**Two-way ANOVA**

#1

response=c(7.5,7.0,7.1,7.4,7.2,6.7,7.3,7.0,6.9,7.6,7.2,6.8,7.4,7.1,6.9)

analyst=c(rep('1',3),rep('2',3),rep('3',3),rep('4',3),rep('5',3))

method=rep(c('M1','M2','M3'),5)

df=data.frame(response,analyst,method)

df

two\_way=aov(response~analyst+method,data=df)

summary(two\_way)

TukeyHSD(two\_way, which = "method")

#2

response=c(13,22,18,39,16,24,17,44,5,4,1,32)

solution=c(rep('1',4),rep('2',4),rep('3',4))

days=rep(c('I','II','III','IV'),3)

df=data.frame(response,solution,days)

df

two\_way=aov(response~solution+days,data=df)

summary(two\_way)

TukeyHSD(two\_way, which = "days")

#**Two-way ANOVA with 'm' observations per cell**

#3

weight=c(5.1,5.0,4.8,5.2,5.2,5.4,5.8,5.7,5.9,6.0,6.0,5.9,6.0,6.0,6.0,5.0,5.1,5.3,

5.3,5.3,5.5,6.0,5.9,6.2,6.2,6.5,6.0,6.0,6.1,6.3,5.1,5.1,4.9,5.3,5.2,5.2,

5.8,5.9,5.9,6.0,6.1,6.0,5.9,6.0,5.8,4.9,4.9,5.0,5.2,5.0,5.5,5.8,5.5,5.5,

6.0,5.8,5.5,5.9,6.0,5.5,5.0,5.0,5.0,5.1,5.3,5.9,5.9,5.4,5.5,5.8,5.6,5.5,

5.5,6.0,6.2)

weight

length(weight)

order\_of\_gravida=c(rep('1',3),rep('2',3),rep('3',3),rep('4',3),rep('5&over',3))

order\_of\_gravida

Age\_group=c(rep('15-20',15),rep('20-25',15),rep('25-30',15),rep('30-35',15),

rep('35&over',15))

Age\_group

df=data.frame(order\_of\_gravida,Age\_group,weight)

df

two\_way=aov(weight~order\_of\_gravida\*Age\_group,data=df)

summary(two\_way)

TukeyHSD(two\_way, which = c("order\_of\_gravida","Age\_group"))

#4

marks=c(5,7,10,8,12,13,9,11,14,16,11,14,19,17,12,21,25,19,14,13,15,18,19,21,

24,21,20,3,2,5,8,5,6,9,6,8)

marks

faculty=c(rep('Arts',3),rep('Commerce',3),rep('Science',3))

faculty

Teach\_method=c(rep('I',9),rep('II',9),rep('III',9),rep('IV',9))

Teach\_method

df=data.frame(faculty,Teach\_method,marks)

df

two\_way=aov(marks~faculty\*Teach\_method,data=df)

summary(two\_way)

TukeyHSD(two\_way, which = c("faculty","Teach\_method"))