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DA410
Professor Li

Part 1: Chapter 8 Page 306-308: #8.7, #8.11 (part a and b only), #8.15 Hint: See next page
a. You may either use R or “hand calculation” in this assignment.

#8.7 a = (1.366, -.810, 2.525, -1.463), b = t1 = 5.417, t2=2.007, t37.775, t4=.688

```
library(MASS)
library(readr)

# assuming equal (1=graduated, 0=did not graduate)
#  prior probabilities of graduating or not:
#5.16a
male_psych <- psych(c('m1y1','m1y2','m1y3','m1y4'))
female_psych <- psych(c('f1y1','f1y2','f1y3','f1y4'))

both_psych <- cbind(male_psych, female_psych)

n1 <- nrow(male_psych)
n2 <- nrow(female_psych)

male_psych.means <- apply(male_psych, 2, mean)
female_psych.means <- apply(female_psych, 2, mean)

w1 <- (n1 - 1) * var(male_psych)
w2 <- (n2 - 1) * var(female_psych)

sp1 <- 1 / (n1 + n2 - 2) * (w1 + w2)

a <- solve(sp1) %*% (male_psych.means - female_psych.means)
a
```

20:51 (Top Level)

Console ~/

```
> female_psych.means <- apply(female_psych, 2, mean)
Warning message:
In mean.default(newX[, i], ...) :
  argument is not numeric or logical: returning NA
>
> w1 <- (n1 - 1) * var(male_psych)
Warning message:
In var(male_psych) : NAs introduced by coercion
> w2 <- (n2 - 1) * var(female_psych)
Warning message:
In var(female_psych) : NAs introduced by coercion
>
> sp1 <- 1 / (n1 + n2 - 2) * (w1 + w2)
>
> a <- solve(sp1) %*% (male_psych.means - female_psych.means)
> a
     [,1]
[1,]   NA
> #5.16b
>
```

#8.11 (part a and b only)
a1’=(0.021, .533, -.347, -.135) a2’ =(-.317, .298, .243, -.026)

(d) In Equation 8.26, $v = n_1 + n_2 - 2 = 62$, $p$ is the number of all variables and $p = 4$.

$$T_p^2 = \frac{n_1 n_2}{n_1+n_2}(\bar{y}_{male} - \bar{y}_{female})' S_{pl}^{-1}(\bar{y}_{male} - \bar{y}_{female})$$

$$T_{p-1}^2 = \frac{n_1 n_2}{n_1+n_2}(\bar{y}_{male} - \bar{y}_{female})' S_{pl}^{-1}(\bar{y}_{male} - \bar{y}_{female})$$ expect $y_i$, for i=1,2,3,4.

Find $T_{p-1}^2(y_1|y_2,y_3,y_4)$, $T_{p-1}^2(y_2|y_1,y_3,y_4)$, $T_{p-1}^2(y_3|y_1,y_2,y_4)$, $T_{p-1}^2(y_4|y_1,y_2,y_3)$.

For example,

$$T_{p-1}^2\,(\text{y1|y2,y3,y4}) = \frac{32(32)}{32+32}(2.000\ 10.531\ 0.813)\begin{pmatrix} 0.076 & -0.018 & -0.009 \\ -0.018 & 0.053 & -0.028 \\ -0.009 & -0.028 & 0.065 \end{pmatrix}\begin{pmatrix} 2.000 \\ 10.531 \\ 0.813 \end{pmatrix}$$

$= 78.866$

$\bar{y}_{male} - \bar{y}_{female}$ except $y_1$

$S_{pl}^{-1}$ except y1

8.11

(b) $\lambda_i$ are eigenvalues. See your assignment 3 for λ values.

8.15

The easiest way is to use greedy.wilks

#8.15 - use greedy wilks algorithm
summary table

| step | Variable Entered | OverallA | p-value | partialA | PartialF | p-value |
|---|---|---|---|---|---|---|
| 1 | y2 | .6347 | .0006 | .6347 | 9.495 | .0006 |
| 2 | y3 | .2606 | <.0001 | .4106 | 22.975 | <.0001 |

b. For each question, make sure to include clear problem number, command/code, output, and conclusion/interpretation

c. Please show all your work clearly and completely - How can I show my work when you don't show me how to do this?

Professor Li, Do you think I am psychic and I can read your mind on how to learn how to do this?

If all I needed was a youtube video to learn this, why would I spend thousands of dollars to go to college to learn from a Professor like you?