## The GLM Procedure

| Class Level Information | | |
|---|---|---|
| **Class** | **Levels** | **Values** |
| **replicate** | 4 | 1 2 3 4 |
| **treatment** | 6 | 1 2 3 4 5 6 |
| **number** | 6 | 5 6 7 8 9 10 |

| | |
|---|---|
| **Number of Observations Read** | 144 |
| **Number of Observations Used** | 140 |

## The GLM Procedure

### Dependent Variable: assessment

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 52 | 81448.63538 | 1566.31991 | 1512.99 | <.0001 |
| Error | 87 | 90.06670 | 1.03525 | | |
| Corrected Total | 139 | 81538.70207 | | | |

| R-Square | Coeff Var | Root MSE | assessment Mean |
|---|---|---|---|
| 0.998895 | 3.682680 | 1.017472 | 27.62857 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 22.28572 | 7.42857 | 7.18 | 0.0002 |
| number | 5 | 3155.90305 | 631.18061 | 609.69 | <.0001 |
| treatment | 5 | 78058.05560 | 15611.61112 | 15080.0 | <.0001 |
| treatment*number | 24 | 57.74334 | 2.40597 | 2.32 | 0.0024 |
| replicate*treatment | 15 | 154.64767 | 10.30984 | 9.96 | <.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 24.70753 | 8.23584 | 7.96 | <.0001 |
| number | 5 | 448.92343 | 89.78469 | 86.73 | <.0001 |
| treatment | 5 | 78058.05560 | 15611.61112 | 15080.0 | <.0001 |
| treatment*number | 24 | 57.74334 | 2.40597 | 2.32 | 0.0024 |
| replicate*treatment | 15 | 154.64767 | 10.30984 | 9.96 | <.0001 |

## The GLM Procedure

| Source | Type III Expected Mean Square |
|---|---|
| **replicate** | Var(Error) + 5.8065 Var(replicate*treatment) + 34.839 Var(replicate) |
| **number** | Var(Error) + Q(number,treatment*number) |
| **treatment** | Var(Error) + 5.8 Var(replicate*treatment) + Q(treatment,treatment*number) |
| **treatment*number** | Var(Error) + Q(treatment*number) |
| **replicate*treatment** | Var(Error) + 5.8286 Var(replicate*treatment) |

## The GLM Procedure
## Least Squares Means

**Error:** LINES display is not produced for effect treatment and dependent variable assessment because of non-estimable least-squares means.

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey-Kramer

### Standard Errors and Probabilities Calculated Using the Type III MS for replicate*treatment as an Error Term

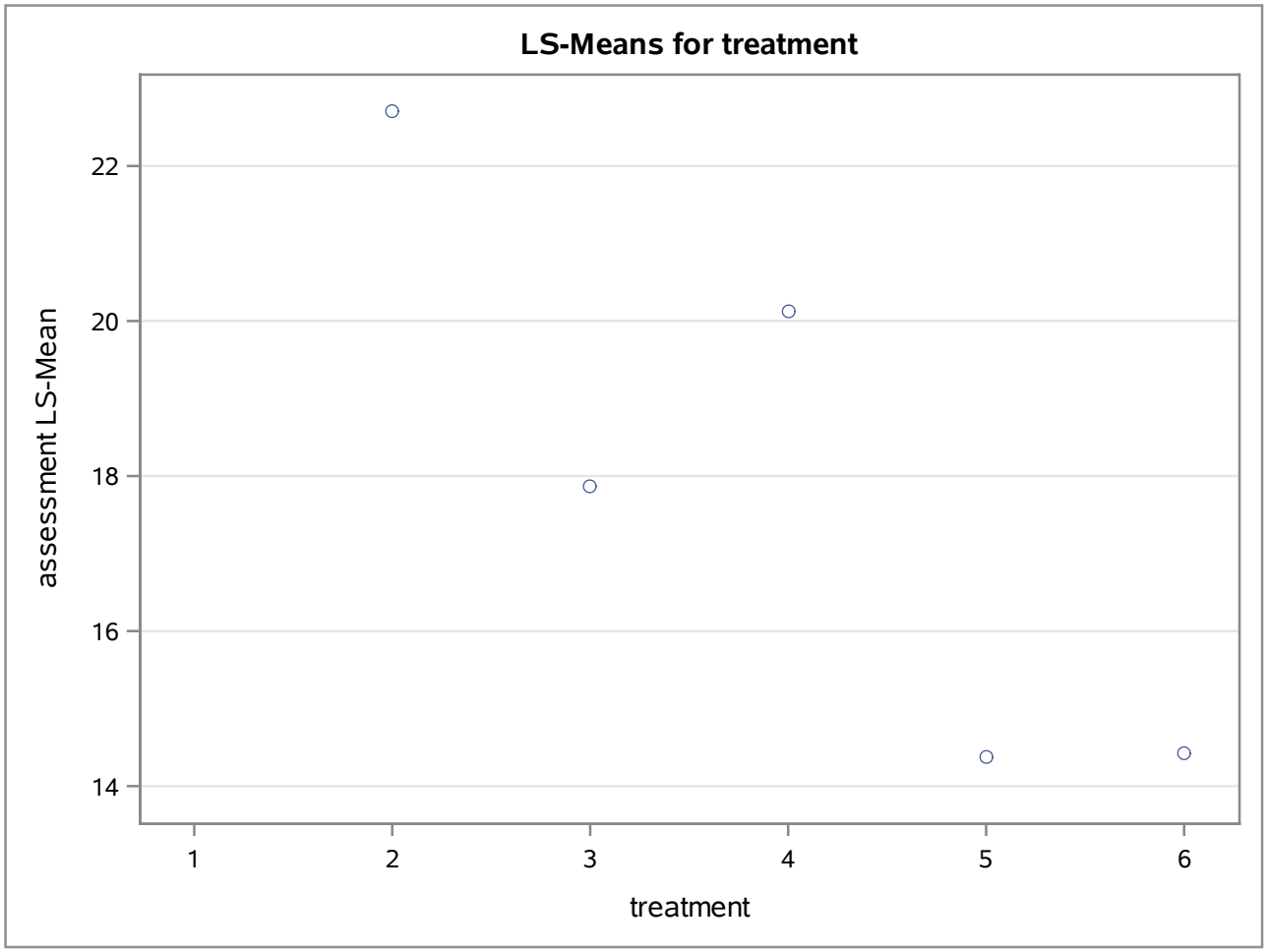
| treatment | assessment LSMEAN | Standard Error | Pr > \|t\| | LSMEAN Number |
|---|---|---|---|---|
| 1 | Non-est | . | . | 1 |
| 2 | 22.7083355 | 0.6554211 | <.0001 | 2 |
| 3 | 17.8750019 | 0.6554211 | <.0001 | 3 |
| 4 | 20.1250020 | 0.6554211 | <.0001 | 4 |
| 5 | 14.3750014 | 0.6554211 | <.0001 | 5 |
| 6 | 14.4166683 | 0.6554211 | <.0001 | 6 |

**Least Squares Means for effect treatment**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

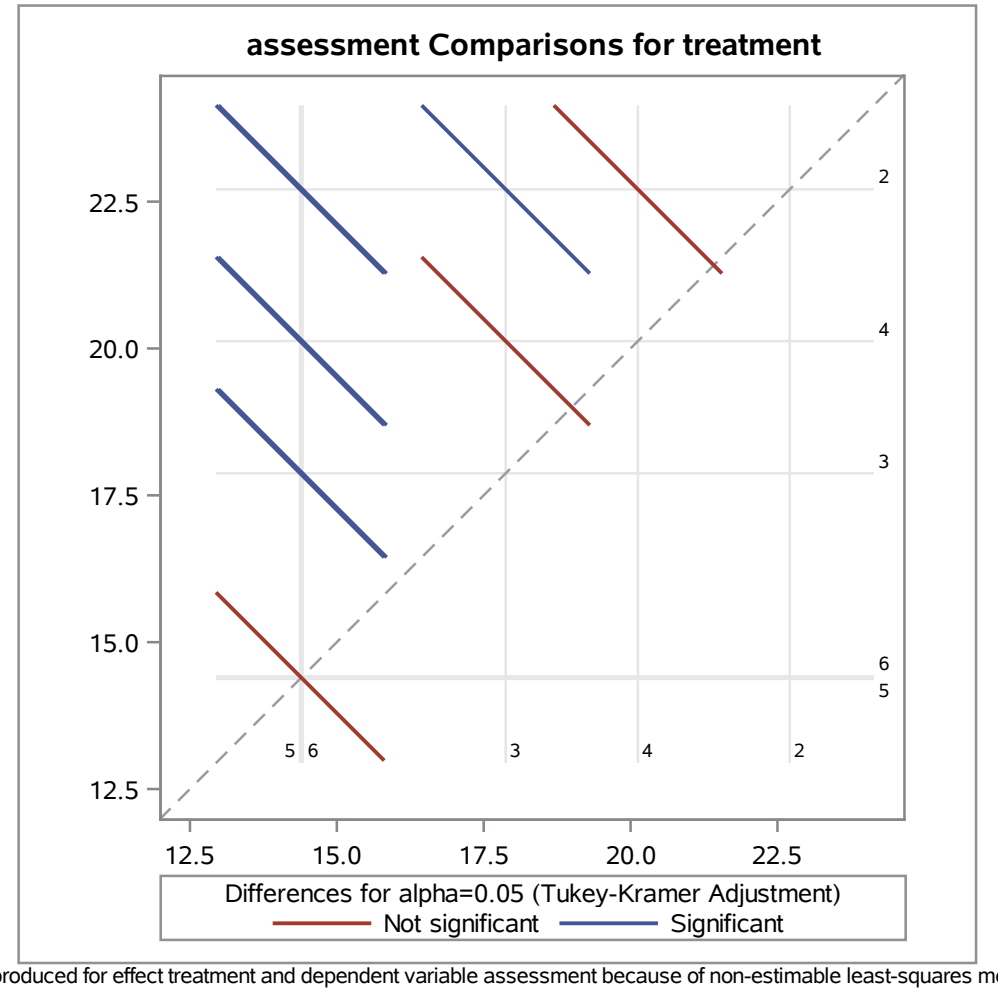
**Dependent Variable: assessment**

| i/j | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 | | . | . | . | . | . |
| 2 | . | | 0.0009 | 0.0867 | <.0001 | <.0001 |
| 3 | . | 0.0009 | | 0.1613 | 0.0134 | 0.0147 |
| 4 | . | 0.0867 | 0.1613 | | 0.0001 | 0.0002 |
| 5 | . | <.0001 | 0.0134 | 0.0001 | | 1.0000 |
| 6 | . | <.0001 | 0.0147 | 0.0002 | 1.0000 | |

**The GLM Procedure**
**Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey-Kramer**



**The GLM Procedure**
**Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey-Kramer**




**Error:** LINES display is not produced for effect treatment and dependent variable assessment because of non-estimable least-squares means.

## The GLM Procedure
## Least Squares Means

**Error:** LINES display is not produced for effect number and dependent variable assessment because of non-estimable least-squares means.

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey-Kramer

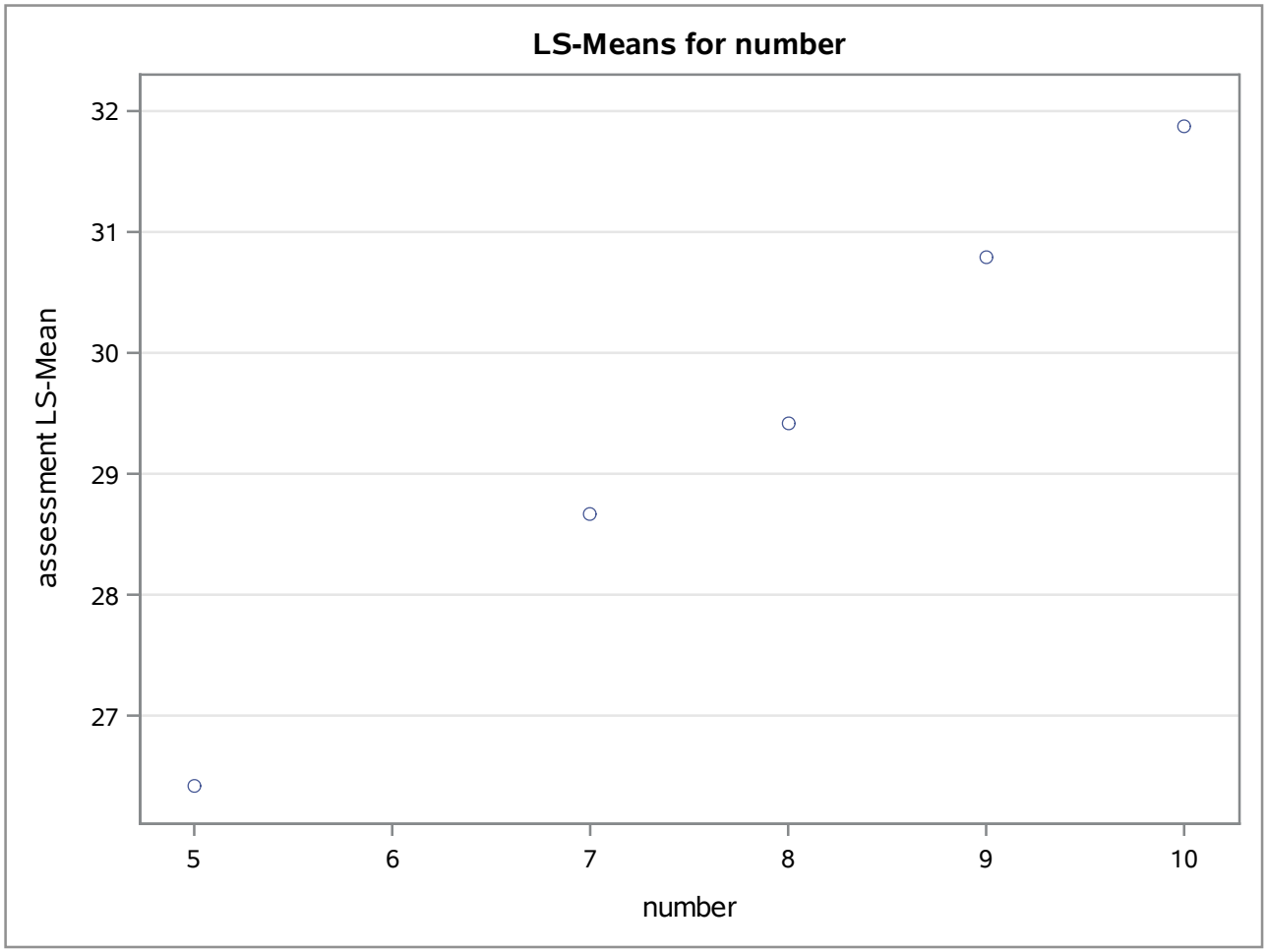
| number | assessment LSMEAN | Standard Error | Pr > \|t\| | LSMEAN Number |
|---|---|---|---|---|
| 5 | 26.4166693 | 0.2076906 | <.0001 | 1 |
| 6 | Non-est | . | . | 2 |
| 7 | 28.6666695 | 0.2076906 | <.0001 | 3 |
| 8 | 29.4166697 | 0.2076906 | <.0001 | 4 |
| 9 | 30.7916698 | 0.2076906 | <.0001 | 5 |
| 10 | 31.8750032 | 0.2076906 | <.0001 | 6 |

