HW3a

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Da biggest bloop

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<https://bookdown.org/yihui/rmarkdown/pdf-document.html#table-of-contents-1>

<https://pandoc.org/MANUAL.html#citations>

<https://rstudio.com/wp-content/uploads/2015/03/rmarkdown-reference.pdf>

<https://stirlingcodingclub.github.io/Manuscripts_in_Rmarkdown/Rmarkdown_notes.html>

# Introduction

# Literature Review

# Results

Lambda2F <- function(Lambda,dim,nuH,nuE,alpha=.05) #nuH is the number of groups - 1, nuE is number of observations - number of variables in y  
{  
 #dim is the number of variables you're taking out of the model  
 df1 <- dim\*nuH  
 w <- nuH + nuE - .5\*(dim+nuH+1)  
 t <- 1  
 if((dim^2 + nuH^2 - 5) > 0)  
 t <- sqrt((dim^2 \* nuH^2 - 4)/(dim^2 + nuH^2 - 5))  
 df2 <- w\*t - .5\*(dim\*nuH - 2)  
 Fstat <- (1-Lambda^(1/t))/(Lambda^(1/t)) \* df2/df1  
 critval <- qf(1-alpha,df1,df2)  
 pval <- 1 - pf(Fstat,df1,df2)  
 return(list(Lambda,w,t,df1,df2,Fstat,critval,pval))  
}  
  
# sowdate:  
# full: 0.00064500  
# reduced: 0.00527159  
lamzy <- 0.00064500/0.00527159  
#fval <- Lambda2F(lamzy, 2, 3, 60-2) #incorrect  
fval <- Lambda2F(lamzy, 2, 3, 60 - 12 - 2) #the last argument is n - (# of groups) - (the number of variables we are conditioning on or the # of variables in y (see slides3 slide 71))  
fval[[8]] #p-value

## [1] 0

# variety:  
# full: 0.06530009  
# reduced: 0.06994306  
lamzy <- 0.06530009/0.06994306  
fval <- Lambda2F(lamzy, 2, 3, 60-2)  
fval[[8]] #p-value

## [1] 0.6789343

# interaction:  
# full: 0.13794739  
# reduced: 0.21546479  
lamzy <- 0.13794739/0.21546479  
fval <- Lambda2F(lamzy, 2, 3, 60-2)  
fval[[8]] #p-value

## [1] 0.0002371453

According to the above analysis, x3 and x4 are important variables to sowdate and the interaction in assessing trends but not to variety.

#e

#variety  
e <- c(sqrt(11.896), sqrt(14.404), sqrt(13.656), sqrt(7245.6))  
  
variety <- matrix(c(0.27131451, -0.02672873, 0.05558050, 0.00170062), ncol = 1)  
diag(e) %\*% variety

## [,1]  
## [1,] 0.9357794  
## [2,] -0.1014425  
## [3,] 0.2053923  
## [4,] 0.1447586

sowdate <- matrix(c(0.20895364, -0.05317724, 0.17493015, -0.00429399), ncol = 1)  
diag(e) %\*% sowdate

## [,1]  
## [1,] 0.7206932  
## [2,] -0.2018215  
## [3,] 0.6464373  
## [4,] -0.3655091

interaction <- matrix(c(0.28266108, -0.04609473, 0.02654888, 0.00025815), ncol = 1)  
diag(e) %\*% interaction

## [,1]  
## [1,] 0.97491441  
## [2,] -0.17494149  
## [3,] 0.09810880  
## [4,] 0.02197401

Based on the standardized discriminant functions above (a-star), for variety, x1 is the most important. For sowdate, x1 and x3 are the most important and for the interaction x1 is the most important. [R Core Team](#ref-R-base) ([2016](#ref-R-base))

Bloop [Xie](#ref-R-knitr) ([2020](#ref-R-knitr))

Bloop2 [Wickham](#ref-R-stringr) ([2019](#ref-R-stringr))

# Summary of Conclusions

# Future Recommendations

R Core Team. 2016. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. <https://www.R-project.org/>.

Wickham, Hadley. 2019. *Stringr: Simple, Consistent Wrappers for Common String Operations*. <https://CRAN.R-project.org/package=stringr>.

Xie, Yihui. 2020. *Knitr: A General-Purpose Package for Dynamic Report Generation in r*. <https://yihui.org/knitr/>.

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## @Manual{R-knitr,  
## title = {knitr: A General-Purpose Package for Dynamic  
## Report Generation in R},  
## author = {Yihui Xie},  
## year = {2021},  
## note = {R package version 1.33},  
## url = {https://yihui.org/knitr/},  
## }  
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## author = {Hadley Wickham},  
## year = {2019},  
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## url = {https://CRAN.R-project.org/package=stringr},  
## }  
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## title = {Dynamic Documents with {R} and knitr},  
## author = {Yihui Xie},  
## publisher = {Chapman and Hall/CRC},  
## address = {Boca Raton, Florida},  
## year = {2015},  
## edition = {2nd},  
## note = {ISBN 978-1498716963},  
## url = {https://yihui.org/knitr/},  
## }  
##   
## @InCollection{knitr2014,  
## booktitle = {Implementing Reproducible Computational  
## Research},  
## editor = {Victoria Stodden and Friedrich Leisch and Roger  
## D. Peng},  
## title = {knitr: A Comprehensive Tool for Reproducible  
## Research in {R}},  
## author = {Yihui Xie},  
## publisher = {Chapman and Hall/CRC},  
## year = {2014},  
## note = {ISBN 978-1466561595},  
## url = {http://www.crcpress.com/product/isbn/  
## 9781466561595},  
## }

# Appendix

Lambda2F <- function(Lambda,dim,nuH,nuE,alpha=.05) #nuH is the number of groups - 1, nuE is number of observations - number of variables in y  
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