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# 09/02/2021
# Lars plot using ggplot2
library(ggplot2); library(lars); library(devtools); library(reshape2); library(ElemStatLearn);
library(directlabels); library(quadprog)
#####
# Lars plot using AMR data
=====
# A) Creating LARS plot using lars package
#=====
rm(list=ls())
setwd("D:/Data_2")
dat <- read.csv("AMR_DDDRate_V2.csv", sep=",", header=TRUE, na.string=NA)
names(dat)
# delete rows with zero data for HA_MRSA variable
dat1 <- dat[-c(3, 7, 9,10,17,19,22),]
dat1$HA_MRSA

# In this model, we tested the model after removing the zero data for HA_MRSA variable
m0 <- lars(x=as.matrix(dat1[, -c(1:5)]), y=dat1[,3], type="lar", normalize=TRUE)
x11()
plot(m0); # suggests 3 steps
title("HA_MRSA >0", adj = 0, line = 2.5, col="blue")
print(m0)
#=====
# B) creating LARS plot using ggplot2
#=====
names(dat)
ycol <- which(names(dat)=="HA_MRSA")
x <- as.matrix(dat[-ycol])
y <- dat[[ycol]]

library(lars)
fit <- lars(x=as.matrix(dat1[, -c(1:5)]), y=dat1[,3], type="lar", normalize=TRUE) # type="lasso"
beta <- scale(coef(fit), FALSE, 1/fit$normx)
arclength <- rowSums(abs(beta))/max(rowSums(abs(beta))) # LARS

library(reshape2)
path <- data.frame(melt(beta), arclength)
names(path)[1:3] <- c("step", "variable", "standardized.coef")

library(ggplot2)
p1 <- ggplot(path, aes(arclength, standardized.coef, colour=variable))+
  geom_line(aes(group=variable))+
  ggtitle("LASSO path for HA_MRSA data calculated using the LARS")+
  theme(legend.position = "none") +
  xlab("Sum of beta/max of sum of beta")+
  ylab("standardised coefficient") +
  xlim(0,1)
x11(); p1

# direct.label(p, "angled.boxes")
direct.label(p1, "angled.boxes") # this creates the error message (see below)

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## Error Message #-----  
#Error in parse(text = elt) : <text>:2:0: unexpected end of input 1: ~ ^  
  
#In addition: Warning message:  
#Using `as.character()` on a quosure is deprecated as of rlang 0.3.0.  
#Please use `as_label()` or `as_name()` instead.  
#-----  
# Note: I will be ok with any other label options in your package  
#END  
#####
```