**Least Squares Means for effect number**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

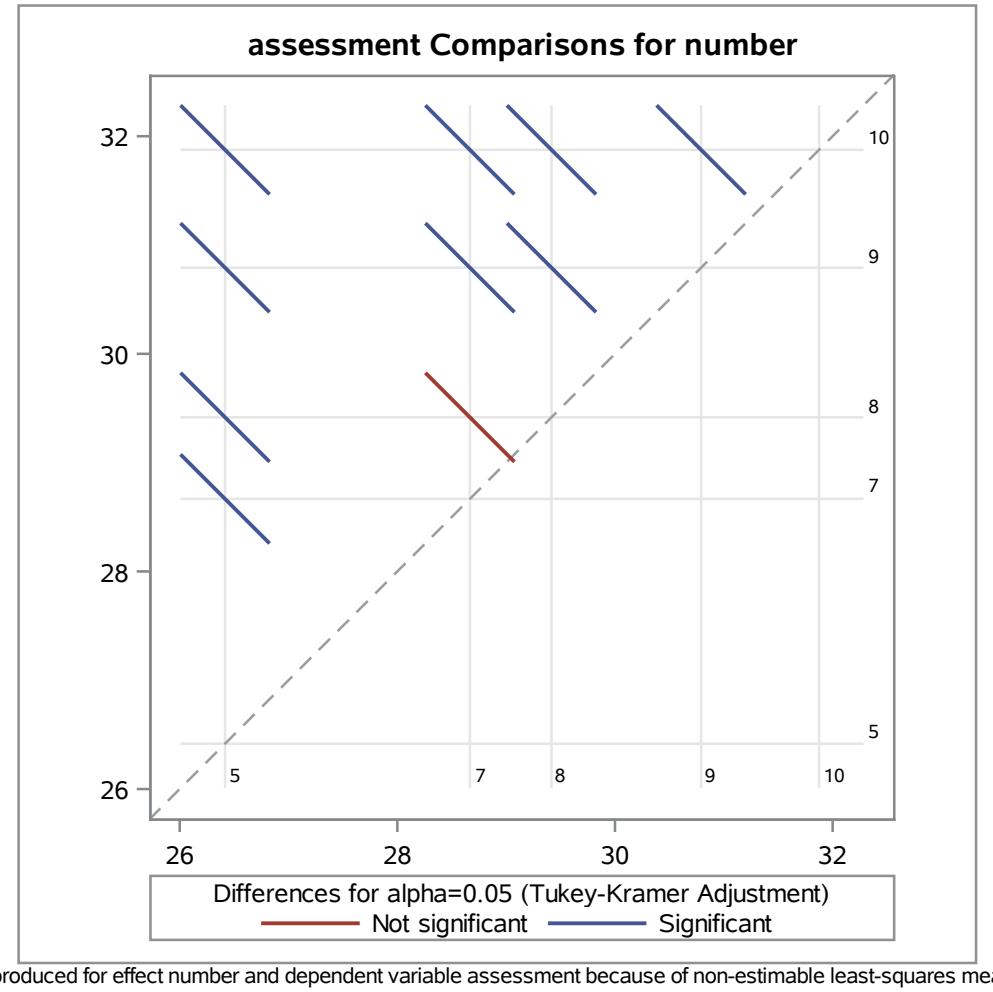
**Dependent Variable: assessment**

| i/j | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 | | . | <.0001 | <.0001 | <.0001 | <.0001 |
| 2 | . | | . | . | . | . |
| 3 | <.0001 | . | | 0.0884 | <.0001 | <.0001 |
| 4 | <.0001 | . | 0.0884 | | 0.0001 | <.0001 |
| 5 | <.0001 | . | <.0001 | 0.0001 | | 0.0035 |
| 6 | <.0001 | . | <.0001 | <.0001 | 0.0035 | |

**The GLM Procedure**
**Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey-Kramer**



**The GLM Procedure**
**Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey-Kramer**




**Error:** LINES display is not produced for effect number and dependent variable assessment because of non-estimable least-squares means.

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

| treatment | number | assessment LSMEAN | Standard Error | Pr > \|t\| | LSMEAN Number |
|---|---|---|---|---|---|
| 1 | 5 | 81.5000080 | 0.5087360 | <.0001 | 1 |
| 1 | 7 | 85.0000085 | 0.5087360 | <.0001 | 2 |
| 1 | 8 | 85.7500087 | 0.5087360 | <.0001 | 3 |
| 1 | 9 | 88.2500090 | 0.5087360 | <.0001 | 4 |
| 1 | 10 | 89.5000090 | 0.5087360 | <.0001 | 5 |
| 2 | 5 | 21.0000020 | 0.5087360 | <.0001 | 6 |
| 2 | 6 | 22.0000020 | 0.5087360 | <.0001 | 7 |
| 2 | 7 | 22.2500020 | 0.5087360 | <.0001 | 8 |
| 2 | 8 | 22.7500022 | 0.5087360 | <.0001 | 9 |
| 2 | 9 | 23.5000022 | 0.5087360 | <.0001 | 10 |
| 2 | 10 | 24.7500025 | 0.5087360 | <.0001 | 11 |
| 3 | 5 | 15.2500017 | 0.5087360 | <.0001 | 12 |
| 3 | 6 | 16.7500017 | 0.5087360 | <.0001 | 13 |
| 3 | 7 | 17.2500017 | 0.5087360 | <.0001 | 14 |
| 3 | 8 | 18.0000020 | 0.5087360 | <.0001 | 15 |
| 3 | 9 | 19.2500020 | 0.5087360 | <.0001 | 16 |
| 3 | 10 | 20.7500020 | 0.5087360 | <.0001 | 17 |
| 4 | 5 | 16.7500020 | 0.5087360 | <.0001 | 18 |
| 4 | 6 | 18.2500020 | 0.5087360 | <.0001 | 19 |
| 4 | 7 | 19.2500020 | 0.5087360 | <.0001 | 20 |
| 4 | 8 | 21.0000020 | 0.5087360 | <.0001 | 21 |
| 4 | 9 | 22.7500022 | 0.5087360 | <.0001 | 22 |
| 4 | 10 | 22.7500020 | 0.5087360 | <.0001 | 23 |
| 5 | 5 | 11.7500010 | 0.5087360 | <.0001 | 24 |
| 5 | 6 | 13.0000010 | 0.5087360 | <.0001 | 25 |
| 5 | 7 | 13.7500010 | 0.5087360 | <.0001 | 26 |
| 5 | 8 | 14.0000015 | 0.5087360 | <.0001 | 27 |
| 5 | 9 | 16.0000017 | 0.5087360 | <.0001 | 28 |
| 5 | 10 | 17.7500020 | 0.5087360 | <.0001 | 29 |
| 6 | 5 | 12.2500012 | 0.5087360 | <.0001 | 30 |
| 6 | 6 | 14.0000015 | 0.5087360 | <.0001 | 31 |
| 6 | 7 | 14.5000018 | 0.5087360 | <.0001 | 32 |
| 6 | 8 | 15.0000017 | 0.5087360 | <.0001 | 33 |
| 6 | 9 | 15.0000018 | 0.5087360 | <.0001 | 34 |
| 6 | 10 | 15.7500017 | 0.5087360 | <.0001 | 35 |

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

**Least Squares Means for effect treatment*number**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

**Dependent Variable: assessment**

| i/j | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | | 0.0023 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **2** | 0.0023 | | 1.0000 | 0.0082 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **3** | <.0001 | 1.0000 | | 0.1832 | 0.0006 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **4** | <.0001 | 0.0082 | 0.1832 | | 0.9983 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **5** | <.0001 | <.0001 | 0.0006 | 0.9983 | | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **6** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | | 1.0000 | 0.9983 | 0.8639 | 0.1832 | 0.0006 | <.0001 | <.0001 |
| **7** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 1.0000 | | 1.0000 | 1.0000 | 0.9742 | 0.0744 | <.0001 | <.0001 |
| **8** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.9983 | 1.0000 | | 1.0000 | 0.9983 | 0.1832 | <.0001 | <.0001 |
| **9** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.8639 | 1.0000 | 1.0000 | | 1.0000 | 0.6381 | <.0001 | <.0001 |
| **10** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.1832 | 0.9742 | 0.9983 | 1.0000 | | 0.9983 | <.0001 | <.0001 |
| **11** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0006 | 0.0744 | 0.1832 | 0.6381 | 0.9983 | | <.0001 | <.0001 |
| **12** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | | 0.9742 |
| **13** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.9742 | |
| **14** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0006 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.6381 | 1.0000 |
| **15** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0262 | 0.0002 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0744 | 0.9983 |
| **16** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.8639 | 0.0744 | 0.0262 | 0.0023 | <.0001 | <.0001 | 0.0002 | 0.1832 |
| **17** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 1.0000 | 0.9983 | 0.9742 | 0.6381 | 0.0744 | 0.0002 | <.0001 | 0.0002 |
| **18** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.9742 | 1.0000 |
| **19** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0744 | 0.0006 | 0.0002 | <.0001 | <.0001 | <.0001 | 0.0262 | 0.9742 |
| **20** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.8639 | 0.0744 | 0.0262 | 0.0023 | <.0001 | <.0001 | 0.0002 | 0.1832 |
| **21** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 1.0000 | 1.0000 | 0.9983 | 0.8639 | 0.1832 | 0.0006 | <.0001 | <.0001 |
| **22** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.8639 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.6381 | <.0001 | <.0001 |
| **23** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.8639 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.6381 | <.0001 | <.0001 |
| **24** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0023 | <.0001 |
| **25** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.3789 | 0.0006 |
| **26** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.9742 | 0.0262 |
| **27** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.9983 | 0.0744 |
| **28** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 1.0000 | 1.0000 |
| **29** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0082 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.1832 | 1.0000 |
| **30** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0262 | <.0001 |
| **31** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.9983 | 0.0744 |
| **32** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 1.0000 | 0.3789 |
| **33** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 1.0000 | 0.8639 |

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

**Least Squares Means for effect treatment*number**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

**Dependent Variable: assessment**

| i/j | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **2** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **3** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **4** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **5** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **6** | 0.0006 | 0.0262 | 0.8639 | 1.0000 | <.0001 | 0.0744 | 0.8639 | 1.0000 | 0.8639 | 0.8639 | <.0001 | <.0001 | <.0001 |
| **7** | <.0001 | 0.0002 | 0.0744 | 0.9983 | <.0001 | 0.0006 | 0.0744 | 1.0000 | 1.0000 | 1.0000 | <.0001 | <.0001 | <.0001 |
| **8** | <.0001 | <.0001 | 0.0262 | 0.9742 | <.0001 | 0.0002 | 0.0262 | 0.9983 | 1.0000 | 1.0000 | <.0001 | <.0001 | <.0001 |
| **9** | <.0001 | <.0001 | 0.0023 | 0.6381 | <.0001 | <.0001 | 0.0023 | 0.8639 | 1.0000 | 1.0000 | <.0001 | <.0001 | <.0001 |
| **10** | <.0001 | <.0001 | <.0001 | 0.0744 | <.0001 | <.0001 | <.0001 | 0.1832 | 1.0000 | 1.0000 | <.0001 | <.0001 | <.0001 |
| **11** | <.0001 | <.0001 | <.0001 | 0.0002 | <.0001 | <.0001 | <.0001 | 0.0006 | 0.6381 | 0.6381 | <.0001 | <.0001 | <.0001 |
| **12** | 0.6381 | 0.0744 | 0.0002 | <.0001 | 0.9742 | 0.0262 | 0.0002 | <.0001 | <.0001 | <.0001 | 0.0023 | 0.3789 | 0.9742 |
| **13** | 1.0000 | 0.9983 | 0.1832 | 0.0002 | 1.0000 | 0.9742 | 0.1832 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0006 | 0.0262 |
| **14** |  | 1.0000 | 0.6381 | 0.0023 | 1.0000 | 1.0000 | 0.6381 | 0.0006 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0023 |
| **15** | 1.0000 |  | 0.9983 | 0.0744 | 0.9983 | 1.0000 | 0.9983 | 0.0262 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **16** | 0.6381 | 0.9983 |  | 0.9742 | 0.1832 | 1.0000 | 1.0000 | 0.8639 | 0.0023 | 0.0023 | <.0001 | <.0001 | <.0001 |
| **17** | 0.0023 | 0.0744 | 0.9742 |  | 0.0002 | 0.1832 | 0.9742 | 1.0000 | 0.6381 | 0.6381 | <.0001 | <.0001 | <.0001 |
| **18** | 1.0000 | 0.9983 | 0.1832 | 0.0002 |  | 0.9742 | 0.1832 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0006 | 0.0262 |
| **19** | 1.0000 | 1.0000 | 1.0000 | 0.1832 | 0.9742 |  | 1.0000 | 0.0744 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **20** | 0.6381 | 0.9983 | 1.0000 | 0.9742 | 0.1832 | 1.0000 |  | 0.8639 | 0.0023 | 0.0023 | <.0001 | <.0001 | <.0001 |
| **21** | 0.0006 | 0.0262 | 0.8639 | 1.0000 | <.0001 | 0.0744 | 0.8639 |  | 0.8639 | 0.8639 | <.0001 | <.0001 | <.0001 |
| **22** | <.0001 | <.0001 | 0.0023 | 0.6381 | <.0001 | <.0001 | 0.0023 | 0.8639 |  | 1.0000 | <.0001 | <.0001 | <.0001 |
| **23** | <.0001 | <.0001 | 0.0023 | 0.6381 | <.0001 | <.0001 | 0.0023 | 0.8639 | 1.0000 |  | <.0001 | <.0001 | <.0001 |
| **24** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |  | 0.9983 | 0.6381 |
| **25** | <.0001 | <.0001 | <.0001 | <.0001 | 0.0006 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.9983 |  | 1.0000 |
| **26** | 0.0023 | <.0001 | <.0001 | <.0001 | 0.0262 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.6381 | 1.0000 |  |
| **27** | 0.0082 | 0.0002 | <.0001 | <.0001 | 0.0744 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.3789 | 1.0000 | 1.0000 |
| **28** | 0.9983 | 0.6381 | 0.0082 | <.0001 | 1.0000 | 0.3789 | 0.0082 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0262 | 0.3789 |
| **29** | 1.0000 | 1.0000 | 0.9742 | 0.0262 | 1.0000 | 1.0000 | 0.9742 | 0.0082 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0002 |
| **30** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 1.0000 | 1.0000 | 0.9742 |
| **31** | 0.0082 | 0.0002 | <.0001 | <.0001 | 0.0744 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.3789 | 1.0000 | 1.0000 |
| **32** | 0.0744 | 0.0023 | <.0001 | <.0001 | 0.3789 | 0.0006 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0744 | 0.9742 | 1.0000 |
| **33** | 0.3789 | 0.0262 | <.0001 | <.0001 | 0.8639 | 0.0082 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0082 | 0.6381 | 0.9983 |

