevices, grid, gtable (>= 0.1.1), isoband,\nMASS, mgcv, rlang (>= 0.3.0)"
## ggrepel "grid, Rcpp, scales (>= 0.3.0)"
## ggvis "assertthat, jsonlite (>= 0.9.11), shiny (>= 0.11.1), magrittr,\nndplyr (>= 0.5.0), lazyeval"
## gh "cli, ini, jsonlite, httr (>= 1.2)"
## git2r "graphics, utils"
## glue "methods"
## gower NA
## gplots "gtools, gdata, stats, caTools, KernSmooth"
## graphics "grDevices"
## grDevices NA
## grid "grDevices, utils"
## gridExtra "gtable, grid, grDevices, graphics, utils"
## gtable "grid"
## gtools NA
## haven "forcats (>= 0.2.0), hms, Rcpp (>= 0.11.4), readr (>= 0.1.0),\nrlang (>= 0.4.0), tibble"
## highr NA
## HistData NA
## hms "methods, pkgconfig, rlang, vctrs (>= 0.2.1)"
## htmltools "utils, digest, Rcpp, rlang"
## htmlwidgets "grDevices, htmltools (>= 0.3), jsonlite (>= 0.9.16), yaml"
## httpuv "Rcpp (>= 0.11.0), utils, R6, promises, later (>= 0.8.0)"
## httr "curl (>= 3.0.0), jsonlite, mime, openssl (>= 0.8), R6"
## igraph "graphics, grDevices, magrittr, Matrix, pkgconfig (>= 2.0.0),\nstats, utils"
## ini NA
## ipred "rpart (>= 3.1-8), MASS, survival, nnet, class, prodlim"

```



```

## irlba          "stats, methods"
## isoband        "Rcpp, grid, utils"
## iterators      NA
## jsonlite       NA
## kableExtra     "knitr (>= 1.16), magrittr, stringr (>= 1.0), xml2 (>= 1.1.1), \nrvest, rmarkdown (>= 1.11.0)"
## KernSmooth     NA
## kkn           "igraph (>= 1.0), Matrix, stats, graphics"
## knitr          "evaluate (>= 0.10), highr, markdown, stringr (>= 0.6), yaml\n(>= 2.1.19), methods, xfun"
## labeling       NA
## Lahman         NA
## later          "Rcpp (>= 0.12.9), rlang"
## lattice        "grid, grDevices, graphics, stats, utils"
## lava           "grDevices, graphics, methods, numDeriv, stats, survival, \nSQUAREM, utils"
## lazyeval       NA
## lifecycle      "glue, rlang (>= 0.4.0)"
## lubridate      "generics, Rcpp (>= 0.12.13)"
## magrittr       NA
## markdown       "utils, xfun, mime (>= 0.3)"
## MASS           "methods"
## Matrix         "methods, graphics, grid, stats, utils, lattice"
## memoise        "digest (>= 0.6.3)"
## methods        "utils, stats"
## mgcv           "methods, stats, graphics, Matrix, splines, utils"
## mime           "tools"
## miniUI         "shiny (>= 0.13), htmltools (>= 0.3), utils"
## MLmetrics      "stats, utils, ROCR"
## ModelMetrics   "Rcpp, data.table"
## modelr         "broom, dplyr, magrittr, purrr (>= 0.2.2), rlang (>= 0.2.0), \ntibble, tidyr (>= 0.8.0)"
## munsell        "colorspace, methods"
## nlme           "graphics, stats, utils, lattice"
## nnet           NA
## numDeriv       NA
## openssl        "askpass"
## parallel       "tools, compiler"
## pdftools       "Rcpp (>= 0.12.12), qpdf"
## pillar         "cli, crayon (>= 1.3.4), fansi, rlang (>= 0.3.0), utf8 (>= \n1.1.0), vctrs (>= 0.2.0)"
## pkgbuild       "callr (>= 3.2.0), cli, crayon, desc, prettyunits, R6, \nrprojroot, withr (>= 2.1.2)"
## pkgconfig      "utils"
## pkgload        "desc, methods, pkgbuild, rlang, rprojroot, rstudioapi, utils, \nwithr"
## plogr          NA
## plyr           "Rcpp (>= 0.11.0)"
## praise         NA
## prettyunits    NA
## pROC           "methods, plyr, Rcpp (>= 0.11.1)"
## processx       "ps (>= 1.2.0), R6, utils"
## prodlim        "Rcpp (>= 0.11.5), stats, grDevices, graphics, survival, \nKernSmooth, lava"
## progress       "hms, prettyunits, R6, crayon"
## promises       "R6, Rcpp, later, rlang, stats, magrittr"
## proxy          "stats, utils"
## ps             "utils"
## purrr          "magrittr (>= 1.5), rlang (>= 0.3.1)"
## qpdf           "Rcpp, askpass, curl"
## R6             NA
## randomForest   NA

```

```

## ranger "Rcpp (>= 0.11.2), Matrix"
## raster "Rcpp, methods"
## rcmdcheck "callr (>= 3.1.1.9000), cli (>= 1.1.0), crayon, desc (>=\n1.2.0), digest, pkgbuild, p
## RColorBrewer NA
## Rcpp "methods, utils"
## RcppEigen "Matrix (>= 1.1-0), Rcpp (>= 0.11.0), stats, utils"
## RcppProgress NA
## readr "Rcpp (>= 0.12.0.5), tibble, hms (>= 0.4.1), R6, clipr, crayon,\nmethods"
## readxl "cellranger, Rcpp (>= 0.12.18), tibble (>= 1.3.1), utils"
## recipes "generics, glue, gower, ipred, lubridate, magrittr, Matrix,\npurrr (>= 0.2.3), rlang
## recommenderlab "methods, utils, stats, irlba, recosystem"
## recosystem "Rcpp (>= 0.11.0)"
## registry "utils"
## rematch NA
## rematch2 "tibble"
## remotes "methods, stats, tools, utils"
## reprex "callr (>= 2.0.0), clipr (>= 0.4.0), fs, rlang, rmarkdown,\nutils, whisker, withr"
## reshape "plyr"
## reshape2 "plyr (>= 1.8.1), Rcpp, stringr"
## rex "lazyeval"
## rlang NA
## rmarkdown "tools, utils, knitr (>= 1.22), yaml (>= 2.1.19), htmltools (>=\n0.3.5), evaluate (>=
## ROCR "methods, graphics, grDevices, gplots, stats"
## roxygen2 "brew, commonmark, desc (>= 1.2.0), digest, knitr, methods,\npkgload (>= 1.0.2), purrr
## rpart NA
## rprojroot "backports"
## rstudioapi NA
## rversions "curl, utils, xml2 (>= 1.0.0)"
## rvest "httr (>= 0.5), magrittr, selectr"
## scales "farver (>= 2.0.3), labeling, lifecycle, munsell (>= 0.5), R6,\nRColorBrewer, viridis
## selectr "methods, stringr, R6"
## sessioninfo "cli, tools, utils, withr"
## shiny "utils, grDevices, httpuv (>= 1.5.2), mime (>= 0.3), jsonlite\n(>= 0.9.16), xtable, d
## shinyWidgets "shiny (>= 0.14), htmltools, jsonlite, grDevices, scales"
## sourcetools NA
## sp "utils, stats, graphics, grDevices, lattice, grid"
## spatial NA
## splines "graphics, stats"
## SQUAREM NA
## stats "utils, grDevices, graphics"
## stats4 "graphics, methods, stats"
## stringi "tools, utils, stats"
## stringr "glue (>= 1.2.0), magrittr, stringi (>= 1.1.7)"
## survival "graphics, Matrix, methods, splines, stats, utils"
## sys NA
## tcltk "utils"
## testthat "cli, crayon (>= 1.3.4), digest, ellipsis, evaluate, magrittr,\nmethods, pkgload, pra
## tibble "cli, crayon (>= 1.3.4), ellipsis (>= 0.2.0), fansi (>= 0.4.0),\nlifecycle (>= 0.2.0)
## tidyr "dplyr (>= 0.8.2), ellipsis (>= 0.1.0), glue, magrittr, purrr,\nRcpp, rlang, stringi,
## tidyselect "ellipsis, glue (>= 1.3.0), purrr (>= 0.3.2), rlang (>= 0.4.6),\nvctrs (>= 0.2.2)"
## tidyverse "broom (>= 0.5.2), cli (>= 1.1.0), crayon (>= 1.3.4), dbplyr\n(>= 1.4.2), dplyr (>= 0
## timeDate NA
## tinytex "xfun (>= 0.5)"
## titanic NA

```

