# Regression Random Forest

About the method - reg\_rf: Random Forest for regression. Averages many decision trees trained with randomness; tends to reduce variance. - Hyperparameters: mtry (variables per split), ntree (number of trees).

# installation   
#install.packages("daltoolbox")  
  
# loading DAL  
library(daltoolbox)

# Dataset for regression analysis

Load Boston dataset and inspect types/values.

library(MASS)  
data(Boston)  
print(t(sapply(Boston, class)))

## [,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10] [,11] [,12] [,13] [,14] [,15]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,16] [,17] [,18] [,19] [,20] [,21] [,22] [,23] [,24] [,25] [,26] [,27] [,28] [,29] [,30]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,31] [,32] [,33] [,34] [,35] [,36] [,37] [,38] [,39] [,40] [,41] [,42] [,43] [,44] [,45]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,46] [,47] [,48] [,49] [,50] [,51] [,52] [,53] [,54] [,55] [,56] [,57] [,58] [,59] [,60]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,61] [,62] [,63] [,64] [,65] [,66] [,67] [,68] [,69] [,70] [,71] [,72] [,73] [,74] [,75]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,76] [,77] [,78] [,79] [,80] [,81] [,82] [,83] [,84] [,85] [,86] [,87] [,88] [,89] [,90]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,91] [,92] [,93] [,94] [,95] [,96] [,97] [,98] [,99] [,100] [,101] [,102] [,103] [,104] [,105]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,106] [,107] [,108] [,109] [,110] [,111] [,112] [,113] [,114] [,115] [,116] [,117] [,118] [,119] [,120]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,121] [,122] [,123] [,124] [,125] [,126] [,127] [,128] [,129] [,130] [,131] [,132] [,133] [,134] [,135]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,136] [,137] [,138] [,139] [,140] [,141] [,142] [,143] [,144] [,145] [,146] [,147] [,148] [,149] [,150]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,151] [,152] [,153] [,154] [,155] [,156] [,157] [,158] [,159] [,160] [,161] [,162] [,163] [,164] [,165]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,166] [,167] [,168] [,169] [,170] [,171] [,172] [,173] [,174] [,175] [,176] [,177] [,178] [,179] [,180]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,181] [,182] [,183] [,184] [,185] [,186] [,187] [,188] [,189] [,190] [,191] [,192] [,193] [,194] [,195]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,196] [,197] [,198] [,199] [,200] [,201] [,202] [,203] [,204] [,205] [,206] [,207] [,208] [,209] [,210]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,211] [,212] [,213] [,214] [,215] [,216] [,217] [,218] [,219] [,220] [,221] [,222] [,223] [,224] [,225]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,226] [,227] [,228] [,229] [,230] [,231] [,232] [,233] [,234] [,235] [,236] [,237] [,238] [,239] [,240]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,241] [,242] [,243] [,244] [,245] [,246] [,247] [,248] [,249] [,250] [,251] [,252] [,253] [,254] [,255]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,256] [,257] [,258] [,259] [,260] [,261] [,262] [,263] [,264] [,265] [,266] [,267] [,268] [,269] [,270]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,271] [,272] [,273] [,274] [,275] [,276] [,277] [,278] [,279] [,280] [,281] [,282] [,283] [,284] [,285]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,286] [,287] [,288] [,289] [,290] [,291] [,292] [,293] [,294] [,295] [,296] [,297] [,298] [,299] [,300]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,301] [,302] [,303] [,304] [,305] [,306] [,307] [,308] [,309] [,310] [,311] [,312] [,313] [,314] [,315]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,316] [,317] [,318] [,319] [,320] [,321] [,322] [,323] [,324] [,325] [,326] [,327] [,328] [,329] [,330]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,331] [,332] [,333] [,334] [,335] [,336] [,337] [,338] [,339] [,340] [,341] [,342] [,343] [,344] [,345]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,346] [,347] [,348] [,349] [,350] [,351] [,352] [,353] [,354] [,355] [,356] [,357] [,358] [,359] [,360]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,361] [,362] [,363] [,364] [,365] [,366] [,367] [,368] [,369] [,370] [,371] [,372] [,373] [,374] [,375]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,376] [,377] [,378] [,379] [,380] [,381] [,382] [,383] [,384] [,385] [,386] [,387] [,388] [,389] [,390]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,391] [,392] [,393] [,394] [,395] [,396] [,397] [,398] [,399] [,400] [,401] [,402] [,403] [,404] [,405]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,406] [,407] [,408] [,409] [,410] [,411] [,412] [,413] [,414] [,415] [,416] [,417] [,418] [,419] [,420]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,421] [,422] [,423] [,424] [,425] [,426] [,427] [,428] [,429] [,430] [,431] [,432] [,433] [,434] [,435]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,436] [,437] [,438] [,439] [,440] [,441] [,442] [,443] [,444] [,445] [,446] [,447] [,448] [,449] [,450]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,451] [,452] [,453] [,454] [,455] [,456] [,457] [,458] [,459] [,460] [,461] [,462] [,463] [,464] [,465]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,466] [,467] [,468] [,469] [,470] [,471] [,472] [,473] [,474] [,475] [,476] [,477] [,478] [,479] [,480]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,481] [,482] [,483] [,484] [,485] [,486] [,487] [,488] [,489] [,490] [,491] [