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

**Least Squares Means for effect treatment*number**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

**Dependent Variable: assessment**

| i/j | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 |
|---|---|---|---|---|---|---|---|---|---|
| **1** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **2** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **3** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **4** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **5** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **6** | <.0001 | <.0001 | 0.0082 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **7** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **8** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **9** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **10** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **11** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **12** | 0.9983 | 1.0000 | 0.1832 | 0.0262 | 0.9983 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| **13** | 0.0744 | 1.0000 | 1.0000 | <.0001 | 0.0744 | 0.3789 | 0.8639 | 0.8639 | 1.0000 |
| **14** | 0.0082 | 0.9983 | 1.0000 | <.0001 | 0.0082 | 0.0744 | 0.3789 | 0.3789 | 0.9742 |
| **15** | 0.0002 | 0.6381 | 1.0000 | <.0001 | 0.0002 | 0.0023 | 0.0262 | 0.0262 | 0.3789 |
| **16** | <.0001 | 0.0082 | 0.9742 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0023 |
| **17** | <.0001 | <.0001 | 0.0262 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **18** | 0.0744 | 1.0000 | 1.0000 | <.0001 | 0.0744 | 0.3789 | 0.8639 | 0.8639 | 1.0000 |
| **19** | <.0001 | 0.3789 | 1.0000 | <.0001 | <.0001 | 0.0006 | 0.0082 | 0.0082 | 0.1832 |
| **20** | <.0001 | 0.0082 | 0.9742 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0023 |
| **21** | <.0001 | <.0001 | 0.0082 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **22** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **23** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| **24** | 0.3789 | <.0001 | <.0001 | 1.0000 | 0.3789 | 0.0744 | 0.0082 | 0.0082 | 0.0002 |
| **25** | 1.0000 | 0.0262 | <.0001 | 1.0000 | 1.0000 | 0.9742 | 0.6381 | 0.6381 | 0.0744 |
| **26** | 1.0000 | 0.3789 | 0.0002 | 0.9742 | 1.0000 | 1.0000 | 0.9983 | 0.9983 | 0.6381 |
| **27** | | 0.6381 | 0.0006 | 0.8639 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.8639 |
| **28** | 0.6381 | | 0.8639 | 0.0006 | 0.6381 | 0.9742 | 1.0000 | 1.0000 | 1.0000 |
| **29** | 0.0006 | 0.8639 | | <.0001 | 0.0006 | 0.0082 | 0.0744 | 0.0744 | 0.6381 |
| **30** | 0.8639 | 0.0006 | <.0001 | | 0.8639 | 0.3789 | 0.0744 | 0.0744 | 0.0023 |
| **31** | 1.0000 | 0.6381 | 0.0006 | 0.8639 | | 1.0000 | 1.0000 | 1.0000 | 0.8639 |
| **32** | 1.0000 | 0.9742 | 0.0082 | 0.3789 | 1.0000 | | 1.0000 | 1.0000 | 0.9983 |
| **33** | 1.0000 | 1.0000 | 0.0744 | 0.0744 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 |

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

**Least Squares Means for effect treatment*number**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

**Dependent Variable: assessment**

| i/j | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **34** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 1.0000 | 0.8639 |
| **35** | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 1.0000 | 1.0000 |

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

**Least Squares Means for effect treatment*number**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

**Dependent Variable: assessment**

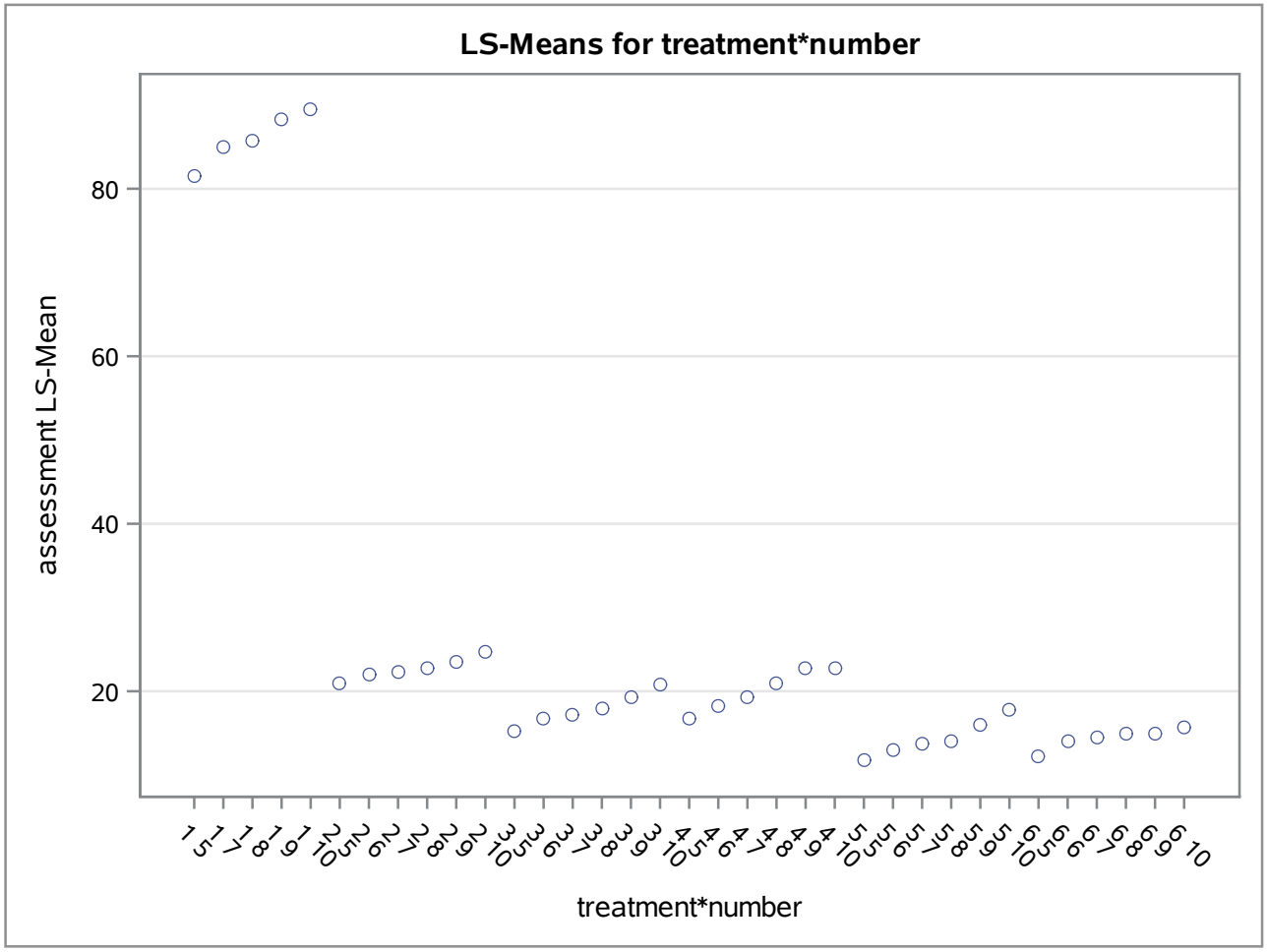
| i/j | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **34** | 0.3789 | 0.0262 | <.0001 | <.0001 | 0.8639 | 0.0082 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0082 | 0.6381 | 0.9983 |
| **35** | 0.9742 | 0.3789 | 0.0023 | <.0001 | 1.0000 | 0.1832 | 0.0023 | <.0001 | <.0001 | <.0001 | 0.0002 | 0.0744 | 0.6381 |

**The GLM Procedure**
**Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey**

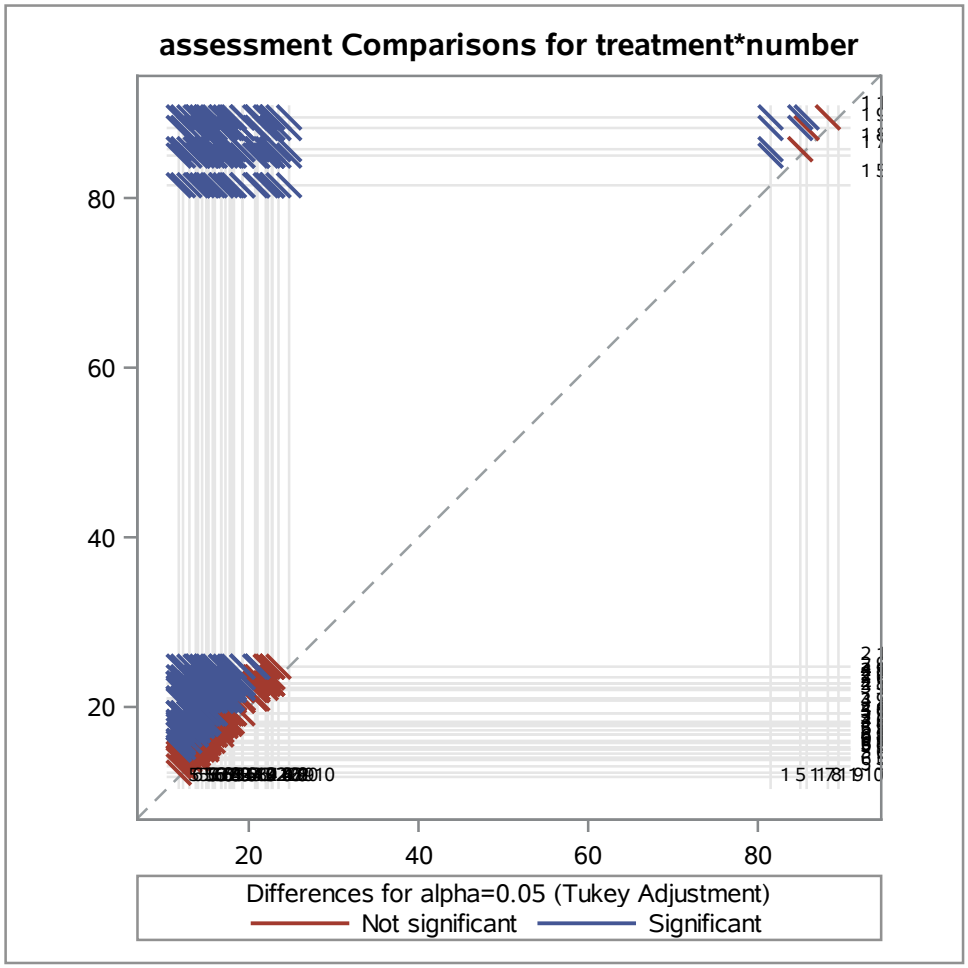
**Least Squares Means for effect treatment*number**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

**Dependent Variable: assessment**

| i/j | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 |
|---|---|---|---|---|---|---|---|---|---|
| **34** | 1.0000 | 1.0000 | 0.0744 | 0.0744 | 1.0000 | 1.0000 | 1.0000 | | 1.0000 |
| **35** | 0.8639 | 1.0000 | 0.6381 | 0.0023 | 0.8639 | 0.9983 | 1.0000 | 1.0000 | |



**The GLM Procedure**
**Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey**




| Tukey Comparison Lines for Least Squares Means of treatment*number | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | | | | | | | |
| | | | | | | | assessment LSMEAN | treatment | number | LSMEAN Number |
| | | | A | | | | 89.50001 | **1** | **10** | 5 |
| | | | A | | | | | | | |
| | B | | A | | | | 88.25001 | **1** | **9** | 4 |
| | B | | | | | | | | | |
| | B | | C | | | | 85.75001 | **1** | **8** | 3 |
| | | | C | | | | | | | |
| | | | C | | | | 85.00001 | **1** | **7** | 2 |
| | | | | | | | | | | |
| | | | D | | | | 81.50001 | **1** | **5** | 1 |
| | | | | | | | | | | |
| | | | E | | | | 24.75000 | **2** | **10** | 11 |
| | | | E | | | | | | | |

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

| Tukey Comparison Lines for Least Squares Means of treatment*number | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | | | | | | | |
| | | | | | | | assessment LSMEAN | treatment | number | LSMEAN Number |
| | F | | E | | | | 23.50000 | **2** | **9** | 10 |
| | F | | E | | | | | | | |
| | F | | E | | | | 22.75000 | **4** | **9** | 22 |
| | F | | E | | | | | | | |
| | F | | E | | | | 22.75000 | **2** | **8** | 9 |
| | F | | E | | | | | | | |
| | F | | E | | | | 22.75000 | **4** | **10** | 23 |
| | F | | E | | | | | | | |
| | F | | E | | | | 22.25000 | **2** | **7** | 8 |
| | F | | E | | | | | | | |
| | F | | E | | G | | 22.00000 | **2** | **6** | 7 |
| | F | | | | G | | | | | |
| | F | | H | | G | | 21.00000 | **4** | **8** | 21 |
| | F | | H | | G | | | | | |
| | F | | H | | G | | 21.00000 | **2** | **5** | 6 |
| | F | | H | | G | | | | | |
| | F | I | H | | G | | 20.75000 | **3** | **10** | 17 |
| | | I | H | | G | | | | | |
| | J | I | H | | G | | 19.25000 | **4** | **7** | 20 |
| | J | I | H | | G | | | | | |
| | J | I | H | | G | | 19.25000 | **3** | **9** | 16 |
| | J | I | H | | | | | | | |
| | J | I | H | | K | | 18.25000 | **4** | **6** | 19 |
| | J | I | | | K | | | | | |
| | J | I | L | | K | | 18.00000 | **3** | **8** | 15 |
| | J | | L | | K | | | | | |
| | J | M | L | | K | | 17.75000 | **5** | **10** | 29 |
| | J | M | L | | K | | | | | |
| N | J | M | L | | K | | 17.25000 | **3** | **7** | 14 |
| N | J | M | L | | K | | | | | |
| N | J | M | L | | K | O | 16.75000 | **4** | **5** | 18 |
| N | J | M | L | | K | O | | | | |
| N | J | M | L | | K | O | 16.75000 | **3** | **6** | 13 |