```

## tools      NA
## tree       NA
## usethis    "clipr (>= 0.3.0), cli, crayon, curl (>= 2.7), desc, fs (>=\n1.3.0), gh (>= 1.1.0), g
## utf8       NA
## utils      NA
## vctrs      "ellipsis (>= 0.2.0), digest, glue, rlang (>= 0.4.5)"
## viridisLite NA
## webshot    "magrittr, jsonlite, callr"
## whisker    NA
## withr      "graphics, grDevices, stats"
## xfun       "stats, tools"
## xml2       "methods"
## xopen      "processx"
## xtable     "stats, utils"
## yaml       NA
##           LinkingTo
## arules     NA
## askpass    NA
## assertthat NA
## backports  NA
## base       NA
## base64enc  NA
## BH         NA
## bitops     NA
## boot       NA
## Boruta     NA
## brew       NA
## broom      NA
## callr      NA
## caret      NA
## caTools    NA
## cellranger NA
## class      NA
## cli        NA
## clipr      NA
## cluster    NA
## codetools  NA
## colorspace NA
## commonmark NA
## compare    NA
## compiler   NA
## covr       NA
## crayon     NA
## crosstalk  NA
## curl       NA
## data.table NA
## datasets   NA
## DBI        NA
## dbplyr     NA
## desc       NA
## devtools   NA
## digest     NA
## dplyr      "BH, plogr (>= 0.2.0), Rcpp (>= 1.0.1)"
## dslabs     NA

```

## DT	NA
## e1071	NA
## ellipsis	NA
## esquisse	NA
## evaluate	NA
## fansi	NA
## farver	NA
## fastmap	NA
## FMEA	NA
## forcats	NA
## foreach	NA
## foreign	NA
## fs	NA
## gbm	NA
## gdata	NA
## generics	NA
## ggplot2	NA
## ggrepel	"Rcpp"
## ggvis	NA
## gh	NA
## git2r	NA
## glue	NA
## gower	NA
## gplots	NA
## graphics	NA
## grDevices	NA
## grid	NA
## gridExtra	NA
## gtable	NA
## gtools	NA
## haven	"Rcpp"
## highr	NA
## HistData	NA
## hms	NA
## htmltools	"Rcpp"
## htmlwidgets	NA
## httpuv	"Rcpp, BH, later"
## httr	NA
## igraph	NA
## ini	NA
## ipred	NA
## irlba	"Matrix"
## isoband	"Rcpp, testthat"
## iterators	NA
## jsonlite	NA
## kableExtra	NA
## KernSmooth	NA
## kkn	NA
## knitr	NA
## labeling	NA
## Lahman	NA
## later	"Rcpp, BH"
## lattice	NA
## lava	NA

```

## lazyeval      NA
## lifecycle     NA
## lubridate     "Rcpp"
## magrittr      NA
## markdown      NA
## MASS          NA
## Matrix        NA
## memoise       NA
## methods       NA
## mgcv          NA
## mime          NA
## miniUI        NA
## MLmetrics     NA
## ModelMetrics  "Rcpp"
## modelr        NA
## munsell       NA
## nlme          NA
## nnet          NA
## numDeriv      NA
## openssl       NA
## parallel      NA
## pdftools      "Rcpp"
## pillar        NA
## pkgbuild      NA
## pkgconfig     NA
## pkgload       NA
## plogr         NA
## plyr          "Rcpp"
## praise        NA
## prettyunits   NA
## pROC          "Rcpp"
## processx      NA
## prodlim       "Rcpp"
## progress      NA
## promises      "later, Rcpp"
## proxy         NA
## ps            NA
## purrr         NA
## qpdf          "Rcpp"
## R6            NA
## randomForest  NA
## ranger        "Rcpp, RcppEigen"
## raster        "Rcpp"
## rcmdcheck     NA
## RColorBrewer  NA
## Rcpp          NA
## RcppEigen     "Rcpp"
## RcppProgress  NA
## readr         "Rcpp, BH"
## readxl        "progress, Rcpp"
## recipes       NA
## recommenderlab NA
## recosystem    "Rcpp, RcppProgress"
## registry      NA

```

## rematch	NA
## rematch2	NA
## remotes	NA
## reprex	NA
## reshape	NA
## reshape2	"Rcpp"
## rex	NA
## rlang	NA
## rmarkdown	NA
## ROCR	NA
## roxygen2	"Rcpp"
## rpart	NA
## rprojroot	NA
## rstudioapi	NA
## rversions	NA
## rvest	NA
## scales	NA
## selectr	NA
## sessioninfo	NA
## shiny	NA
## shinyWidgets	NA
## sourcetools	NA
## sp	NA
## spatial	NA
## splines	NA
## SQUAREM	NA
## stats	NA
## stats4	NA
## stringi	NA
## stringr	NA
## survival	NA
## sys	NA
## tcltk	NA
## testthat	NA
## tibble	NA
## tidyr	"Rcpp"
## tidyselect	NA
## tidyverse	NA
## timeDate	NA
## tinytex	NA
## titanic	NA
## tools	NA
## tree	NA
## usethis	NA
## utf8	NA
## utils	NA
## vctrs	NA
## viridisLite	NA
## webshot	NA
## whisker	NA
## withr	NA
## xfun	NA
## xml2	NA
## xopen	NA

