
```
title: "FIA example in R"
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date: `r format(Sys.time(), "%B %d, %Y")
output:
word_document: default
pdf_document: default
html_document: default
```

Installation of rFIA

```
# install the package if not already installed and call it via library()
if(!require(rFIA)){install.packages("rFIA")}

## Loading required package: rFIA

library(rFIA)
library(tidyverse)

## -- Attaching packages ----- tidyverse 1.3.1 --

## v ggplot2 3.3.5     v purrr    0.3.4
## v tibble   3.1.3     v dplyr    1.0.7
## v tidyr    1.1.3     v stringr  1.4.0
## v readr    2.0.0     vforcats  0.5.1

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

library(sf)

## Linking to GEOS 3.9.0, GDAL 3.2.1, PROJ 7.2.1
```

Getting started with rFIA

Please visit <https://rfia.netlify.app/tutorial/downloading/> for a full run down on how to do this. Here, we work through their example using FIA data from the state of Virginia.

You can also embed plots, for example:

```
## Download the state subset or Connecticut (requires an internet connection)
## Save as an object to automatically load the data into your current R session!
getFIA(states = 'VA', dir = '../inst/extdata/fia/')

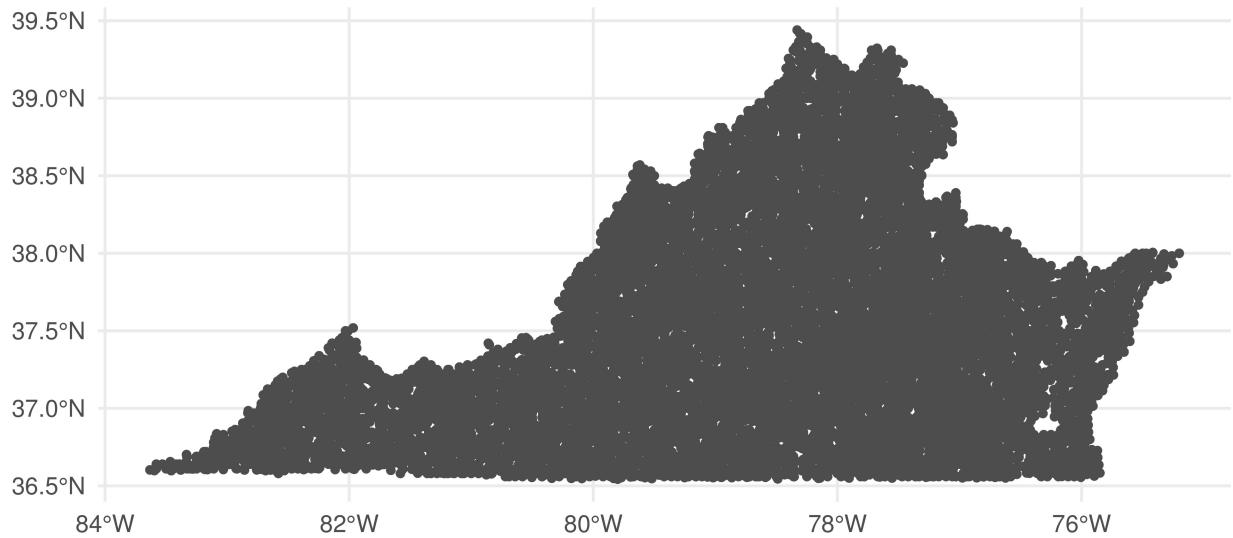
## Get the forest type and forest type group reference tables
ref <- getFIA(states = 'ref', tables = c('FOREST_TYPE', 'FOREST_TYPE_GROUP'))

## Warning: The 'dots' argument of 'group_by()' is deprecated as of dplyr 1.0.0.
```

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.

```
## Check spatial coverage of plots held in the database
plotFIA(va, plot.title = "FIA plot distribution, Virginia, USA" )
```

FIA plot distribution, Virginia, USA



```
## let's make a bounding box
snp <- st_read("../inst/extdata/fia/SNP_boundary/shen_PkBndryPly.shp")

## Reading layer 'shen_PkBndryPly' from data source
##   'C:\R\rforestanalysis\inst\extdata\fia\SNP_boundary\shen_PkBndryPly.shp'
##   using driver 'ESRI Shapefile'
## Simple feature collection with 4 features and 6 fields
## Geometry type: POLYGON
## Dimension:      XY
## Bounding box:  xmin: 687853.1 ymin: 4211705 xmax: 747375.5 ymax: 4310539
## Projected CRS: NAD83 / UTM zone 17N

## Most Recent Subset (2017)
snp.clip <- clipFIA(va, mask = snp)

# let's look at some basic population estimates
tpaSNP <- tpa(snp.clip)
```

```

# we can also analyze by plot
## Plot-level
snp_plot <- tpa(snp.clip, byPlot = TRUE)

## or by tree
## Plot-level
snp_plot_tree <- tpa(snp.clip, byPlot = TRUE, grpBy = TREE)

## Size class
## Group estimates by size class
snp_sizeClass <- tpa(snp.clip, bySizeClass = TRUE)

## Using our estimates from above (all inventory years in RI)
plotFIA(snp_sizeClass, y = BAA, x = sizeClass, plot.title = 'Size class distribution of trees in SNP')

```

Size class distribution of trees in SNP