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

| Tukey Comparison Lines for Least Squares Means of treatment*number | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | | | | | | | |
| | | | | | | | assessment LSMEAN | treatment | number | LSMEAN Number |
| N | | M | L | | K | O | | | | |
| N | P | M | L | | K | O | 16.00000 | **5** | **9** | 28 |
| N | P | M | L | | K | O | | | | |
| N | P | M | L | Q | K | O | 15.75000 | **6** | **10** | 35 |
| N | P | M | L | Q | | O | | | | |
| N | P | M | L | Q | | O | 15.25000 | **3** | **5** | 12 |
| N | P | M | | Q | | O | | | | |
| N | P | M | R | Q | | O | 15.00000 | **6** | **9** | 34 |
| N | P | M | R | Q | | O | | | | |
| N | P | M | R | Q | | O | 15.00000 | **6** | **8** | 33 |
| N | P | | R | Q | | O | | | | |
| N | P | | R | Q | S | O | 14.50000 | **6** | **7** | 32 |
| | P | | R | Q | S | O | | | | |
| | P | | R | Q | S | O | 14.00000 | **5** | **8** | 27 |
| | P | | R | Q | S | O | | | | |
| | P | | R | Q | S | O | 14.00000 | **6** | **6** | 31 |
| | P | | R | Q | S | | | | | |
| | P | | R | Q | S | | 13.75000 | **5** | **7** | 26 |
| | | | R | Q | S | | | | | |
| | | | R | Q | S | | 13.00000 | **5** | **6** | 25 |
| | | | R | | S | | | | | |
| | | | R | | S | | 12.25000 | **6** | **5** | 30 |
| | | | | | S | | | | | |
| | | | | | S | | 11.75000 | **5** | **5** | 24 |

## The GLM Procedure

## Dependent Variable: assessment

| Tests of Hypotheses Using the Type III MS for replicate*treatment as an Error Term | | | | | |
|---|---|---|---|---|---|
| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
| treatment | 5 | 78058.05560 | 15611.61112 | 1514.24 | <.0001 |
| replicate | 3 | 24.70753 | 8.23584 | 0.80 | 0.5136 |

| Obs | _NAME_ | treatment | LSMEAN | STDERR | NUMBER | COV1 | COV2 | COV3 | COV4 | COV5 | COV6 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | assessment | 1 | . | . | 1 | . | . | . | . | . | . |
| 2 | assessment | 2 | 22.7083 | 0.65542 | 2 | . | 0.42958 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 3 | assessment | 3 | 17.8750 | 0.65542 | 3 | . | 0.00000 | 0.42958 | 0.00000 | 0.00000 | 0.00000 |
| 4 | assessment | 4 | 20.1250 | 0.65542 | 4 | . | 0.00000 | 0.00000 | 0.42958 | 0.00000 | 0.00000 |
| 5 | assessment | 5 | 14.3750 | 0.65542 | 5 | . | 0.00000 | 0.00000 | 0.00000 | 0.42958 | 0.00000 |
| 6 | assessment | 6 | 14.4167 | 0.65542 | 6 | . | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.42958 |

| Obs | _NAME_ | number | LSMEAN | STDERR | NUMBER2 | COV1 | COV2 | COV3 | COV4 | COV5 | COV6 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | assessment | 5 | 26.4167 | 0.20769 | 1 | 0.043135 | . | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 2 | assessment | 6 | . | . | 2 | . | . | . | . | . | . |
| 3 | assessment | 7 | 28.6667 | 0.20769 | 3 | 0.000000 | . | 0.043135 | 0.000000 | 0.000000 | 0.000000 |
| 4 | assessment | 8 | 29.4167 | 0.20769 | 4 | 0.000000 | . | 0.000000 | 0.043135 | 0.000000 | 0.000000 |
| 5 | assessment | 9 | 30.7917 | 0.20769 | 5 | 0.000000 | . | 0.000000 | 0.000000 | 0.043135 | 0.000000 |
| 6 | assessment | 10 | 31.8750 | 0.20769 | 6 | 0.000000 | . | 0.000000 | 0.000000 | 0.000000 | 0.043135 |

| Obs | _NAME_ | treatment | number | LSMEAN | STDERR | NUMBER2 | COV1 | COV2 | COV3 | COV4 | COV5 | COV6 | COV7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | assessment | 1 | 5 | 81.5000 | 0.50874 | 1 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 2 | assessment | 1 | 7 | 85.0000 | 0.50874 | 2 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 3 | assessment | 1 | 8 | 85.7500 | 0.50874 | 3 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 4 | assessment | 1 | 9 | 88.2500 | 0.50874 | 4 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 |
| 5 | assessment | 1 | 10 | 89.5000 | 0.50874 | 5 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 |
| 6 | assessment | 2 | 5 | 21.0000 | 0.50874 | 6 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 |
| 7 | assessment | 2 | 6 | 22.0000 | 0.50874 | 7 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 |
| 8 | assessment | 2 | 7 | 22.2500 | 0.50874 | 8 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 9 | assessment | 2 | 8 | 22.7500 | 0.50874 | 9 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 10 | assessment | 2 | 9 | 23.5000 | 0.50874 | 10 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 11 | assessment | 2 | 10 | 24.7500 | 0.50874 | 11 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Obs | COV8 | COV9 | COV10 | COV11 | COV12 | COV13 | COV14 | COV15 | COV16 | COV17 | COV18 | COV19 | COV20 | COV21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 2 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 3 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 4 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 5 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 6 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 7 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 8 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 9 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 10 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 11 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Obs | COV22 | COV23 | COV24 | COV25 | COV26 | COV27 | COV28 | COV29 | COV30 | COV31 | COV32 | COV33 | COV34 | COV35 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 2 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 3 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 4 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 5 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 6 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 7 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 8 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 9 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 10 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 11 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Obs | _NAME_ | treatment | number | LSMEAN | STDERR | NUMBER2 | COV1 | COV2 | COV3 | COV4 | COV5 | COV6 | COV7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | assessment | 3 | 5 | 15.2500 | 0.50874 | 12 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 13 | assessment | 3 | 6 | 16.7500 | 0.50874 | 13 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 14 | assessment | 3 | 7 | 17.2500 | 0.50874 | 14 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 15 | assessment | 3 | 8 | 18.0000 | 0.50874 | 15 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 16 | assessment | 3 | 9 | 19.2500 | 0.50874 | 16 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 17 | assessment | 3 | 10 | 20.7500 | 0.50874 | 17 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 18 | assessment | 4 | 5 | 16.7500 | 0.50874 | 18 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 19 | assessment | 4 | 6 | 18.2500 | 0.50874 | 19 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 20 | assessment | 4 | 7 | 19.2500 | 0.50874 | 20 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 21 | assessment | 4 | 8 | 21.0000 | 0.50874 | 21 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 22 | assessment | 4 | 9 | 22.7500 | 0.50874 | 22 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Obs | COV8 | COV9 | COV10 | COV11 | COV12 | COV13 | COV14 | COV15 | COV16 | COV17 | COV18 | COV19 | COV20 | COV21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 13 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 14 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 15 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 16 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 17 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 18 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 |
| 19 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 |
| 20 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 |
| 21 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 |
| 22 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Obs | COV22 | COV23 | COV24 | COV25 | COV26 | COV27 | COV28 | COV29 | COV30 | COV31 | COV32 | COV33 | COV34 | COV35 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 13 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 14 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 15 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 16 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 17 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 18 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 19 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 20 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 21 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 22 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Obs | _NAME_ | treatment | number | LSMEAN | STDERR | NUMBER2 | COV1 | COV2 | COV3 | COV4 | COV5 | COV6 | COV7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | assessment | 4 | 10 | 22.7500 | 0.50874 | 23 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 24 | assessment | 5 | 5 | 11.7500 | 0.50874 | 24 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 25 | assessment | 5 | 6 | 13.0000 | 0.50874 | 25 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 26 | assessment | 5 | 7 | 13.7500 | 0.50874 | 26 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 27 | assessment | 5 | 8 | 14.0000 | 0.50874 | 27 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 28 | assessment | 5 | 9 | 16.0000 | 0.50874 | 28 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 29 | assessment | 5 | 10 | 17.7500 | 0.50874 | 29 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 30 | assessment | 6 | 5 | 12.2500 | 0.50874 | 30 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 31 | assessment | 6 | 6 | 14.0000 | 0.50874 | 31 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 32 | assessment | 6 | 7 | 14.5000 | 0.50874 | 32 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 33 | assessment | 6 | 8 | 15.0000 | 0.50874 | 33 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Obs | COV8 | COV9 | COV10 | COV11 | COV12 | COV13 | COV14 | COV15 | COV16 | COV17 | COV18 | COV19 | COV20 | COV21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 24 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 25 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 26 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 27 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 28 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 29 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 30 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 31 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 32 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 33 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Obs | COV22 | COV23 | COV24 | COV25 | COV26 | COV27 | COV28 | COV29 | COV30 | COV31 | COV32 | COV33 | COV34 | COV35 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 24 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 25 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 26 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 27 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 28 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 29 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 30 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 31 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 32 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 | 0.00000 |
| 33 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 | 0.00000 |

| Obs | _NAME_ | treatment | number | LSMEAN | STDERR | NUMBER2 | COV1 | COV2 | COV3 | COV4 | COV5 | COV6 | COV7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 34 | assessment | 6 | 9 | 15.0000 | 0.50874 | 34 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 35 | assessment | 6 | 10 | 15.7500 | 0.50874 | 35 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Obs | COV8 | COV9 | COV10 | COV11 | COV12 | COV13 | COV14 | COV15 | COV16 | COV17 | COV18 | COV19 | COV20 | COV21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 34 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 35 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Obs | COV22 | COV23 | COV24 | COV25 | COV26 | COV27 | COV28 | COV29 | COV30 | COV31 | COV32 | COV33 | COV34 | COV35 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 34 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 | 0.00000 |
| 35 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25881 |

## The Mixed Procedure

| Model Information | |
|---|---|
| **Data Set** | WORK.STACKED |
| **Dependent Variable** | assessment |
| **Covariance Structure** | Variance Components |
| **Estimation Method** | REML |
| **Residual Variance Method** | Profile |
| **Fixed Effects SE Method** | Model-Based |
| **Degrees of Freedom Method** | Containment |

| Class Level Information | | |
|---|---|---|
| **Class** | **Levels** | **Values** |
| **replicate** | 4 | 1 2 3 4 |
| **treatment** | 6 | 1 2 3 4 5 6 |
| **number** | 6 | 5 6 7 8 9 10 |

| Dimensions | |
|---|---|
| **Covariance Parameters** | 3 |
| **Columns in X** | 48 |
| **Columns in Z** | 28 |
| **Subjects** | 1 |
| **Max Obs per Subject** | 140 |

| Number of Observations | |
|---|---|
| **Number of Observations Read** | 144 |
| **Number of Observations Used** | 140 |
| **Number of Observations Not Used** | 4 |

| Iteration History | | | |
|---|---|---|---|
| **Iteration** | **Evaluations** | **-2 Res Log Like** | **Criterion** |
| **0** | 1 | 444.49269962 | |
| **1** | 2 | 390.85776706 | 0.00000000 |

Convergence criteria met.

## The Mixed Procedure

| Covariance Parameter Estimates | |
|---|---|
| **Cov Parm** | **Estimate** |
| **replicate** | 0 |
| **replicate*treatment** | 1.5273 |
| **Residual** | 1.0356 |

| Fit Statistics | |
|---|---|
| **-2 Res Log Likelihood** | 390.9 |
| **AIC (Smaller is Better)** | 394.9 |
| **AICC (Smaller is Better)** | 395.0 |
| **BIC (Smaller is Better)** | 393.6 |

| Solution for Random Effects | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Effect** | **replicate** | **treatment** | **Estimate** | **Std Err Pred** | **DF** | **t Value** | **Pr > \|t\|** |
| **replicate** | 1 | | 0 | . | . | . | . |
| **replicate** | 2 | | 0 | . | . | . | . |
| **replicate** | 3 | | 0 | . | . | . | . |
| **replicate** | 4 | | 0 | . | . | . | . |
| **replicate*treatment** | 1 | 1 | -0.8806 | 0.7201 | 87 | -1.22 | 0.2247 |
| **replicate*treatment** | 1 | 2 | 1.0108 | 0.7058 | 87 | 1.43 | 0.1557 |
| **replicate*treatment** | 1 | 3 | 1.4600 | 0.7058 | 87 | 2.07 | 0.0415 |
| **replicate*treatment** | 1 | 4 | -0.7113 | 0.7058 | 87 | -1.01 | 0.3163 |
| **replicate*treatment** | 1 | 5 | 0.1123 | 0.7058 | 87 | 0.16 | 0.8739 |
| **replicate*treatment** | 1 | 6 | -2.1713 | 0.7058 | 87 | -3.08 | 0.0028 |
| **replicate*treatment** | 2 | 1 | 0.5283 | 0.7201 | 87 | 0.73 | 0.4651 |
| **replicate*treatment** | 2 | 2 | 0.4118 | 0.7058 | 87 | 0.58 | 0.5611 |
| **replicate*treatment** | 2 | 3 | 0.7113 | 0.7058 | 87 | 1.01 | 0.3163 |
| **replicate*treatment** | 2 | 4 | 0.03744 | 0.7058 | 87 | 0.05 | 0.9578 |
| **replicate*treatment** | 2 | 5 | 0.4118 | 0.7058 | 87 | 0.58 | 0.5611 |
| **replicate*treatment** | 2 | 6 | 0.5241 | 0.7058 | 87 | 0.74 | 0.4597 |
| **replicate*treatment** | 3 | 1 | 1.7612 | 0.7201 | 87 | 2.45 | 0.0165 |
| **replicate*treatment** | 3 | 2 | -0.9359 | 0.7058 | 87 | -1.33 | 0.1883 |
| **replicate*treatment** | 3 | 3 | -0.3369 | 0.7058 | 87 | -0.48 | 0.6343 |
| **replicate*treatment** | 3 | 4 | 0.1872 | 0.7058 | 87 | 0.27 | 0.7915 |
| **replicate*treatment** | 3 | 5 | 0.7113 | 0.7058 | 87 | 1.01 | 0.3163 |
| **replicate*treatment** | 3 | 6 | 0.2246 | 0.7058 | 87 | 0.32 | 0.7511 |