```

## xtable      NA
## yaml        NA
##             Suggests
## arules       "pmml, XML, arulesViz, testthat"
## askpass      "testthat"
## assertthat   "testthat, covr"
## backports    NA
## base         "methods"
## base64enc    NA
## BH           NA
## bitops       NA
## boot         "MASS, survival"
## Boruta       "mlbench, rFens, randomForest, testthat, xgboost, survival"
## brew         NA
## broom        "AER, akima, AUC, bbmle, betareg, biglm, binGroup, boot, brms,\nbtergm, car, caret, c
## callr        "cliapp, covr, crayon, fansi, pingr, ps, rprojroot, spelling,\ntestthat, tibble, withr"
## caret        "BradleyTerry2, e1071, earth (>= 2.2-3), fastICA, gam (>=\n1.15), ipred, kernlab, kni
## caTools      "MASS, rpart"
## cellranger    "covr, testthat (>= 1.0.0), knitr, rmarkdown"
## class        NA
## cli          "callr, covr, htmlwidgets, knitr, mockery, rmarkdown,\nrstudioapi, prettycode (>= 1.1
## clipr        "covr, knitr, rmarkdown, rstudioapi (>= 0.5), testthat (>=\n2.0.0)"
## cluster      "MASS, Matrix"
## codetools    NA
## colorspace   "datasets, utils, KernSmooth, MASS, kernlab, mvtnorm, vcd,\ntcltk, shiny, shinyjs, gg
## commonmark    "curl, testthat, xml2"
## compare      NA
## compiler      NA
## covr         "R6, knitr, rmarkdown, htmltools, DT (>= 0.2), testthat,\nrlang, rstudioapi (>= 0.2),
## crayon       "mockery, rstudioapi, testthat, withr"
## crosstalk     "shiny, ggplot2, testthat (>= 2.1.0)"
## curl         "spelling, testthat (>= 1.0.0), knitr, jsonlite, rmarkdown,\nmagrittr, httpuv (>= 1.4
## data.table    "bit64, curl, R.utils, knitr, xts, nanotime, zoo, yaml"
## datasets     NA
## DBI          "blob, covr, hms, knitr, magrittr, rmarkdown, rprojroot,\nRSQLite (>= 1.1-2), testtha
## dbplyr       "bit64, covr, knitr, Lahman, nycflights13, RMariaDB (>=\n1.0.2), rmarkdown, RPostgres
## desc         "covr, testthat, whoami, withr"
## devtools     "BiocManager (>= 1.30.10), curl (>= 4.3), foghorn (>= 1.1.5),\nngmailr (>= 1.0.0), kni
## digest       "tinytest, knitr, rmarkdown"
## dplyr        "bit64, callr, covr, crayon (>= 1.3.4), DBI, dbplyr, dtplyr,\nggplot2, hms, knitr, La
## dslabs       NA
## DT          "knitr (>= 1.8), rmarkdown, shiny (>= 1.2.0)"
## e1071        "cluster, mlbench, nnet, randomForest, rpart, SparseM, xtable,\nMatrix, MASS, slam"
## ellipsis     "covr, testthat"
## esquisse     "officer, rvg, rio, DT, testthat (>= 2.1.0), knitr, ggthemes,\nnhrbrthemes"
## evaluate     "testthat, lattice, ggplot2"
## fansi        "unitizer, knitr, rmarkdown"
## farver       "testthat (>= 2.1.0), covr"
## fastmap      "testthat (>= 2.1.1)"
## FMEA         "dplyr, ggrepel, ggplot2, magrittr, knitr, rmarkdown"
## forcats      "covr, ggplot2, testthat, readr, knitr, rmarkdown, dplyr"
## foreach      "randomForest, doMC, doParallel, testthat, knitr, rmarkdown"
## foreign      NA
## fs           "testthat, covr, pillar (>= 1.0.0), tibble (>= 1.1.0), crayon,\nrmmarkdown, knitr, withr"

```

```

## gbm "knitr, pdp, RUnit, splines, viridis"
## gdata "RUnit"
## generics "covr, pkgload, testthat, tibble"
## ggplot2 "covr, dplyr, ggplot2movies, hexbin, Hmisc, knitr, lattice,\nmapproj, maps, maptools,
## ggrepel "knitr, rmarkdown, testthat, gridExtra, devtools, prettydoc"
## ggvis "MASS, mgcv, lubridate, testthat (>= 0.8.1), knitr (>= 1.6),\nrmarkdown"
## gh "covr, keyring, pingr, testthat, withr"
## git2r "getPass"
## glue "testthat, covr, magrittr, crayon, knitr, rmarkdown, DBI,\nRSQLite, R.utils, forcats,
## gower "tinytest (>= 0.9.3),"
## gplots "grid, MASS, knitr"
## graphics NA
## grDevices "KernSmooth"
## grid "lattice"
## gridExtra "ggplot2, egg, lattice, knitr, testthat"
## gtable "covr, testthat, knitr, rmarkdown, ggplot2, profvis"
## gtools NA
## haven "covr, fs, knitr, rmarkdown, testthat, pillar (>= 1.4.0), cli,\nrcrayon"
## highr "knitr, testit"
## HistData "gtools, KernSmooth, maps, ggplot2, scales, proto, grid,\nreshape, plyr, lattice, jpeg
## hms "crayon, lubridate, pillar (>= 1.1.0), testthat"
## htmltools "markdown, testthat, withr"
## htmlwidgets "knitr (>= 1.8)"
## httpuv "testthat, callr, curl, websocket"
## httr "covr, httpuv, jpeg, knitr, png, readr, rmarkdown, testthat\n(>= 0.8.0), xml2"
## igraph "ape, digest, graph, igraphdata, rgl, scales, stats4, tcltk,\ntestthat, withr"
## ini "testthat"
## ipred "mvtnorm, mlbench, TH.data"
## irlba NA
## isoband "covr, ggplot2, knitr, magick, microbenchmark, rmarkdown, sf,\ntestthat"
## iterators "RUnit, foreach"
## jsonlite "httr, curl, plyr, testthat, knitr, rmarkdown, R.rsp, sp"
## kableExtra "testthat, magick, formattable, dplyr"
## KernSmooth "MASS"
## kknk NA
## knitr "formatR, testit, digest, rgl (>= 0.95.1201), codetools,\nrmarkdown, htmlwidgets (>=
## labeling NA
## Lahman "lattice, ggplot2, googleVis, data.table, vcd, plyr, reshape2,\nzipcode"
## later "knitr, rmarkdown, testthat"
## lattice "KernSmooth, MASS, latticeExtra"
## lava "KernSmooth, Matrix, Rgraphviz, data.table, ellipse, fields,\nfforeach, geepack, gof (
## lazyeval "knitr, rmarkdown (>= 0.2.65), testthat, covr"
## lifecycle "covr, crayon, knitr, rmarkdown, testthat (>= 2.1.0)"
## lubridate "covr, knitr, testthat"
## magrittr "testthat, knitr"
## markdown "knitr, RCurl"
## MASS "lattice, nlme, nnet, survival"
## Matrix "expm, MASS"
## memoise "testthat, aws.s3, httr, covr"
## methods "codetools"
## mgcv "parallel, survival, MASS"
## mime NA
## miniUI NA
## MLmetrics "e1071"

```