,492] [,493] [,494] [,495]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,496] [,497] [,498] [,499] [,500] [,501] [,502] [,503] [,504] [,505] [,506] [,507] [,508] [,509] [,510]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,511] [,512] [,513] [,514] [,515] [,516] [,517] [,518] [,519] [,520] [,521] [,522] [,523] [,524] [,525]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,526] [,527] [,528] [,529] [,530] [,531] [,532] [,533] [,534] [,535] [,536] [,537] [,538] [,539] [,540]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,541] [,542] [,543] [,544] [,545] [,546] [,547] [,548] [,549] [,550] [,551] [,552] [,553] [,554] [,555]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,556] [,557] [,558] [,559] [,560] [,561] [,562] [,563] [,564] [,565] [,566] [,567] [,568] [,569] [,570]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,571] [,572] [,573] [,574] [,575] [,576] [,577] [,578] [,579] [,580] [,581] [,582] [,583] [,584] [,585]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,586] [,587] [,588] [,589] [,590] [,591] [,592] [,593] [,594] [,595] [,596] [,597] [,598] [,599] [,600]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,601] [,602] [,603] [,604] [,605] [,606] [,607] [,608] [,609] [,610] [,611] [,612] [,613] [,614] [,615]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,616] [,617] [,618] [,619] [,620] [,621] [,622] [,623] [,624] [,625] [,626] [,627] [,628] [,629] [,630]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,631] [,632] [,633] [,634] [,635] [,636] [,637] [,638] [,639] [,640] [,641] [,642] [,643] [,644] [,645]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,646] [,647] [,648] [,649] [,650] [,651] [,652] [,653] [,654] [,655] [,656] [,657] [,658] [,659] [,660]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,661] [,662] [,663] [,664] [,665] [,666] [,667] [,668] [,669] [,670] [,671] [,672] [,673] [,674] [,675]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,676] [,677] [,678] [,679] [,680] [,681] [,682] [,683] [,684] [,685] [,686] [,687] [,688] [,689] [,690]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,691] [,692] [,693] [,694] [,695] [,696] [,697] [,698] [,699] [,700] [,701] [,702] [,703] [,704] [,705]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,706] [,707] [,708] [,709] [,710] [,711] [,712] [,713] [,714] [,715] [,716] [,717] [,718] [,719] [,720]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,721] [,722] [,723] [,724] [,725] [,726] [,727] [,728] [,729] [,730] [,731] [,732] [,733] [,734] [,735]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,736] [,737] [,738] [,739] [,740] [,741] [,742] [,743] [,744] [,745] [,746] [,747] [,748] [,749] [,750]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,751] [,752] [,753] [,754] [,755] [,756] [,757] [,758] [,759] [,760] [,761] [,762] [,763] [,764] [,765]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,766] [,767] [,768] [,769] [,770] [,771] [,772] [,773] [,774] [,775] [,776] [,777] [,778] [,779] [,780]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,781] [,782] [,783] [,784] [,785] [,786] [,787] [,788] [,789] [,790] [,791] [,792] [,793] [,794] [,795]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,796] [,797] [,798] [,799] [,800] [,801] [,802] [,803] [,804] [,805] [,806] [,807] [,808] [,809] [,810]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,811] [,812] [,813] [,814] [,815] [,816] [,817] [,818] [,819] [,820] [,821] [,822] [,823] [,824] [,825]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,826] [,827] [,828] [,829] [,830] [,831] [,832] [,833] [,834] [,835] [,836] [,837] [,838] [,839] [,840]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,841] [,842] [,843] [,844] [,845] [,846] [,847] [,848] [,849] [,850] [,851] [,852] [,853] [,854] [,855]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,856] [,857] [,858] [,859] [,860] [,861] [,862] [,863] [,864] [,865] [,866] [,867] [,868] [,869] [,870]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,871] [,872] [,873] [,874] [,875] [,876] [,877] [,878] [,879] [,880] [,881] [,882] [,883] [,884] [,885]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,886] [,887] [,888] [,889] [,890] [,891] [,892] [,893] [,894] [,895] [,896] [,897] [,898] [,899] [,900]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,901] [,902] [,903] [,904] [,905] [,906] [,907] [,908] [,909] [,910] [,911] [,912] [,913] [,914] [,915]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,916] [,917] [,918] [,919] [,920] [,921] [,922] [,923] [,924] [,925] [,926] [,927] [,928] [,929] [,930]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,931] [,932] [,933] [,934] [,935] [,936] [,937] [,938] [,939] [,940] [,941] [,942] [,943] [,944] [,945]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,946] [,947] [,948] [,949] [,950] [,951] [,952] [,953] [,954] [,955] [,956] [,957] [,958] [,959] [,960]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,961] [,962] [,963] [,964] [,965] [,966] [,967] [,968] [,969] [,970] [,971] [,972] [,973] [,974] [,975]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,976] [,977] [,978] [,979] [,980] [,981] [,982] [,983] [,984] [,985] [,986] [,987] [,988] [,989] [,990]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [,991] [,992] [,993] [,994] [,995] [,996] [,997] [,998] [,999] [,1000]   
## [1,] "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric" "numeric"  
## [ reached 'max' / getOption("max.print") -- omitted 6084 columns ]