## The Mixed Procedure

| Solution for Random Effects | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Effect** | **replicate** | **treatment** | **Estimate** | **Std Err Pred** | **DF** | **t Value** | **Pr > \|t\|** |
| **replicate*treatment** | 4 | 1 | -1.4089 | 0.7201 | 87 | -1.96 | 0.0536 |
| **replicate*treatment** | 4 | 2 | -0.4867 | 0.7058 | 87 | -0.69 | 0.4923 |
| **replicate*treatment** | 4 | 3 | -1.8344 | 0.7058 | 87 | -2.60 | 0.0110 |
| **replicate*treatment** | 4 | 4 | 0.4867 | 0.7058 | 87 | 0.69 | 0.4923 |
| **replicate*treatment** | 4 | 5 | -1.2354 | 0.7058 | 87 | -1.75 | 0.0836 |
| **replicate*treatment** | 4 | 6 | 1.4226 | 0.7058 | 87 | 2.02 | 0.0469 |

| Type 3 Tests of Fixed Effects | | | | |
|---|---|---|---|---|
| **Effect** | **Num DF** | **Den DF** | **F Value** | **Pr > F** |
| **number** | 5 | 87 | 86.70 | <.0001 |
| **treatment** | 5 | 15 | 1795.89 | <.0001 |
| **treatment*number** | 24 | 87 | 2.32 | 0.0024 |

## The PLM Procedure

| Store Information | |
|---|---|
| **Item Store** | WORK.SPLITMIXED |
| **Data Set Created From** | WORK.STACKED |
| **Created By** | PROC MIXED |
| **Date Created** | 12NOV18:16:48:34 |
| **Response Variable** | assessment |
| **Distribution** | Normal |
| **Class Variables** | replicate treatment number |
| **Model Effects** | Intercept number treatment treatment*number |

| Class Level Information | | |
|---|---|---|
| **Class** | **Levels** | **Values** |
| **replicate** | 4 | 1 2 3 4 |
| **treatment** | 6 | 1 2 3 4 5 6 |
| **number** | 6 | 5 6 7 8 9 10 |

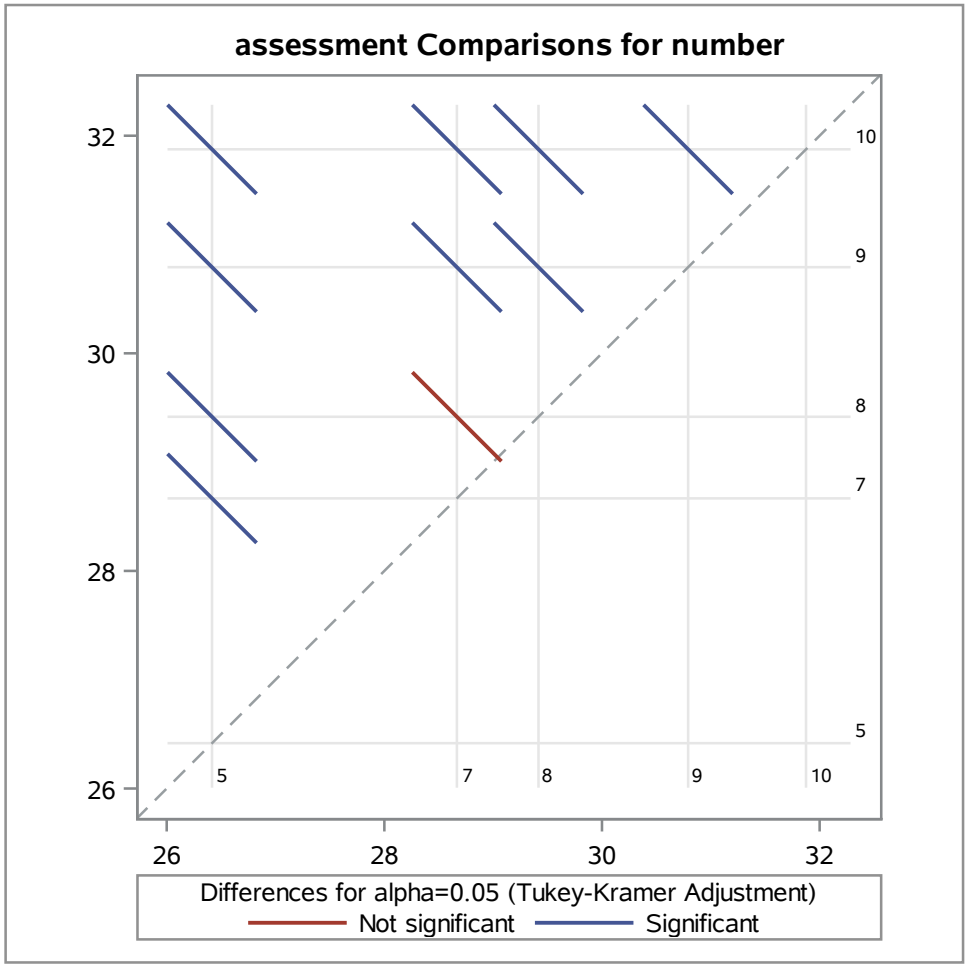
| number Least Squares Means | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **number** | **Estimate** | **Standard Error** | **DF** | **t Value** | **Pr > \|t\|** | **Alpha** | **Lower** | **Upper** | **Cov1** | **Cov2** | **Cov3** | **Cov4** | **Cov5** | **Cov6** |
| 5 | 26.4167 | 0.3268 | 87 | 80.84 | <.0001 | 0.05 | 25.7672 | 27.0662 | 0.1068 | . | 0.06364 | 0.06364 | 0.06364 | 0.06364 |
| 6 | Non-est | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 7 | 28.6667 | 0.3268 | 87 | 87.72 | <.0001 | 0.05 | 28.0172 | 29.3162 | 0.06364 | . | 0.1068 | 0.06364 | 0.06364 | 0.06364 |
| 8 | 29.4167 | 0.3268 | 87 | 90.02 | <.0001 | 0.05 | 28.7672 | 30.0662 | 0.06364 | . | 0.06364 | 0.1068 | 0.06364 | 0.06364 |
| 9 | 30.7917 | 0.3268 | 87 | 94.23 | <.0001 | 0.05 | 30.1422 | 31.4412 | 0.06364 | . | 0.06364 | 0.06364 | 0.1068 | 0.06364 |
| 10 | 31.8750 | 0.3268 | 87 | 97.54 | <.0001 | 0.05 | 31.2255 | 32.5245 | 0.06364 | . | 0.06364 | 0.06364 | 0.06364 | 0.1068 |

| number Least Squares Means | | | | | | |
|---|---|---|---|---|---|---|
| **number** | **Corr1** | **Corr2** | **Corr3** | **Corr4** | **Corr5** | **Corr6** |
| 5 | 1.0000 | . | 0.5959 | 0.5959 | 0.5959 | 0.5959 |
| 6 | . | . | . | . | . | . |
| 7 | 0.5959 | . | 1.0000 | 0.5959 | 0.5959 | 0.5959 |
| 8 | 0.5959 | . | 0.5959 | 1.0000 | 0.5959 | 0.5959 |
| 9 | 0.5959 | . | 0.5959 | 0.5959 | 1.0000 | 0.5959 |
| 10 | 0.5959 | . | 0.5959 | 0.5959 | 0.5959 | 1.0000 |

## The PLM Procedure

**Differences of number Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey-Kramer**

| number | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper | Adj Lower | Adj Upper |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 6 | Non-est | . | . | . | . | . | . | . | . | . | . |
| 5 | 7 | -2.2500 | 0.2938 | 87 | -7.66 | <.0001 | <.0001 | 0.05 | -2.8339 | -1.6661 | -3.0684 | -1.4316 |
| 5 | 8 | -3.0000 | 0.2938 | 87 | -10.21 | <.0001 | <.0001 | 0.05 | -3.5839 | -2.4161 | -3.8184 | -2.1816 |
| 5 | 9 | -4.3750 | 0.2938 | 87 | -14.89 | <.0001 | <.0001 | 0.05 | -4.9589 | -3.7911 | -5.1934 | -3.5566 |
| 5 | 10 | -5.4583 | 0.2938 | 87 | -18.58 | <.0001 | <.0001 | 0.05 | -6.0422 | -4.8744 | -6.2767 | -4.6399 |
| 6 | 7 | Non-est | . | . | . | . | . | . | . | . | . | . |
| 6 | 8 | Non-est | . | . | . | . | . | . | . | . | . | . |
| 6 | 9 | Non-est | . | . | . | . | . | . | . | . | . | . |
| 6 | 10 | Non-est | . | . | . | . | . | . | . | . | . | . |
| 7 | 8 | -0.7500 | 0.2938 | 87 | -2.55 | 0.0124 | 0.0885 | 0.05 | -1.3339 | -0.1661 | -1.5684 | 0.06840 |
| 7 | 9 | -2.1250 | 0.2938 | 87 | -7.23 | <.0001 | <.0001 | 0.05 | -2.7089 | -1.5411 | -2.9434 | -1.3066 |
| 7 | 10 | -3.2083 | 0.2938 | 87 | -10.92 | <.0001 | <.0001 | 0.05 | -3.7922 | -2.6244 | -4.0267 | -2.3899 |
| 8 | 9 | -1.3750 | 0.2938 | 87 | -4.68 | <.0001 | 0.0001 | 0.05 | -1.9589 | -0.7911 | -2.1934 | -0.5566 |
| 8 | 10 | -2.4583 | 0.2938 | 87 | -8.37 | <.0001 | <.0001 | 0.05 | -3.0422 | -1.8744 | -3.2767 | -1.6399 |
| 9 | 10 | -1.0833 | 0.2938 | 87 | -3.69 | 0.0004 | 0.0035 | 0.05 | -1.6672 | -0.4994 | -1.9017 | -0.2649 |



## The PLM Procedure

**treatment Least Squares Means**

| treatment | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Alpha | Lower | Upper | Cov1 | Cov2 | Cov3 | Cov4 | Cov5 | Cov6 | Corr1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Non-est | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 2 | 22.7083 | 0.6519 | 15 | 34.83 | <.0001 | 0.05 | 21.3189 | 24.0978 | . | 0.4250 | | | | | . |
| 3 | 17.8750 | 0.6519 | 15 | 27.42 | <.0001 | 0.05 | 16.4855 | 19.2645 | . | | 0.4250 | | | | . |
| 4 | 20.1250 | 0.6519 | 15 | 30.87 | <.0001 | 0.05 | 18.7355 | 21.5145 | . | | | 0.4250 | | | . |
| 5 | 14.3750 | 0.6519 | 15 | 22.05 | <.0001 | 0.05 | 12.9855 | 15.7645 | . | | | | 0.4250 | | . |
| 6 | 14.4167 | 0.6519 | 15 | 22.12 | <.0001 | 0.05 | 13.0272 | 15.8061 | . | | | | | 0.4250 | . |

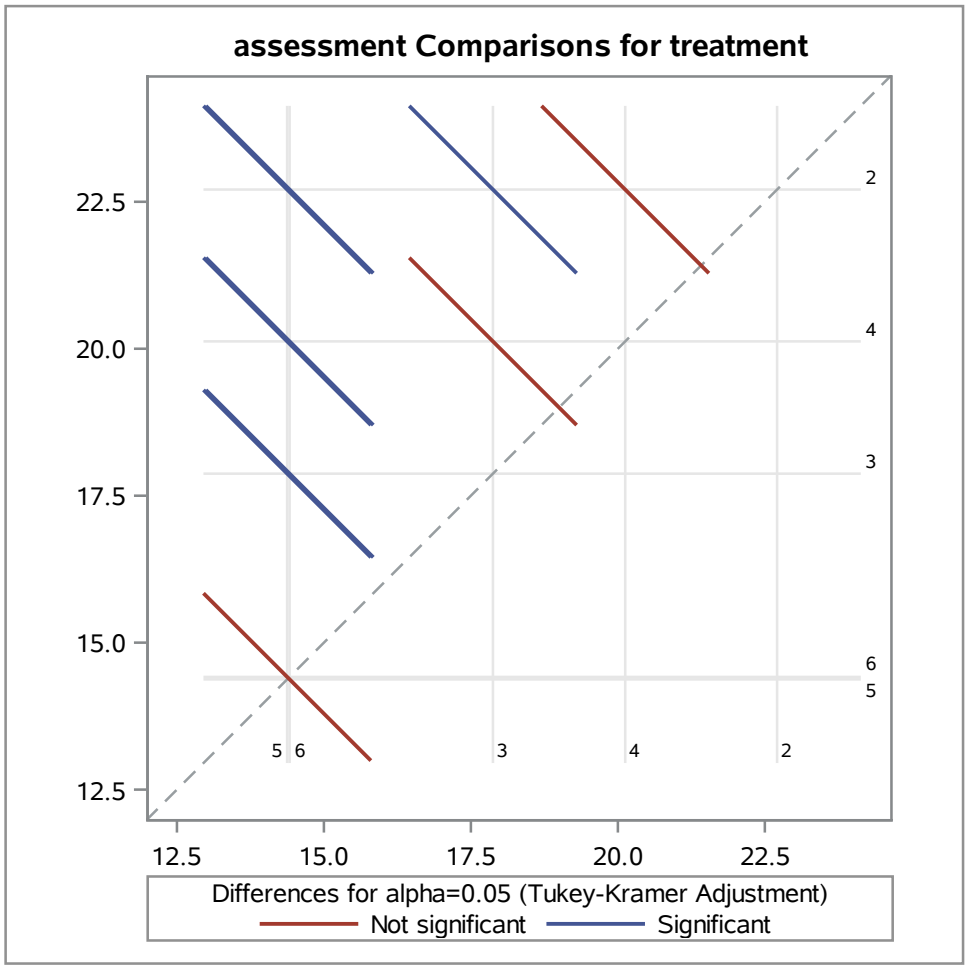
**treatment Least Squares Means**

| treatment | Corr2 | Corr3 | Corr4 | Corr5 | Corr6 |
|---|---|---|---|---|---|
| 1 | . | . | . | . | . |
| 2 | 1.0000 | | | | |
| 3 | | 1.0000 | | | |
| 4 | | | 1.0000 | | |
| 5 | | | | 1.0000 | |
| 6 | | | | | 1.0000 |