```
## ModelMetrics      "testthat"
## modelr            "compiler, covr, ggplot2, testthat"
## munsell           "ggplot2, testthat"
## nlme              "Hmisc, MASS"
## nnet              "MASS"
## numDeriv          NA
## openssl           "testthat, digest, knitr, rmarkdown, jsonlite, jose, sodium"
## parallel          "methods"
## pdftools          "jpeg, png, webp, tesseract, testthat"
## pillar            "knitr, lubridate, testthat (>= 2.0.0), withr"
## pkgbuild          "Rcpp, testthat, covr"
## pkgconfig         "covr, testthat, disposables (>= 1.0.3)"
## pkgload           "bitops, covr, Rcpp, testthat"
## plogr             "Rcpp"
## plyr              "abind, covr, doParallel, foreach, iterators, itertools,\ntcltk, testthat"
## praise            "testthat"
## prettyunits       "codetools, covr, testthat"
## pROC              "microbenchmark, tcltk, MASS, logcondens, doParallel,\ntestthat, vdiff, ggplot2"
## processx          "callr (>= 3.2.0), codetools, covr, crayon, curl, debugme,\nparallel, testthat, withr"
## prodlim           NA
## progress          "Rcpp, testthat, withr"
## promises          "testthat, future, knitr, rmarkdown"
## proxy             "cba"
## ps                "callr, covr, curl, pingr, processx (>= 3.1.0), R6, rlang,\ntestthat, tibble"
## purrr             "covr, crayon, dplyr (>= 0.7.8), knitr, rmarkdown, testthat,\ntibble, tidyselect"
## qpdf              "testthat"
## R6                "knitr, microbenchmark, pryr, testthat, ggplot2, scales"
## randomForest      "RColorBrewer, MASS"
## ranger            "survival, testthat"
## raster            "rgdal (>= 0.9-1), rgeos (>= 0.3-8), ncdf4, igraph, tcltk,\nparallel, rasterVis, MASS"
## rcmdcheck         "covr, knitr, mockery, rmarkdown, testthat"
## RColorBrewer      NA
## Rcpp              "tinytest, inline, rbenchmark, pkgKitten (>= 0.1.2)"
## RcppEigen         "inline, tinytest, pkgKitten, microbenchmark"
## RcppProgress      "RcppArmadillo, devtools, roxygen2, testthat"
## readr             "curl, testthat, knitr, rmarkdown, stringi, covr, spelling"
## readxl            "covr, knitr, rmarkdown, rprojroot (>= 1.1), testthat"
## recipes           "covr, ddalp, dimRed (>= 0.2.2), fastICA, ggplot2, igraph,\nkernlab, knitr, modelda"
## recommenderlab    "ROCR, testthat"
## recosystem        "knitr, prettydoc"
## registry          NA
## rematch           "covr, testthat"
## rematch2          "covr, testthat"
## remotes           "brew, callr, codetools, curl, covr, git2r (>= 0.23.0), knitr,\nmockery, pkgbuild (>= 1.3.0), rprojroot, rstudioapi, shiny, styler (>= 1.4.0)"
## reprex            "covr, devtools, fortunes, knitr, miniUI, rprojroot,\nrstudioapi, shiny, styler (>= 1.4.0)"
## reshape          NA
## reshape2          "covr, lattice, testthat (>= 0.8.0)"
## rex               "testthat, knitr, rmarkdown, dplyr, ggplot2, magrittr, Hmisc,\nstringr, rvest, roxygen"
## rlang             "cli, covr, crayon, glue, magrittr, methods, pillar,\nrmarkdown, testthat (>= 2.3.0), withr"
## rmarkdown         "shiny (>= 0.11), tufte, testthat, digest, dygraphs, tibble,\nfs, pkgdown, callr (>= 3.2.0), rprojroot, rstudioapi, shiny, styler (>= 1.4.0)"
## ROCR              "testthat, knitr, rmarkdown"
## roxygen2          "covr, devtools, rmarkdown, testthat (>= 2.1.0), R.methodsS3,\nR.oo"
## rpart             "survival"
## rprojroot         "testthat, mockr, knitr, withr, rmarkdown"
```

```

## rstudioapi      "testthat, knitr, rmarkdown, clipr"
## rversions      "mockery, testthat"
## rvest           "covr, knitr, png, rmarkdown, spelling, stringi (>= 0.3.1), \ntestthat"
## scales         "bit64, covr, dichromat, ggplot2, hms (>= 0.5.0), testthat (>= \n2.1.0)"
## selectr        "testthat, XML, xml2"
## sessioninfo    "callr, covr, mockery, testthat"
## shiny          "datasets, Cairo (>= 1.5-5), testthat (>= 2.1.1), knitr (>= \n1.6), markdown, rmarkdown"
## shinyWidgets   "shinydashboard, testthat, covr, shinydashboardPlus, bs4Dash, \nargonR, argonDash, tabler"
## sourcetools    "testthat"
## sp             "RColorBrewer, rgdal (>= 1.2-3), rgeos (>= 0.3-13), gstat, \nmaptools, deldir"
## spatial        "MASS"
## splines        "Matrix, methods"
## SQUAREM        "setRNG"
## stats          "MASS, Matrix, SuppDists, methods, stats4"
## stats4         NA
## stringi        NA
## stringr        "covr, htmltools, htmlwidgets, knitr, rmarkdown, testthat"
## survival       NA
## sys            "unix (>= 1.4), spelling, testthat"
## tcltk          NA
## testthat       "covr, curl (>= 0.9.5), devtools, knitr, rmarkdown, usethis, \nvctr (>= 0.1.0), xml2"
## tibble         "bench, bit64, blob, covr, dplyr, evaluate, hms, htmltools, \nnimpor, knitr, mockr, ny"
## tidyr          "covr, jsonlite, knitr, repurrrsive (>= 1.0.0), rmarkdown, \nreadr, testthat (>= 2.1.0)"
## tidyselect     "covr, crayon, dplyr, knitr, magrittr, rmarkdown, testthat (>= \n2.3.0), tibble (>= 2.1.0)"
## tidyverse      "covr, feather, glue, knitr, rmarkdown, testthat"
## timeDate       "date, RUnit"
## tinytex        "testit, rstudioapi, bookdown"
## titanic        "dplyr, knitr"
## tools          "codetools, methods, xml2, curl, commonmark"
## tree           "MASS"
## usethis        "covr, knitr, magick, pkgdown (>= 1.4.0), rmarkdown, roxygen2, \nspelling (>= 1.2), st"
## utf8           "knitr, rmarkdown, testthat"
## utils          "methods, xml2, commonmark"
## vctr           "bit64, covr, crayon, dplyr (>= 0.8.5), generics, knitr, \npillar (>= 1.4.4), pkgdown,"
## viridisLite    "hexbin (>= 1.27.0), ggplot2 (>= 1.0.1), testthat, covr"
## webshot        "httpuv, knitr, rmarkdown, shiny"
## whisker        "markdown"
## withr          "covr, DBI, knitr, lattice, methods, rmarkdown, RSQLite, \ntestthat (>= 2.1.0)"
## xfun           "testit, parallel, rstudioapi, tinytex, mime, markdown, knitr, \nhtmltools, base64enc,"
## xml2           "covr, curl, httr, knitr, magrittr, mockery, rmarkdown, \ntestthat (>= 2.1.0)"
## xopen          "ps, testthat"
## xtable         "knitr, plm, zoo, survival"
## yaml           "RUnit"
##               Enhances
## arules         NA
## askpass        NA
## assertthat     NA
## backports      NA
## base           NA
## base64enc      "png"
## BH             NA
## bitops         NA
## boot           NA
## Boruta         NA

```

## brew	NA
## broom	NA
## callr	NA
## caret	NA
## caTools	NA
## cellranger	NA
## class	NA
## cli	NA
## clipr	NA
## cluster	NA
## codetools	NA
## colorspace	NA
## commonmark	NA
## compare	NA
## compiler	NA
## covr	NA
## crayon	NA
## crosstalk	NA
## curl	NA
## data.table	NA
## datasets	NA
## DBI	NA
## dbplyr	NA
## desc	NA
## devtools	NA
## digest	NA
## dplyr	NA
## dslabs	NA
## DT	NA
## e1071	NA
## ellipsis	NA
## esquisse	NA
## evaluate	NA
## fansi	NA
## farver	NA
## fastmap	NA
## FMEA	NA
## forcats	NA
## foreach	NA
## foreign	NA
## fs	NA
## gbm	NA
## gdata	NA
## generics	NA
## ggplot2	"sp"
## ggrepel	NA
## ggvis	NA
## gh	NA
## git2r	NA
## glue	NA
## gower	NA
## gplots	NA
## graphics	NA
## grDevices	NA