head(Boston)

## crim zn indus chas nox rm age dis rad tax ptratio black lstat medv  
## 1 0.00632 18 2.31 0 0.538 6.575 65.2 4.0900 1 296 15.3 396.90 4.98 24.0  
## 2 0.02731 0 7.07 0 0.469 6.421 78.9 4.9671 2 242 17.8 396.90 9.14 21.6  
## 3 0.02729 0 7.07 0 0.469 7.185 61.1 4.9671 2 242 17.8 392.83 4.03 34.7  
## 4 0.03237 0 2.18 0 0.458 6.998 45.8 6.0622 3 222 18.7 394.63 2.94 33.4  
## 5 0.06905 0 2.18 0 0.458 7.147 54.2 6.0622 3 222 18.7 396.90 5.33 36.2  
## 6 0.02985 0 2.18 0 0.458 6.430 58.7 6.0622 3 222 18.7 394.12 5.21 28.7

# Optional conversion to matrix (may improve performance in some cases).

# por desempenho, você pode converter para matriz  
Boston <- as.matrix(Boston)

# Train/test split

Random and reproducible train/test split.

# preparando amostragem aleatória  
set.seed(1)  
sr <- sample\_random()  
sr <- train\_test(sr, Boston)  
boston\_train <- sr$train  
boston\_test <- sr$test

# Training

Train Random Forest to predict medv.

model <- reg\_rf("medv", mtry=7, ntree=30) # mtry: variáveis por split; ntree: nº de árvores  
model <- fit(model, boston\_train)

# Model adjustment

Training evaluation (regression metrics such as RMSE/MAE).

train\_prediction <- predict(model, boston\_train)  
boston\_train\_predictand <- boston\_train[,"medv"]  
train\_eval <- evaluate(model, boston\_train\_predictand, train\_prediction)  
print(train\_eval$metrics)

## mse smape R2  
## 1 1.358048 0.03937262 0.984912

# Test

Test evaluation.

test\_prediction <- predict(model, boston\_test)  
boston\_test\_predictand <- boston\_test[,"medv"]  
test\_eval <- evaluate(model, boston\_test\_predictand, test\_prediction)  
print(test\_eval$metrics)

## mse smape R2  
## 1 14.60407 0.1220641 0.7573084