**Differences of treatment Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey-Kramer**

| treatment | _treatment | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper | Adj Lower | Adj Upper |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | Non-est | . | . | . | . | . | . | . | . | . | . |
| 1 | 3 | Non-est | . | . | . | . | . | . | . | . | . | . |
| 1 | 4 | Non-est | . | . | . | . | . | . | . | . | . | . |
| 1 | 5 | Non-est | . | . | . | . | . | . | . | . | . | . |
| 1 | 6 | Non-est | . | . | . | . | . | . | . | . | . | . |
| 2 | 3 | 4.8333 | 0.9219 | 15 | 5.24 | <.0001 | 0.0008 | 0.05 | 2.8683 | 6.7984 | 1.9865 | 7.6801 |
| 2 | 4 | 2.5833 | 0.9219 | 15 | 2.80 | 0.0134 | 0.0844 | 0.05 | 0.6183 | 4.5484 | -0.2635 | 5.4301 |
| 2 | 5 | 8.3333 | 0.9219 | 15 | 9.04 | <.0001 | <.0001 | 0.05 | 6.3683 | 10.2984 | 5.4865 | 11.1801 |
| 2 | 6 | 8.2917 | 0.9219 | 15 | 8.99 | <.0001 | <.0001 | 0.05 | 6.3267 | 10.2567 | 5.4449 | 11.1385 |
| 3 | 4 | -2.2500 | 0.9219 | 15 | -2.44 | 0.0275 | 0.1578 | 0.05 | -4.2150 | -0.2850 | -5.0968 | 0.5968 |
| 3 | 5 | 3.5000 | 0.9219 | 15 | 3.80 | 0.0018 | 0.0129 | 0.05 | 1.5350 | 5.4650 | 0.6532 | 6.3468 |
| 3 | 6 | 3.4583 | 0.9219 | 15 | 3.75 | 0.0019 | 0.0141 | 0.05 | 1.4933 | 5.4234 | 0.6115 | 6.3051 |
| 4 | 5 | 5.7500 | 0.9219 | 15 | 6.24 | <.0001 | 0.0001 | 0.05 | 3.7850 | 7.7150 | 2.9032 | 8.5968 |
| 4 | 6 | 5.7083 | 0.9219 | 15 | 6.19 | <.0001 | 0.0001 | 0.05 | 3.7433 | 7.6734 | 2.8615 | 8.5551 |
| 5 | 6 | -0.04167 | 0.9219 | 15 | -0.05 | 0.9645 | 1.0000 | 0.05 | -2.0067 | 1.9234 | -2.8885 | 2.8051 |

The PLM Procedure



## The PLM Procedure

| treatment*number Least Squares Means | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Alpha | Lower | Upper | Cov1 | Cov2 | Cov3 | Cov4 | Cov5 |
| 1 | 5 | 81.5000 | 0.8004 | 87 | 101.82 | <.0001 | 0.05 | 79.9090 | 83.0910 | 0.6407 | 0.3818 | 0.3818 | 0.3818 | 0.3818 |
| 1 | 7 | 85.0000 | 0.8004 | 87 | 106.19 | <.0001 | 0.05 | 83.4090 | 86.5910 | 0.3818 | 0.6407 | 0.3818 | 0.3818 | 0.3818 |
| 1 | 8 | 85.7500 | 0.8004 | 87 | 107.13 | <.0001 | 0.05 | 84.1590 | 87.3410 | 0.3818 | 0.3818 | 0.6407 | 0.3818 | 0.3818 |
| 1 | 9 | 88.2500 | 0.8004 | 87 | 110.25 | <.0001 | 0.05 | 86.6590 | 89.8410 | 0.3818 | 0.3818 | 0.3818 | 0.6407 | 0.3818 |
| 1 | 10 | 89.5000 | 0.8004 | 87 | 111.81 | <.0001 | 0.05 | 87.9090 | 91.0910 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.6407 |
| 2 | 5 | 21.0000 | 0.8004 | 87 | 26.24 | <.0001 | 0.05 | 19.4090 | 22.5910 | | | | | |
| 2 | 6 | 22.0000 | 0.8004 | 87 | 27.48 | <.0001 | 0.05 | 20.4090 | 23.5910 | | | | | |
| 2 | 7 | 22.2500 | 0.8004 | 87 | 27.80 | <.0001 | 0.05 | 20.6590 | 23.8410 | | | | | |
| 2 | 8 | 22.7500 | 0.8004 | 87 | 28.42 | <.0001 | 0.05 | 21.1590 | 24.3410 | | | | | |
| 2 | 9 | 23.5000 | 0.8004 | 87 | 29.36 | <.0001 | 0.05 | 21.9090 | 25.0910 | | | | | |
| 2 | 10 | 24.7500 | 0.8004 | 87 | 30.92 | <.0001 | 0.05 | 23.1590 | 26.3410 | | | | | |
| 3 | 5 | 15.2500 | 0.8004 | 87 | 19.05 | <.0001 | 0.05 | 13.6590 | 16.8410 | | | | | |
| 3 | 6 | 16.7500 | 0.8004 | 87 | 20.93 | <.0001 | 0.05 | 15.1590 | 18.3410 | | | | | |
| 3 | 7 | 17.2500 | 0.8004 | 87 | 21.55 | <.0001 | 0.05 | 15.6590 | 18.8410 | | | | | |
| 3 | 8 | 18.0000 | 0.8004 | 87 | 22.49 | <.0001 | 0.05 | 16.4090 | 19.5910 | | | | | |
| 3 | 9 | 19.2500 | 0.8004 | 87 | 24.05 | <.0001 | 0.05 | 17.6590 | 20.8410 | | | | | |
| 3 | 10 | 20.7500 | 0.8004 | 87 | 25.92 | <.0001 | 0.05 | 19.1590 | 22.3410 | | | | | |
| 4 | 5 | 16.7500 | 0.8004 | 87 | 20.93 | <.0001 | 0.05 | 15.1590 | 18.3410 | | | | | |
| 4 | 6 | 18.2500 | 0.8004 | 87 | 22.80 | <.0001 | 0.05 | 16.6590 | 19.8410 | | | | | |
| 4 | 7 | 19.2500 | 0.8004 | 87 | 24.05 | <.0001 | 0.05 | 17.6590 | 20.8410 | | | | | |
| 4 | 8 | 21.0000 | 0.8004 | 87 | 26.24 | <.0001 | 0.05 | 19.4090 | 22.5910 | | | | | |
| 4 | 9 | 22.7500 | 0.8004 | 87 | 28.42 | <.0001 | 0.05 | 21.1590 | 24.3410 | | | | | |
| 4 | 10 | 22.7500 | 0.8004 | 87 | 28.42 | <.0001 | 0.05 | 21.1590 | 24.3410 | | | | | |
| 5 | 5 | 11.7500 | 0.8004 | 87 | 14.68 | <.0001 | 0.05 | 10.1590 | 13.3410 | | | | | |
| 5 | 6 | 13.0000 | 0.8004 | 87 | 16.24 | <.0001 | 0.05 | 11.4090 | 14.5910 | | | | | |
| 5 | 7 | 13.7500 | 0.8004 | 87 | 17.18 | <.0001 | 0.05 | 12.1590 | 15.3410 | | | | | |
| 5 | 8 | 14.0000 | 0.8004 | 87 | 17.49 | <.0001 | 0.05 | 12.4090 | 15.5910 | | | | | |
| 5 | 9 | 16.0000 | 0.8004 | 87 | 19.99 | <.0001 | 0.05 | 14.4090 | 17.5910 | | | | | |
| 5 | 10 | 17.7500 | 0.8004 | 87 | 22.18 | <.0001 | 0.05 | 16.1590 | 19.3410 | | | | | |
| 6 | 5 | 12.2500 | 0.8004 | 87 | 15.30 | <.0001 | 0.05 | 10.6590 | 13.8410 | | | | | |
| 6 | 6 | 14.0000 | 0.8004 | 87 | 17.49 | <.0001 | 0.05 | 12.4090 | 15.5910 | | | | | |
| 6 | 7 | 14.5000 | 0.8004 | 87 | 18.11 | <.0001 | 0.05 | 12.9090 | 16.0910 | | | | | |
| 6 | 8 | 15.0000 | 0.8004 | 87 | 18.74 | <.0001 | 0.05 | 13.4090 | 16.5910 | | | | | |
| 6 | 9 | 15.0000 | 0.8004 | 87 | 18.74 | <.0001 | 0.05 | 13.4090 | 16.5910 | | | | | |
| 6 | 10 | 15.7500 | 0.8004 | 87 | 19.68 | <.0001 | 0.05 | 14.1590 | 17.3410 | | | | | |

## The PLM Procedure

**treatment*number Least Squares Means**

| treatment | number | Cov6 | Cov7 | Cov8 | Cov9 | Cov10 | Cov11 | Cov12 | Cov13 | Cov14 | Cov15 | Cov16 | Cov17 | Cov18 | Cov19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | | | | | | | | | | | | | | |
| 1 | 7 | | | | | | | | | | | | | | |
| 1 | 8 | | | | | | | | | | | | | | |
| 1 | 9 | | | | | | | | | | | | | | |
| 1 | 10 | | | | | | | | | | | | | | |
| 2 | 5 | 0.6407 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | | | | | | | | |
| 2 | 6 | 0.3818 | 0.6407 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | | | | | | | | |
| 2 | 7 | 0.3818 | 0.3818 | 0.6407 | 0.3818 | 0.3818 | 0.3818 | | | | | | | | |
| 2 | 8 | 0.3818 | 0.3818 | 0.3818 | 0.6407 | 0.3818 | 0.3818 | | | | | | | | |
| 2 | 9 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.6407 | 0.3818 | | | | | | | | |
| 2 | 10 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.6407 | | | | | | | | |
| 3 | 5 | | | | | | | 0.6407 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | | |
| 3 | 6 | | | | | | | 0.3818 | 0.6407 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | | |
| 3 | 7 | | | | | | | 0.3818 | 0.3818 | 0.6407 | 0.3818 | 0.3818 | 0.3818 | | |
| 3 | 8 | | | | | | | 0.3818 | 0.3818 | 0.3818 | 0.6407 | 0.3818 | 0.3818 | | |
| 3 | 9 | | | | | | | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.6407 | 0.3818 | | |
| 3 | 10 | | | | | | | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.6407 | | |
| 4 | 5 | | | | | | | | | | | | | 0.6407 | 0.3818 |
| 4 | 6 | | | | | | | | | | | | | 0.3818 | 0.6407 |
| 4 | 7 | | | | | | | | | | | | | 0.3818 | 0.3818 |
| 4 | 8 | | | | | | | | | | | | | 0.3818 | 0.3818 |
| 4 | 9 | | | | | | | | | | | | | 0.3818 | 0.3818 |
| 4 | 10 | | | | | | | | | | | | | 0.3818 | 0.3818 |
| 5 | 5 | | | | | | | | | | | | | | |
| 5 | 6 | | | | | | | | | | | | | | |
| 5 | 7 | | | | | | | | | | | | | | |
| 5 | 8 | | | | | | | | | | | | | | |
| 5 | 9 | | | | | | | | | | | | | | |
| 5 | 10 | | | | | | | | | | | | | | |
| 6 | 5 | | | | | | | | | | | | | | |
| 6 | 6 | | | | | | | | | | | | | | |
| 6 | 7 | | | | | | | | | | | | | | |
| 6 | 8 | | | | | | | | | | | | | | |
| 6 | 9 | | | | | | | | | | | | | | |
| 6 | 10 | | | | | | | | | | | | | | |

## The PLM Procedure

| treatment*number Least Squares Means | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | Cov20 | Cov21 | Cov22 | Cov23 | Cov24 | Cov25 | Cov26 | Cov27 | Cov28 | Cov29 | Cov30 | Cov31 | Cov32 | Cov33 |
| 1 | 5 | | | | | | | | | | | | | | |
| 1 | 7 | | | | | | | | | | | | | | |
| 1 | 8 | | | | | | | | | | | | | | |
| 1 | 9 | | | | | | | | | | | | | | |
| 1 | 10 | | | | | | | | | | | | | | |
| 2 | 5 | | | | | | | | | | | | | | |
| 2 | 6 | | | | | | | | | | | | | | |
| 2 | 7 | | | | | | | | | | | | | | |
| 2 | 8 | | | | | | | | | | | | | | |
| 2 | 9 | | | | | | | | | | | | | | |
| 2 | 10 | | | | | | | | | | | | | | |
| 3 | 5 | | | | | | | | | | | | | | |
| 3 | 6 | | | | | | | | | | | | | | |
| 3 | 7 | | | | | | | | | | | | | | |
| 3 | 8 | | | | | | | | | | | | | | |
| 3 | 9 | | | | | | | | | | | | | | |
| 3 | 10 | | | | | | | | | | | | | | |
| 4 | 5 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | | | | | | | | | | |
| 4 | 6 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | | | | | | | | | | |
| 4 | 7 | 0.6407 | 0.3818 | 0.3818 | 0.3818 | | | | | | | | | | |
| 4 | 8 | 0.3818 | 0.6407 | 0.3818 | 0.3818 | | | | | | | | | | |
| 4 | 9 | 0.3818 | 0.3818 | 0.6407 | 0.3818 | | | | | | | | | | |
| 4 | 10 | 0.3818 | 0.3818 | 0.3818 | 0.6407 | | | | | | | | | | |
| 5 | 5 | | | | | 0.6407 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | | | | |
| 5 | 6 | | | | | 0.3818 | 0.6407 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | | | | |
| 5 | 7 | | | | | 0.3818 | 0.3818 | 0.6407 | 0.3818 | 0.3818 | 0.3818 | | | | |
| 5 | 8 | | | | | 0.3818 | 0.3818 | 0.3818 | 0.6407 | 0.3818 | 0.3818 | | | | |
| 5 | 9 | | | | | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.6407 | 0.3818 | | | | |
| 5 | 10 | | | | | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.3818 | 0.6407 | | | | |
| 6 | 5 | | | | | | | | | | | 0.6407 | 0.3818 | 0.3818 | 0.3818 |
| 6 | 6 | | | | | | | | | | | 0.3818 | 0.6407 | 0.3818 | 0.3818 |
| 6 | 7 | | | | | | | | | | | 0.3818 | 0.3818 | 0.6407 | 0.3818 |
| 6 | 8 | | | | | | | | | | | 0.3818 | 0.3818 | 0.3818 | 0.6407 |
| 6 | 9 | | | | | | | | | | | 0.3818 | 0.3818 | 0.3818 | 0.3818 |
| 6 | 10 | | | | | | | | | | | 0.3818 | 0.3818 | 0.3818 | 0.3818 |