```

## grid                NA
## gridExtra           NA
## gtable              NA
## gtools              NA
## haven               NA
## highr               NA
## HistData            NA
## hms                 NA
## htmltools           "knitr"
## htmlwidgets         "shiny (>= 1.1)"
## httpuv              NA
## httr                NA
## igraph              NA
## ini                 NA
## ipred               NA
## irlba                NA
## isoband              NA
## iterators           NA
## jsonlite            NA
## kableExtra          NA
## KernSmooth          NA
## kkn                 NA
## knitr                NA
## labeling            NA
## Lahman              NA
## later               NA
## lattice              "chron"
## lava                NA
## lazyeval            NA
## lifecycle           NA
## lubridate           "chron, timeDate, tis, zoo"
## magrittr            NA
## markdown            NA
## MASS                NA
## Matrix              "MatrixModels, graph, SparseM, sfsmisc"
## memoise             NA
## methods             NA
## mgcv                NA
## mime                NA
## miniUI              NA
## MLmetrics           NA
## ModelMetrics        NA
## modelr              NA
## munsell             NA
## nlme                NA
## nnet                NA
## numDeriv            NA
## openssl             NA
## parallel            "snow, nws, Rmpi"
## pdftools            NA
## pillar              NA
## pkgbuild            NA
## pkgconfig           NA
## pkgload             NA

```

## plogr	NA
## plyr	NA
## praise	NA
## prettyunits	NA
## pROC	NA
## processx	NA
## prodlim	NA
## progress	NA
## promises	NA
## proxy	NA
## ps	NA
## purrr	NA
## qpdf	NA
## R6	NA
## randomForest	NA
## ranger	NA
## raster	NA
## rcmdcheck	NA
## RColorBrewer	NA
## Rcpp	NA
## RcppEigen	NA
## RcppProgress	NA
## readr	NA
## readxl	NA
## recipes	NA
## recommenderlab	NA
## recosystem	NA
## registry	NA
## rematch	NA
## rematch2	NA
## remotes	NA
## reprex	NA
## reshape	NA
## reshape2	NA
## rex	NA
## rlang	NA
## rmarkdown	NA
## ROCR	NA
## roxygen2	NA
## rpart	NA
## rprojroot	NA
## rstudioapi	NA
## rversions	NA
## rvest	NA
## scales	NA
## selectr	NA
## sessioninfo	NA
## shiny	NA
## shinyWidgets	NA
## sourcetools	NA
## sp	NA
## spatial	NA
## splines	NA
## SQUAREM	NA

## stats	NA	
## stats4	NA	
## stringi	NA	
## stringr	NA	
## survival	NA	
## sys	NA	
## tcltk	NA	
## testthat	NA	
## tibble	NA	
## tidyr	NA	
## tidyselect	NA	
## tidyverse	NA	
## timeDate	NA	
## tinytex	NA	
## titanic	NA	
## tools	NA	
## tree	NA	
## usethis	NA	
## utf8	NA	
## utils	NA	
## vctrs	NA	
## viridisLite	NA	
## webshot	NA	
## whisker	NA	
## withr	NA	
## xfun	NA	
## xml2	NA	
## xopen	NA	
## xtable	NA	
## yaml	NA	
##	License	License_is_FOSS
## arules	"GPL-3"	NA
## askpass	"MIT + file LICENSE"	NA
## assertthat	"GPL-3"	NA
## backports	"GPL-2 GPL-3"	NA
## base	"Part of R 4.0.0"	NA
## base64enc	"GPL-2 GPL-3"	NA
## BH	"BSL-1.0"	NA
## bitops	"GPL (>= 2)"	NA
## boot	"Unlimited"	NA
## Boruta	"GPL (>= 2)"	NA
## brew	"GPL-2"	NA
## broom	"MIT + file LICENSE"	NA
## callr	"MIT + file LICENSE"	NA
## caret	"GPL (>= 2)"	NA
## caTools	"GPL-3"	NA
## cellranger	"MIT + file LICENSE"	NA
## class	"GPL-2 GPL-3"	NA
## cli	"MIT + file LICENSE"	NA
## clipr	"GPL-3"	NA
## cluster	"GPL (>= 2)"	NA
## codetools	"GPL"	NA
## colorspace	"BSD_3_clause + file LICENSE"	NA
## commonmark	"BSD_2_clause + file LICENSE"	NA

## compare	"GPL (>= 2)"	NA
## compiler	"Part of R 4.0.0"	NA
## covr	"GPL-3"	NA
## crayon	"MIT + file LICENSE"	NA
## crosstalk	"MIT + file LICENSE"	NA
## curl	"MIT + file LICENSE"	NA
## data.table	"MPL-2.0 file LICENSE"	NA
## datasets	"Part of R 4.0.0"	NA
## DBI	"LGPL (>= 2.1)"	NA
## dbplyr	"MIT + file LICENSE"	NA
## desc	"MIT + file LICENSE"	NA
## devtools	"GPL (>= 2)"	NA
## digest	"GPL (>= 2)"	NA
## dplyr	"MIT + file LICENSE"	NA
## dslabs	"Artistic-2.0"	NA
