Worksheet – Balanced 2-Way MANOVA Examples

Example 1) Effect of Plate/Balance on p=3 Attitude Responses Toward Food

n = _____

Factor 1: Balance: g=_____ levels = _____

Factor2: Balance: b=_____ levels = _____

Example 2) Effect of Dryer/Clothing Type on p=2 Dryer Efficiency Responses

n = _____

Factor 1: Clothing: g=_____ levels = _____

Factor2: Dryer: b=_____ levels = _____

Give cell/marginal/overall means for each variable (on back of page)

Complete the following table.

| | Example 1 | Wilks' Λ | X2-Stat | df | X2(.05) | P-value | | Example 2 | Wilks' Λ | X2-Stat | df | X2(.05) | P-value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| \|SSCP_Fact1+SSCP_ERR\| | 2.64312E+14 | | | | | | | 54.2235 | | | | | |
| \|SSCP_Fact2+SSCP_ERR\| | 2.84792E+14 | | | | | | | 1762.4814 | | | | | |
| \|SSCP_Int+SSCP_ERR\| | 2.55114E+14 | | | | | | | 4.7024 | | | | | |
| \|SSCP_ERR\| | 2.30551E+14 | #N/A | #N/A | #N/A | #N/A | #N/A | | 2.7324 | #N/A | #N/A | #N/A | #N/A | #N/A |

$$H_0^{\gamma}: \boldsymbol{\gamma}_{11} = \ldots = \boldsymbol{\gamma}_{gb} = \mathbf{0} \qquad \Lambda^*_{\text{INT}} = \frac{|SSCP_{\text{ERROR}}|}{|SSCP_{\text{INT}} + SSCP_{\text{ERROR}}|} \qquad RR: -\left[ gb(n-1) - \frac{p+1-(g-1)(b-1)}{2} \right] \ln \Lambda^*_{\text{INT}} \geq \chi^2_{p(g-1)(b-1)}(\alpha)$$

$$H_0^{\tau}: \boldsymbol{\tau}_1 = \ldots = \boldsymbol{\tau}_g = \mathbf{0} \qquad \Lambda^*_{\text{FACTOR1}} = \frac{|SSCP_{\text{ERROR}}|}{|SSCP_{\text{FACTOR1}} + SSCP_{\text{ERROR}}|} \qquad RR: -\left[ gb(n-1) - \frac{p+1-(g-1)}{2} \right] \ln \Lambda^*_{\text{FACTOR1}} \geq \chi^2_{p(g-1)}(\alpha)$$

$$H_0^{\beta}: \boldsymbol{\beta}_1 = \ldots = \boldsymbol{\beta}_b = \mathbf{0} \qquad \Lambda^*_{\text{FACTOR2}} = \frac{|SSCP_{\text{ERROR}}|}{|SSCP_{\text{FACTOR2}} + SSCP_{\text{ERROR}}|} \qquad RR: -\left[ gb(n-1) - \frac{p+1-(b-1)}{2} \right] \ln \Lambda^*_{\text{FACTOR2}} \geq \chi^2_{p(b-1)}(\alpha)$$