## The PLM Procedure

| treatment*number Least Squares Means | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | Cov34 | Cov35 | Corr1 | Corr2 | Corr3 | Corr4 | Corr5 | Corr6 | Corr7 | Corr8 | Corr9 | Corr10 | Corr11 | Corr12 |
| 1 | 5 | | | 1.0000 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | | | | | | | |
| 1 | 7 | | | 0.5959 | 1.0000 | 0.5959 | 0.5959 | 0.5959 | | | | | | | |
| 1 | 8 | | | 0.5959 | 0.5959 | 1.0000 | 0.5959 | 0.5959 | | | | | | | |
| 1 | 9 | | | 0.5959 | 0.5959 | 0.5959 | 1.0000 | 0.5959 | | | | | | | |
| 1 | 10 | | | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 1.0000 | | | | | | | |
| 2 | 5 | | | | | | | | 1.0000 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | |
| 2 | 6 | | | | | | | | 0.5959 | 1.0000 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | |
| 2 | 7 | | | | | | | | 0.5959 | 0.5959 | 1.0000 | 0.5959 | 0.5959 | 0.5959 | |
| 2 | 8 | | | | | | | | 0.5959 | 0.5959 | 0.5959 | 1.0000 | 0.5959 | 0.5959 | |
| 2 | 9 | | | | | | | | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 1.0000 | 0.5959 | |
| 2 | 10 | | | | | | | | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 1.0000 | |
| 3 | 5 | | | | | | | | | | | | | | 1.0000 |
| 3 | 6 | | | | | | | | | | | | | | 0.5959 |
| 3 | 7 | | | | | | | | | | | | | | 0.5959 |
| 3 | 8 | | | | | | | | | | | | | | 0.5959 |
| 3 | 9 | | | | | | | | | | | | | | 0.5959 |
| 3 | 10 | | | | | | | | | | | | | | 0.5959 |
| 4 | 5 | | | | | | | | | | | | | | |
| 4 | 6 | | | | | | | | | | | | | | |
| 4 | 7 | | | | | | | | | | | | | | |
| 4 | 8 | | | | | | | | | | | | | | |
| 4 | 9 | | | | | | | | | | | | | | |
| 4 | 10 | | | | | | | | | | | | | | |
| 5 | 5 | | | | | | | | | | | | | | |
| 5 | 6 | | | | | | | | | | | | | | |
| 5 | 7 | | | | | | | | | | | | | | |
| 5 | 8 | | | | | | | | | | | | | | |
| 5 | 9 | | | | | | | | | | | | | | |
| 5 | 10 | | | | | | | | | | | | | | |
| 6 | 5 | 0.3818 | 0.3818 | | | | | | | | | | | | |
| 6 | 6 | 0.3818 | 0.3818 | | | | | | | | | | | | |
| 6 | 7 | 0.3818 | 0.3818 | | | | | | | | | | | | |
| 6 | 8 | 0.3818 | 0.3818 | | | | | | | | | | | | |
| 6 | 9 | 0.6407 | 0.3818 | | | | | | | | | | | | |
| 6 | 10 | 0.3818 | 0.6407 | | | | | | | | | | | | |

## The PLM Procedure

| treatment*number Least Squares Means | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | Corr13 | Corr14 | Corr15 | Corr16 | Corr17 | Corr18 | Corr19 | Corr20 | Corr21 | Corr22 | Corr23 | Corr24 | Corr25 |
| 1 | 5 | | | | | | | | | | | | | |
| 1 | 7 | | | | | | | | | | | | | |
| 1 | 8 | | | | | | | | | | | | | |
| 1 | 9 | | | | | | | | | | | | | |
| 1 | 10 | | | | | | | | | | | | | |
| 2 | 5 | | | | | | | | | | | | | |
| 2 | 6 | | | | | | | | | | | | | |
| 2 | 7 | | | | | | | | | | | | | |
| 2 | 8 | | | | | | | | | | | | | |
| 2 | 9 | | | | | | | | | | | | | |
| 2 | 10 | | | | | | | | | | | | | |
| 3 | 5 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | | | | | | | | |
| 3 | 6 | 1.0000 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | | | | | | | | |
| 3 | 7 | 0.5959 | 1.0000 | 0.5959 | 0.5959 | 0.5959 | | | | | | | | |
| 3 | 8 | 0.5959 | 0.5959 | 1.0000 | 0.5959 | 0.5959 | | | | | | | | |
| 3 | 9 | 0.5959 | 0.5959 | 0.5959 | 1.0000 | 0.5959 | | | | | | | | |
| 3 | 10 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 1.0000 | | | | | | | | |
| 4 | 5 | | | | | | 1.0000 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | | |
| 4 | 6 | | | | | | 0.5959 | 1.0000 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | | |
| 4 | 7 | | | | | | 0.5959 | 0.5959 | 1.0000 | 0.5959 | 0.5959 | 0.5959 | | |
| 4 | 8 | | | | | | 0.5959 | 0.5959 | 0.5959 | 1.0000 | 0.5959 | 0.5959 | | |
| 4 | 9 | | | | | | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 1.0000 | 0.5959 | | |
| 4 | 10 | | | | | | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 1.0000 | | |
| 5 | 5 | | | | | | | | | | | | 1.0000 | 0.5959 |
| 5 | 6 | | | | | | | | | | | | 0.5959 | 1.0000 |
| 5 | 7 | | | | | | | | | | | | 0.5959 | 0.5959 |
| 5 | 8 | | | | | | | | | | | | 0.5959 | 0.5959 |
| 5 | 9 | | | | | | | | | | | | 0.5959 | 0.5959 |
| 5 | 10 | | | | | | | | | | | | 0.5959 | 0.5959 |
| 6 | 5 | | | | | | | | | | | | | |
| 6 | 6 | | | | | | | | | | | | | |
| 6 | 7 | | | | | | | | | | | | | |
| 6 | 8 | | | | | | | | | | | | | |
| 6 | 9 | | | | | | | | | | | | | |
| 6 | 10 | | | | | | | | | | | | | |

## The PLM Procedure

| treatment*number Least Squares Means | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | Corr26 | Corr27 | Corr28 | Corr29 | Corr30 | Corr31 | Corr32 | Corr33 | Corr34 | Corr35 |
| 1 | 5 | | | | | | | | | | |
| 1 | 7 | | | | | | | | | | |
| 1 | 8 | | | | | | | | | | |
| 1 | 9 | | | | | | | | | | |
| 1 | 10 | | | | | | | | | | |
| 2 | 5 | | | | | | | | | | |
| 2 | 6 | | | | | | | | | | |
| 2 | 7 | | | | | | | | | | |
| 2 | 8 | | | | | | | | | | |
| 2 | 9 | | | | | | | | | | |
| 2 | 10 | | | | | | | | | | |
| 3 | 5 | | | | | | | | | | |
| 3 | 6 | | | | | | | | | | |
| 3 | 7 | | | | | | | | | | |
| 3 | 8 | | | | | | | | | | |
| 3 | 9 | | | | | | | | | | |
| 3 | 10 | | | | | | | | | | |
| 4 | 5 | | | | | | | | | | |
| 4 | 6 | | | | | | | | | | |
| 4 | 7 | | | | | | | | | | |
| 4 | 8 | | | | | | | | | | |
| 4 | 9 | | | | | | | | | | |
| 4 | 10 | | | | | | | | | | |
| 5 | 5 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | | | | | | |
| 5 | 6 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | | | | | | |
| 5 | 7 | 1.0000 | 0.5959 | 0.5959 | 0.5959 | | | | | | |
| 5 | 8 | 0.5959 | 1.0000 | 0.5959 | 0.5959 | | | | | | |
| 5 | 9 | 0.5959 | 0.5959 | 1.0000 | 0.5959 | | | | | | |
| 5 | 10 | 0.5959 | 0.5959 | 0.5959 | 1.0000 | | | | | | |
| 6 | 5 | | | | | 1.0000 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 0.5959 |
| 6 | 6 | | | | | 0.5959 | 1.0000 | 0.5959 | 0.5959 | 0.5959 | 0.5959 |
| 6 | 7 | | | | | 0.5959 | 0.5959 | 1.0000 | 0.5959 | 0.5959 | 0.5959 |
| 6 | 8 | | | | | 0.5959 | 0.5959 | 0.5959 | 1.0000 | 0.5959 | 0.5959 |
| 6 | 9 | | | | | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 1.0000 | 0.5959 |
| 6 | 10 | | | | | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 0.5959 | 1.0000 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 1 | 5 | 1 | 7 | -3.5000 | 0.7196 | 87 | -4.86 | <.0001 | 0.0023 | 0.05 | -4.9303 | -2.0697 |
| 1 | 5 | 1 | 8 | -4.2500 | 0.7196 | 87 | -5.91 | <.0001 | <.0001 | 0.05 | -5.6803 | -2.8197 |
| 1 | 5 | 1 | 9 | -6.7500 | 0.7196 | 87 | -9.38 | <.0001 | <.0001 | 0.05 | -8.1803 | -5.3197 |
| 1 | 5 | 1 | 10 | -8.0000 | 0.7196 | 87 | -11.12 | <.0001 | <.0001 | 0.05 | -9.4303 | -6.5697 |
| 1 | 5 | 2 | 5 | 60.5000 | 1.1320 | 87 | 53.44 | <.0001 | <.0001 | 0.05 | 58.2500 | 62.7500 |
| 1 | 5 | 2 | 6 | 59.5000 | 1.1320 | 87 | 52.56 | <.0001 | <.0001 | 0.05 | 57.2500 | 61.7500 |
| 1 | 5 | 2 | 7 | 59.2500 | 1.1320 | 87 | 52.34 | <.0001 | <.0001 | 0.05 | 57.0000 | 61.5000 |
| 1 | 5 | 2 | 8 | 58.7500 | 1.1320 | 87 | 51.90 | <.0001 | <.0001 | 0.05 | 56.5000 | 61.0000 |
| 1 | 5 | 2 | 9 | 58.0000 | 1.1320 | 87 | 51.24 | <.0001 | <.0001 | 0.05 | 55.7500 | 60.2500 |
| 1 | 5 | 2 | 10 | 56.7500 | 1.1320 | 87 | 50.13 | <.0001 | <.0001 | 0.05 | 54.5000 | 59.0000 |
| 1 | 5 | 3 | 5 | 66.2500 | 1.1320 | 87 | 58.52 | <.0001 | <.0001 | 0.05 | 64.0000 | 68.5000 |
| 1 | 5 | 3 | 6 | 64.7500 | 1.1320 | 87 | 57.20 | <.0001 | <.0001 | 0.05 | 62.5000 | 67.0000 |
| 1 | 5 | 3 | 7 | 64.2500 | 1.1320 | 87 | 56.76 | <.0001 | <.0001 | 0.05 | 62.0000 | 66.5000 |
| 1 | 5 | 3 | 8 | 63.5000 | 1.1320 | 87 | 56.10 | <.0001 | <.0001 | 0.05 | 61.2500 | 65.7500 |
| 1 | 5 | 3 | 9 | 62.2500 | 1.1320 | 87 | 54.99 | <.0001 | <.0001 | 0.05 | 60.0000 | 64.5000 |
| 1 | 5 | 3 | 10 | 60.7500 | 1.1320 | 87 | 53.67 | <.0001 | <.0001 | 0.05 | 58.5000 | 63.0000 |
| 1 | 5 | 4 | 5 | 64.7500 | 1.1320 | 87 | 57.20 | <.0001 | <.0001 | 0.05 | 62.5000 | 67.0000 |
| 1 | 5 | 4 | 6 | 63.2500 | 1.1320 | 87 | 55.87 | <.0001 | <.0001 | 0.05 | 61.0000 | 65.5000 |
| 1 | 5 | 4 | 7 | 62.2500 | 1.1320 | 87 | 54.99 | <.0001 | <.0001 | 0.05 | 60.0000 | 64.5000 |
| 1 | 5 | 4 | 8 | 60.5000 | 1.1320 | 87 | 53.44 | <.0001 | <.0001 | 0.05 | 58.2500 | 62.7500 |
| 1 | 5 | 4 | 9 | 58.7500 | 1.1320 | 87 | 51.90 | <.0001 | <.0001 | 0.05 | 56.5000 | 61.0000 |
| 1 | 5 | 4 | 10 | 58.7500 | 1.1320 | 87 | 51.90 | <.0001 | <.0001 | 0.05 | 56.5000 | 61.0000 |
| 1 | 5 | 5 | 5 | 69.7500 | 1.1320 | 87 | 61.62 | <.0001 | <.0001 | 0.05 | 67.5000 | 72.0000 |
| 1 | 5 | 5 | 6 | 68.5000 | 1.1320 | 87 | 60.51 | <.0001 | <.0001 | 0.05 | 66.2500 | 70.7500 |
| 1 | 5 | 5 | 7 | 67.7500 | 1.1320 | 87 | 59.85 | <.0001 | <.0001 | 0.05 | 65.5000 | 70.0000 |
| 1 | 5 | 5 | 8 | 67.5000 | 1.1320 | 87 | 59.63 | <.0001 | <.0001 | 0.05 | 65.2500 | 69.7500 |
| 1 | 5 | 5 | 9 | 65.5000 | 1.1320 | 87 | 57.86 | <.0001 | <.0001 | 0.05 | 63.2500 | 67.7500 |
| 1 | 5 | 5 | 10 | 63.7500 | 1.1320 | 87 | 56.32 | <.0001 | <.0001 | 0.05 | 61.5000 | 66.0000 |
| 1 | 5 | 6 | 5 | 69.2500 | 1.1320 | 87 | 61.17 | <.0001 | <.0001 | 0.05 | 67.0000 | 71.5000 |
| 1 | 5 | 6 | 6 | 67.5000 | 1.1320 | 87 | 59.63 | <.0001 | <.0001 | 0.05 | 65.2500 | 69.7500 |
| 1 | 5 | 6 | 7 | 67.0000 | 1.1320 | 87 | 59.19 | <.0001 | <.0001 | 0.05 | 64.7500 | 69.2500 |
| 1 | 5 | 6 | 8 | 66.5000 | 1.1320 | 87 | 58.75 | <.0001 | <.0001 | 0.05 | 64.2500 | 68.7500 |
| 1 | 5 | 6 | 9 | 66.5000 | 1.1320 | 87 | 58.75 | <.0001 | <.0001 | 0.05 | 64.2500 | 68.7500 |
| 1 | 5 | 6 | 10 | 65.7500 | 1.1320 | 87 | 58.08 | <.0001 | <.0001 | 0.05 | 63.5000 | 68.0000 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 1 | 5 | 1 | 7 | -6.3493 | -0.6507 |
| 1 | 5 | 1 | 8 | -7.0993 | -1.4007 |
| 1 | 5 | 1 | 9 | -9.5993 | -3.9007 |
| 1 | 5 | 1 | 10 | -10.8493 | -5.1507 |
| 1 | 5 | 2 | 5 | 56.0177 | 64.9824 |
| 1 | 5 | 2 | 6 | 55.0177 | 63.9824 |
| 1 | 5 | 2 | 7 | 54.7677 | 63.7324 |
| 1 | 5 | 2 | 8 | 54.2677 | 63.2324 |
| 1 | 5 | 2 | 9 | 53.5177 | 62.4824 |
| 1 | 5 | 2 | 10 | 52.2677 | 61.2324 |
| 1 | 5 | 3 | 5 | 61.7677 | 70.7324 |
| 1 | 5 | 3 | 6 | 60.2677 | 69.2324 |
| 1 | 5 | 3 | 7 | 59.7677 | 68.7324 |
| 1 | 5 | 3 | 8 | 59.0177 | 67.9824 |
| 1 | 5 | 3 | 9 | 57.7677 | 66.7324 |
| 1 | 5 | 3 | 10 | 56.2677 | 65.2324 |
| 1 | 5 | 4 | 5 | 60.2677 | 69.2324 |
| 1 | 5 | 4 | 6 | 58.7677 | 67.7324 |
| 1 | 5 | 4 | 7 | 57.7677 | 66.7324 |
| 1 | 5 | 4 | 8 | 56.0177 | 64.9824 |
| 1 | 5 | 4 | 9 | 54.2677 | 63.2324 |
| 1 | 5 | 4 | 10 | 54.2677 | 63.2324 |
| 1 | 5 | 5 | 5 | 65.2677 | 74.2324 |
| 1 | 5 | 5 | 6 | 64.0177 | 72.9824 |
| 1 | 5 | 5 | 7 | 63.2677 | 72.2324 |
| 1 | 5 | 5 | 8 | 63.0177 | 71.9824 |
| 1 | 5 | 5 | 9 | 61.0177 | 69.9824 |
| 1 | 5 | 5 | 10 | 59.2677 | 68.2324 |
| 1 | 5 | 6 | 5 | 64.7677 | 73.7324 |
| 1 | 5 | 6 | 6 | 63.0177 | 71.9824 |
| 1 | 5 | 6 | 7 | 62.5177 | 71.4824 |
| 1 | 5 | 6 | 8 | 62.0177 | 70.9824 |
| 1 | 5 | 6 | 9 | 62.0177 | 70.9824 |
| 1 | 5 | 6 | 10 | 61.2677 | 70.2324 |