## DT	"GPL-3 file LICENSE"	NA
## e1071	"GPL-2 GPL-3"	NA
## ellipsis	"GPL-3"	NA
## esquisse	"GPL-3 file LICENSE"	NA
## evaluate	"MIT + file LICENSE"	NA
## fansi	"GPL (>= 2)"	NA
## farver	"MIT + file LICENSE"	NA
## fastmap	"MIT + file LICENSE"	NA
## FMEA	"GPL-3"	NA
## forcats	"GPL-3"	NA
## foreach	"Apache License (== 2.0)"	NA
## foreign	"GPL (>= 2)"	NA
## fs	"GPL-3"	NA
## gbm	"GPL (>= 2) file LICENSE"	NA
## gdata	"GPL-2"	NA
## generics	"GPL-2"	NA
## ggplot2	"GPL-2 file LICENSE"	NA
## ggrepel	"GPL-3 file LICENSE"	NA
## ggvis	"GPL-2 file LICENSE"	NA
## gh	"MIT + file LICENSE"	NA
## git2r	"GPL-2"	NA
## glue	"MIT + file LICENSE"	NA
## gower	"GPL-3"	NA
## gplots	"GPL-2"	NA
## graphics	"Part of R 4.0.0"	NA
## grDevices	"Part of R 4.0.0"	NA
## grid	"Part of R 4.0.0"	NA
## gridExtra	"GPL (>= 2)"	NA
## gtable	"GPL-2"	NA
## gtools	"GPL-2"	NA
## haven	"MIT + file LICENSE"	NA
## highr	"GPL"	NA
## HistData	"GPL"	NA
## hms	"GPL-3"	NA
## htmltools	"GPL (>= 2)"	NA
## htmlwidgets	"MIT + file LICENSE"	NA
## httpuv	"GPL (>= 2) file LICENSE"	NA
## httr	"MIT + file LICENSE"	NA
## igraph	"GPL (>= 2)"	NA

## ini	"GPL-3"	NA
## ipred	"GPL (>= 2)"	NA
## irlba	"GPL-3"	NA
## isoband	"MIT + file LICENSE"	NA
## iterators	"Apache License (== 2.0)"	NA
## jsonlite	"MIT + file LICENSE"	NA
## kableExtra	"MIT + file LICENSE"	NA
## KernSmooth	"Unlimited"	NA
## kkn	"GPL (>= 2)"	NA
## knitr	"GPL"	NA
## labeling	"MIT + file LICENSE Unlimited"	NA
## Lahman	"GPL"	NA
## later	"GPL (>= 2)"	NA
## lattice	"GPL (>= 2)"	NA
## lava	"GPL-3"	NA
## lazyeval	"GPL-3"	NA
## lifecycle	"GPL-3"	NA
## lubridate	"GPL (>= 2)"	NA
## magrittr	"MIT + file LICENSE"	NA
## markdown	"GPL-2"	NA
## MASS	"GPL-2 GPL-3"	NA
## Matrix	"GPL (>= 2) file LICENCE"	NA
## memoise	"MIT + file LICENSE"	NA
## methods	"Part of R 4.0.0"	NA
## mgcv	"GPL (>= 2)"	NA
## mime	"GPL"	NA
## miniUI	"GPL-3"	NA
## MLmetrics	"GPL-2"	NA
## ModelMetrics	"GPL (>= 2)"	NA
## modelr	"GPL-3"	NA
## munsell	"MIT + file LICENSE"	NA
## nlme	"GPL (>= 2) file LICENCE"	NA
## nnet	"GPL-2 GPL-3"	NA
## numDeriv	"GPL-2"	NA
## openssl	"MIT + file LICENSE"	NA
## parallel	"Part of R 4.0.0"	NA
## pdftools	"MIT + file LICENSE"	NA
## pillar	"GPL-3"	NA
## pkgbuild	"GPL-3"	NA
## pkgconfig	"MIT + file LICENSE"	NA
## pkgload	"GPL-3"	NA
## plogr	"MIT + file LICENSE"	NA
## plyr	"MIT + file LICENSE"	NA
## praise	"MIT + file LICENSE"	NA
## prettyunits	"MIT + file LICENSE"	NA
## pROC	"GPL (>= 3)"	NA
## processx	"MIT + file LICENSE"	NA
## prodlim	"GPL (>= 2)"	NA
## progress	"MIT + file LICENSE"	NA
## promises	"MIT + file LICENSE"	NA
## proxy	"GPL-2"	NA
## ps	"BSD_3_clause + file LICENSE"	NA
## purrr	"GPL-3 file LICENSE"	NA
## qpdf	"Apache License 2.0"	NA

## R6	"MIT + file LICENSE"	NA
## randomForest	"GPL (>= 2)"	NA
## ranger	"GPL-3"	NA
## raster	"GPL (>= 3)"	NA
## rcmdcheck	"MIT + file LICENSE"	NA
## RColorBrewer	"Apache License 2.0"	NA
## Rcpp	"GPL (>= 2)"	NA
## RcppEigen	"GPL (>= 2) file LICENSE"	NA
## RcppProgress	"GPL (>= 3)"	NA
## readr	"GPL (>= 2) file LICENSE"	NA
## readxl	"GPL-3"	NA
## recipes	"GPL-2"	NA
## recommenderlab	"GPL-2"	NA
## ecosystem	"BSD_3_clause + file LICENSE"	NA
## registry	"GPL-2"	NA
## rematch	"MIT + file LICENSE"	NA
## rematch2	"MIT + file LICENSE"	NA
## remotes	"GPL (>= 2)"	NA
## reprex	"MIT + file LICENSE"	NA
## reshape	"MIT + file LICENSE"	NA
## reshape2	"MIT + file LICENSE"	NA
## rex	"MIT + file LICENSE"	NA
## rlang	"GPL-3"	NA
## rmarkdown	"GPL-3"	NA
## ROCR	"GPL (>= 2)"	NA
## roxygen2	"GPL (>= 2)"	NA
## rpart	"GPL-2 GPL-3"	NA
## rprojroot	"GPL-3"	NA
## rstudioapi	"MIT + file LICENSE"	NA
## rversions	"MIT + file LICENSE"	NA
## rvest	"GPL-3"	NA
## scales	"MIT + file LICENSE"	NA
## selectr	"BSD_3_clause + file LICENSE"	NA
## sessioninfo	"GPL-2"	NA
## shiny	"GPL-3 file LICENSE"	NA
## shinyWidgets	"GPL-3"	NA
## sourcetools	"MIT + file LICENSE"	NA
## sp	"GPL (>= 2)"	NA
## spatial	"GPL-2 GPL-3"	NA
## splines	"Part of R 4.0.0"	NA
## SQUAREM	"GPL (>= 2)"	NA
## stats	"Part of R 4.0.0"	NA
## stats4	"Part of R 4.0.0"	NA
## stringi	"file LICENSE"	"yes"
## stringr	"GPL-2 file LICENSE"	NA
## survival	"LGPL (>= 2)"	NA
## sys	"MIT + file LICENSE"	NA
## tcltk	"Part of R 4.0.0"	NA
## testthat	"MIT + file LICENSE"	NA
## tibble	"MIT + file LICENSE"	NA
## tidyr	"MIT + file LICENSE"	NA
## tidyselect	"GPL-3"	NA
## tidyverse	"GPL-3 file LICENSE"	NA
## timeDate	"GPL (>= 2)"	NA

## tinytex	"MIT + file LICENSE"	NA
## titanic	"CC0"	NA
## tools	"Part of R 4.0.0"	NA
## tree	"GPL-2 GPL-3"	NA
## usethis	"GPL-3"	NA
## utf8	"Apache License (== 2.0) file LICENSE"	NA
## utils	"Part of R 4.0.0"	NA
## vctrs	"GPL-3"	NA
## viridisLite	"MIT + file LICENSE"	NA
## webshot	"GPL-2"	NA
## whisker	"GPL-3"	NA
## withr	"GPL (>= 2)"	NA
## xfun	"MIT + file LICENSE"	NA
## xml2	"GPL (>= 2)"	NA
## xopen	"MIT + file LICENSE"	NA
## xtable	"GPL (>= 2)"	NA
## yaml	"BSD_3_clause + file LICENSE"	NA
##	License_restricts_use	OS_type MD5sum NeedsCompilation Built
## arules	NA	NA NA "yes" "4.0.0"
## askpass	NA	NA NA "yes" "4.0.0"
## assertthat	NA	NA NA "no" "4.0.0"
## backports	NA	NA NA "yes" "4.0.0"
## base	NA	NA NA NA "4.0.0"
## base64enc	NA	NA NA "yes" "4.0.0"
## BH	NA	NA NA "no" "4.0.0"
## bitops	NA	NA NA "yes" "4.0.0"
## boot	NA	NA NA "no" "4.0.0"
## Boruta	NA	NA NA "no" "4.0.0"
## brew	NA	NA NA NA "4.0.0"
## broom	NA	NA NA "no" "4.0.0"
## callr	NA	NA NA "no" "4.0.0"
## caret	NA	NA NA "yes" "4.0.0"
## caTools	NA	NA NA "yes" "4.0.0"
## cellranger	NA	NA NA "no" "4.0.0"
## class	NA	NA NA "yes" "4.0.0"
## cli	NA	NA NA "no" "4.0.0"
## clipr	NA	NA NA "no" "4.0.0"
## cluster	NA	NA NA "yes" "4.0.0"
## codetools	NA	NA NA "no" "4.0.0"
## colorspace	NA	NA NA "yes" "4.0.0"
## commonmark	NA	NA NA "yes" "4.0.0"
## compare	NA	NA NA "no" "4.0.0"
## compiler	NA	NA NA NA "4.0.0"
## covr	NA	NA NA "yes" "4.0.0"
## crayon	NA	NA NA "no" "4.0.0"
## crosstalk	NA	NA NA "no" "4.0.0"
## curl	NA	NA NA "yes" "4.0.0"
## data.table	NA	NA NA "yes" "4.0.0"
## datasets	NA	NA NA NA "4.0.0"
## DBI	NA	NA NA "no" "4.0.0"
## dbplyr	NA	NA NA "no" "4.0.0"
## desc	NA	NA NA "no" "4.0.0"
## devtools	NA	NA NA "no" "4.0.0"
## digest	NA	NA NA "yes" "4.0.0"

## dplyr	NA	NA	NA	"yes"	"4.0.0"
## dslabs	NA	NA	NA	"no"	"4.0.0"
## DT	NA	NA	NA	"no"	"4.0.0"
## e1071	NA	NA	NA	"yes"	"4.0.0"
## ellipsis	NA	NA	NA	"yes"	"4.0.0"
## esquisse	NA	NA	NA	"no"	"4.0.0"
## evaluate	NA	NA	NA	"no"	"4.0.0"
## fansi	NA	NA	NA	"yes"	"4.0.0"
## farver	NA	NA	NA	"yes"	"4.0.0"
## fastmap	NA	NA	NA	"yes"	"4.0.0"
## FMEA	NA	NA	NA	"no"	"4.0.0"
## forcats	NA	NA	NA	"no"	"4.0.0"
## foreach	NA	NA	NA	"no"	"4.0.0"
## foreign	NA	NA	NA	"yes"	"4.0.0"
## fs	NA	NA	NA	"yes"	"4.0.0"
## gbm	NA	NA	NA	"yes"	"4.0.0"
## gdata	NA	NA	NA	"no"	"4.0.0"
## generics	NA	NA	NA	"no"	"4.0.0"
## ggplot2	NA	NA	NA	"no"	"4.0.0"
## ggrepel	NA	NA	NA	"yes"	"4.0.0"
## ggvis	NA	NA	NA	"no"	"4.0.0"
## gh	NA	NA	NA	"no"	"4.0.0"
## git2r	NA	NA	NA	"yes"	"4.0.0"
## glue	NA	NA	NA	"yes"	"4.0.0"
## gower	NA	NA	NA	"yes"	"4.0.0"
## gplots	NA	NA	NA	"no"	"4.0.0"
## graphics	NA	NA	NA	"yes"	"4.0.0"
## grDevices	NA	NA	NA	"yes"	"4.0.0"
## grid	NA	NA	NA	"yes"	"4.0.0"
## gridExtra	NA	NA	NA	"no"	"4.0.0"
## gtable	NA	NA	NA	"no"	"4.0.0"
## gtools	NA	NA	NA	"yes"	"4.0.0"
## haven	NA	NA	NA	"yes"	"4.0.0"
## highr	NA	NA	NA	"no"	"4.0.0"
## HistData	NA	NA	NA	"no"	"4.0.0"
## hms	NA	NA	NA	"no"	"4.0.0"
## htmltools	NA	NA	NA	"yes"	"4.0.0"
## htmlwidgets	NA	NA	NA	"no"	"4.0.0"
## httpuv	NA	NA	NA	"yes"	"4.0.0"
## httr	NA	NA	NA	"no"	"4.0.0"
## igraph	NA	NA	NA	"yes"	"4.0.0"
## ini	NA	NA	NA	"no"	"4.0.0"
## ipred	NA	NA	NA	"yes"	"4.0.0"
## irlba	NA	NA	NA	"yes"	"4.0.0"
## isoband	NA	NA	NA	"yes"	"4.0.0"
## iterators	NA	NA	NA	"no"	"4.0.0"
## jsonlite	NA	NA	NA	"yes"	"4.0.0"
## kableExtra	NA	NA	NA	"no"	"4.0.0"
## KernSmooth	NA	NA	NA	"yes"	"4.0.0"
## kkn	NA	NA	NA	"yes"	"4.0.0"
## knitr	NA	NA	NA	"no"	"4.0.0"
## labeling	NA	NA	NA	"no"	"4.0.0"
## Lahman	NA	NA	NA	"no"	"4.0.0"
## later	NA	NA	NA	"yes"	"4.0.0"

## lattice	NA	NA	NA	"yes"	"4.0.0"
## lava	NA	NA	NA	"no"	"4.0.0"
## lazyeval	NA	NA	NA	"yes"	"4.0.0"
## lifecycle	NA	NA	NA	"no"	"4.0.0"
## lubridate	NA	NA	NA	"yes"	"4.0.0"
## magrittr	NA	NA	NA	"no"	"4.0.0"
## markdown	NA	NA	NA	"yes"	"4.0.0"
## MASS	NA	NA	NA	"yes"	"4.0.0"
## Matrix	NA	NA	NA	"yes"	"4.0.0"
## memoise	NA	NA	NA	"no"	"4.0.0"
## methods	NA	NA	NA	"yes"	"4.0.0"
## mgcv	NA	NA	NA	"yes"	"4.0.0"
## mime	NA	NA	NA	"yes"	"4.0.0"
## miniUI	NA	NA	NA	"no"	"4.0.0"
## MLmetrics	NA	NA	NA	"no"	"4.0.0"
## ModelMetrics	NA	NA	NA	"yes"	"4.0.0"
## modelr	NA	NA	NA	"no"	"4.0.0"
## munsell	NA	NA	NA	"no"	"4.0.0"
## nlme	NA	NA	NA	"yes"	"4.0.0"
## nnet	NA	NA	NA	"yes"	"4.0.0"
## numDeriv	NA	NA	NA	"no"	"4.0.0"
## openssl	NA	NA	NA	"yes"	"4.0.0"
## parallel	NA	NA	NA	"yes"	"4.0.0"
## pdftools	NA	NA	NA	"yes"	"4.0.0"
## pillar	NA	NA	NA	"no"	"4.0.0"
## pkgbuild	NA	NA	NA	"no"	"4.0.0"
## pkgconfig	NA	NA	NA	"no"	"4.0.0"
## pkgload	NA	NA	NA	"yes"	"4.0.0"
## plogr	NA	NA	NA	"no"	"4.0.0"
## plyr	NA	NA	NA	"yes"	"4.0.0"
## praise	NA	NA	NA	"no"	"4.0.0"
## prettyunits	NA	NA	NA	"no"	"4.0.0"
## pROC	NA	NA	NA	"yes"	"4.0.0"
## processx	NA	NA	NA	"yes"	"4.0.0"
## proclim	NA	NA	NA	"yes"	"4.0.0"
## progress	NA	NA	NA	"no"	"4.0.0"
## promises	NA	NA	NA	"yes"	"4.0.0"
## proxy	NA	NA	NA	"yes"	"4.0.0"
## ps	NA	NA	NA	"yes"	"4.0.0"
## purrr	NA	NA	NA	"yes"	"4.0.0"
## qpdf	NA	NA	NA	"yes"	"4.0.0"
## R6	NA	NA	NA	"no"	"4.0.0"
## randomForest	NA	NA	NA	"yes"	"4.0.0"
## ranger	NA	NA	NA	"yes"	"4.0.0"
## raster	NA	NA	NA	"yes"	"4.0.0"
## rcmdcheck	NA	NA	NA	"no"	"4.0.0"
## RColorBrewer	NA	NA	NA	"no"	"4.0.0"
## Rcpp	NA	NA	NA	"yes"	"4.0.0"
## RcppEigen	NA	NA	NA	"yes"	"4.0.0"
## RcppProgress	NA	NA	NA	"no"	"4.0.0"
## readr	NA	NA	NA	"yes"	"4.0.0"
## readxl	NA	NA	NA	"yes"	"4.0.0"
## recipes	NA	NA	NA	"no"	"4.0.0"
## recommenderlab	NA	NA	NA	"no"	"4.0.0"

## recosystem	NA	NA	NA	"yes"	"4.0.0"
## registry	NA	NA	NA	"no"	"4.0.0"
## rematch	NA	NA	NA	"no"	"4.0.0"
## rematch2	NA	NA	NA	"no"	"4.0.0"
## remotes	NA	NA	NA	"no"	"4.0.0"
## replex	NA	NA	NA	"no"	"4.0.0"
## reshape	NA	NA	NA	"yes"	"4.0.0"
## reshape2	NA	NA	NA	"yes"	"4.0.0"
## rex	NA	NA	NA	"no"	"4.0.0"
## rlang	NA	NA	NA	"yes"	"4.0.0"
## rmarkdown	NA	NA	NA	"no"	"4.0.0"
## ROCR	NA	NA	NA	"no"	"4.0.0"
## roxygen2	NA	NA	NA	"yes"	"4.0.0"
## rpart	NA	NA	NA	"yes"	"4.0.0"
## rprojroot	NA	NA	NA	"no"	"4.0.0"
## rstudioapi	NA	NA	NA	"no"	"4.0.0"
## rversions	NA	NA	NA	"no"	"4.0.0"
## rvest	NA	NA	NA	"no"	"4.0.0"
## scales	NA	NA	NA	"no"	"4.0.0"
## selectr	NA	NA	NA	"no"	"4.0.0"
## sessioninfo	NA	NA	NA	"no"	"4.0.0"
## shiny	NA	NA	NA	"no"	"4.0.0"
## shinyWidgets	NA	NA	NA	"no"	"4.0.0"
## sourcetools	NA	NA	NA	"yes"	"4.0.0"
## sp	NA	NA	NA	"yes"	"4.0.0"
## spatial	NA	NA	NA	"yes"	"4.0.0"
## splines	NA	NA	NA	"yes"	"4.0.0"
## SQUAREM	NA	NA	NA	"no"	"4.0.0"
## stats	NA	NA	NA	"yes"	"4.0.0"
## stats4	NA	NA	NA	NA	"4.0.0"
## stringi	NA	NA	NA	"yes"	"4.0.0"
## stringr	NA	NA	NA	"no"	"4.0.0"
## survival	NA	NA	NA	"yes"	"4.0.0"
## sys	NA	NA	NA	"yes"	"4.0.0"
## tcltk	NA	NA	NA	"yes"	"4.0.0"
## testthat	NA	NA	NA	"yes"	"4.0.0"
## tibble	NA	NA	NA	"yes"	"4.0.0"
## tidyr	NA	NA	NA	"yes"	"4.0.0"
## tidyselect	NA	NA	NA	"yes"	"4.0.0"
## tidyverse	NA	NA	NA	"no"	"4.0.0"
## timeDate	NA	NA	NA	"no"	"4.0.0"
## tinytex	NA	NA	NA	"no"	"4.0.0"
## titanic	NA	NA	NA	"no"	"4.0.0"
## tools	NA	NA	NA	"yes"	"4.0.0"
## tree	NA	NA	NA	"yes"	"4.0.0"
## usethis	NA	NA	NA	"no"	"4.0.0"
## utf8	NA	NA	NA	"yes"	"4.0.0"
## utils	NA	NA	NA	"yes"	"4.0.0"
## vctrs	NA	NA	NA	"yes"	"4.0.0"
## viridisLite	NA	NA	NA	"no"	"4.0.0"
## webshot	NA	NA	NA	"no"	"4.0.0"
## whisker	NA	NA	NA	"no"	"4.0.0"
## withr	NA	NA	NA	"no"	"4.0.0"
## xfun	NA	NA	NA	"no"	"4.0.0"

## xml2	NA	NA	NA	"yes"	"4.0.0"
## xopen	NA	NA	NA	"no"	"4.0.0"
## xtable	NA	NA	NA	"no"	"4.0.0"
## yaml	NA	NA	NA	"yes"	"4.0.0"