## The PLM Procedure

**Differences of treatment*number Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey-Kramer**

| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | 1 | 8 | -0.7500 | 0.7196 | 87 | -1.04 | 0.3002 | 1.0000 | 0.05 | -2.1803 | 0.6803 |
| 1 | 7 | 1 | 9 | -3.2500 | 0.7196 | 87 | -4.52 | <.0001 | 0.0082 | 0.05 | -4.6803 | -1.8197 |
| 1 | 7 | 1 | 10 | -4.5000 | 0.7196 | 87 | -6.25 | <.0001 | <.0001 | 0.05 | -5.9303 | -3.0697 |
| 1 | 7 | 2 | 5 | 64.0000 | 1.1320 | 87 | 56.54 | <.0001 | <.0001 | 0.05 | 61.7500 | 66.2500 |
| 1 | 7 | 2 | 6 | 63.0000 | 1.1320 | 87 | 55.65 | <.0001 | <.0001 | 0.05 | 60.7500 | 65.2500 |
| 1 | 7 | 2 | 7 | 62.7500 | 1.1320 | 87 | 55.43 | <.0001 | <.0001 | 0.05 | 60.5000 | 65.0000 |
| 1 | 7 | 2 | 8 | 62.2500 | 1.1320 | 87 | 54.99 | <.0001 | <.0001 | 0.05 | 60.0000 | 64.5000 |
| 1 | 7 | 2 | 9 | 61.5000 | 1.1320 | 87 | 54.33 | <.0001 | <.0001 | 0.05 | 59.2500 | 63.7500 |
| 1 | 7 | 2 | 10 | 60.2500 | 1.1320 | 87 | 53.22 | <.0001 | <.0001 | 0.05 | 58.0000 | 62.5000 |
| 1 | 7 | 3 | 5 | 69.7500 | 1.1320 | 87 | 61.62 | <.0001 | <.0001 | 0.05 | 67.5000 | 72.0000 |
| 1 | 7 | 3 | 6 | 68.2500 | 1.1320 | 87 | 60.29 | <.0001 | <.0001 | 0.05 | 66.0000 | 70.5000 |
| 1 | 7 | 3 | 7 | 67.7500 | 1.1320 | 87 | 59.85 | <.0001 | <.0001 | 0.05 | 65.5000 | 70.0000 |
| 1 | 7 | 3 | 8 | 67.0000 | 1.1320 | 87 | 59.19 | <.0001 | <.0001 | 0.05 | 64.7500 | 69.2500 |
| 1 | 7 | 3 | 9 | 65.7500 | 1.1320 | 87 | 58.08 | <.0001 | <.0001 | 0.05 | 63.5000 | 68.0000 |
| 1 | 7 | 3 | 10 | 64.2500 | 1.1320 | 87 | 56.76 | <.0001 | <.0001 | 0.05 | 62.0000 | 66.5000 |
| 1 | 7 | 4 | 5 | 68.2500 | 1.1320 | 87 | 60.29 | <.0001 | <.0001 | 0.05 | 66.0000 | 70.5000 |
| 1 | 7 | 4 | 6 | 66.7500 | 1.1320 | 87 | 58.97 | <.0001 | <.0001 | 0.05 | 64.5000 | 69.0000 |
| 1 | 7 | 4 | 7 | 65.7500 | 1.1320 | 87 | 58.08 | <.0001 | <.0001 | 0.05 | 63.5000 | 68.0000 |
| 1 | 7 | 4 | 8 | 64.0000 | 1.1320 | 87 | 56.54 | <.0001 | <.0001 | 0.05 | 61.7500 | 66.2500 |
| 1 | 7 | 4 | 9 | 62.2500 | 1.1320 | 87 | 54.99 | <.0001 | <.0001 | 0.05 | 60.0000 | 64.5000 |
| 1 | 7 | 4 | 10 | 62.2500 | 1.1320 | 87 | 54.99 | <.0001 | <.0001 | 0.05 | 60.0000 | 64.5000 |
| 1 | 7 | 5 | 5 | 73.2500 | 1.1320 | 87 | 64.71 | <.0001 | <.0001 | 0.05 | 71.0000 | 75.5000 |
| 1 | 7 | 5 | 6 | 72.0000 | 1.1320 | 87 | 63.60 | <.0001 | <.0001 | 0.05 | 69.7500 | 74.2500 |
| 1 | 7 | 5 | 7 | 71.2500 | 1.1320 | 87 | 62.94 | <.0001 | <.0001 | 0.05 | 69.0000 | 73.5000 |
| 1 | 7 | 5 | 8 | 71.0000 | 1.1320 | 87 | 62.72 | <.0001 | <.0001 | 0.05 | 68.7500 | 73.2500 |
| 1 | 7 | 5 | 9 | 69.0000 | 1.1320 | 87 | 60.95 | <.0001 | <.0001 | 0.05 | 66.7500 | 71.2500 |
| 1 | 7 | 5 | 10 | 67.2500 | 1.1320 | 87 | 59.41 | <.0001 | <.0001 | 0.05 | 65.0000 | 69.5000 |
| 1 | 7 | 6 | 5 | 72.7500 | 1.1320 | 87 | 64.27 | <.0001 | <.0001 | 0.05 | 70.5000 | 75.0000 |
| 1 | 7 | 6 | 6 | 71.0000 | 1.1320 | 87 | 62.72 | <.0001 | <.0001 | 0.05 | 68.7500 | 73.2500 |
| 1 | 7 | 6 | 7 | 70.5000 | 1.1320 | 87 | 62.28 | <.0001 | <.0001 | 0.05 | 68.2500 | 72.7500 |
| 1 | 7 | 6 | 8 | 70.0000 | 1.1320 | 87 | 61.84 | <.0001 | <.0001 | 0.05 | 67.7500 | 72.2500 |
| 1 | 7 | 6 | 9 | 70.0000 | 1.1320 | 87 | 61.84 | <.0001 | <.0001 | 0.05 | 67.7500 | 72.2500 |
| 1 | 7 | 6 | 10 | 69.2500 | 1.1320 | 87 | 61.17 | <.0001 | <.0001 | 0.05 | 67.0000 | 71.5000 |
| 1 | 8 | 1 | 9 | -2.5000 | 0.7196 | 87 | -3.47 | 0.0008 | 0.1835 | 0.05 | -3.9303 | -1.0697 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 1 | 7 | 1 | 8 | -3.5993 | 2.0993 |
| 1 | 7 | 1 | 9 | -6.0993 | -0.4007 |
| 1 | 7 | 1 | 10 | -7.3493 | -1.6507 |
| 1 | 7 | 2 | 5 | 59.5177 | 68.4824 |
| 1 | 7 | 2 | 6 | 58.5177 | 67.4824 |
| 1 | 7 | 2 | 7 | 58.2677 | 67.2324 |
| 1 | 7 | 2 | 8 | 57.7677 | 66.7324 |
| 1 | 7 | 2 | 9 | 57.0177 | 65.9824 |
| 1 | 7 | 2 | 10 | 55.7677 | 64.7324 |
| 1 | 7 | 3 | 5 | 65.2677 | 74.2324 |
| 1 | 7 | 3 | 6 | 63.7677 | 72.7324 |
| 1 | 7 | 3 | 7 | 63.2677 | 72.2324 |
| 1 | 7 | 3 | 8 | 62.5177 | 71.4824 |
| 1 | 7 | 3 | 9 | 61.2677 | 70.2324 |
| 1 | 7 | 3 | 10 | 59.7677 | 68.7324 |
| 1 | 7 | 4 | 5 | 63.7677 | 72.7324 |
| 1 | 7 | 4 | 6 | 62.2677 | 71.2324 |
| 1 | 7 | 4 | 7 | 61.2677 | 70.2324 |
| 1 | 7 | 4 | 8 | 59.5177 | 68.4824 |
| 1 | 7 | 4 | 9 | 57.7677 | 66.7324 |
| 1 | 7 | 4 | 10 | 57.7677 | 66.7324 |
| 1 | 7 | 5 | 5 | 68.7677 | 77.7324 |
| 1 | 7 | 5 | 6 | 67.5177 | 76.4824 |
| 1 | 7 | 5 | 7 | 66.7677 | 75.7324 |
| 1 | 7 | 5 | 8 | 66.5177 | 75.4824 |
| 1 | 7 | 5 | 9 | 64.5177 | 73.4824 |
| 1 | 7 | 5 | 10 | 62.7677 | 71.7324 |
| 1 | 7 | 6 | 5 | 68.2677 | 77.2324 |
| 1 | 7 | 6 | 6 | 66.5177 | 75.4824 |
| 1 | 7 | 6 | 7 | 66.0177 | 74.9824 |
| 1 | 7 | 6 | 8 | 65.5177 | 74.4824 |
| 1 | 7 | 6 | 9 | 65.5177 | 74.4824 |
| 1 | 7 | 6 | 10 | 64.7677 | 73.7324 |
| 1 | 8 | 1 | 9 | -5.3493 | 0.3493 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 1 | 8 | 1 | 10 | -3.7500 | 0.7196 | 87 | -5.21 | <.0001 | 0.0006 | 0.05 | -5.1803 | -2.3197 |
| 1 | 8 | 2 | 5 | 64.7500 | 1.1320 | 87 | 57.20 | <.0001 | <.0001 | 0.05 | 62.5000 | 67.0000 |
| 1 | 8 | 2 | 6 | 63.7500 | 1.1320 | 87 | 56.32 | <.0001 | <.0001 | 0.05 | 61.5000 | 66.0000 |
| 1 | 8 | 2 | 7 | 63.5000 | 1.1320 | 87 | 56.10 | <.0001 | <.0001 | 0.05 | 61.2500 | 65.7500 |
| 1 | 8 | 2 | 8 | 63.0000 | 1.1320 | 87 | 55.65 | <.0001 | <.0001 | 0.05 | 60.7500 | 65.2500 |
| 1 | 8 | 2 | 9 | 62.2500 | 1.1320 | 87 | 54.99 | <.0001 | <.0001 | 0.05 | 60.0000 | 64.5000 |
| 1 | 8 | 2 | 10 | 61.0000 | 1.1320 | 87 | 53.89 | <.0001 | <.0001 | 0.05 | 58.7500 | 63.2500 |
| 1 | 8 | 3 | 5 | 70.5000 | 1.1320 | 87 | 62.28 | <.0001 | <.0001 | 0.05 | 68.2500 | 72.7500 |
| 1 | 8 | 3 | 6 | 69.0000 | 1.1320 | 87 | 60.95 | <.0001 | <.0001 | 0.05 | 66.7500 | 71.2500 |
| 1 | 8 | 3 | 7 | 68.5000 | 1.1320 | 87 | 60.51 | <.0001 | <.0001 | 0.05 | 66.2500 | 70.7500 |
| 1 | 8 | 3 | 8 | 67.7500 | 1.1320 | 87 | 59.85 | <.0001 | <.0001 | 0.05 | 65.5000 | 70.0000 |
| 1 | 8 | 3 | 9 | 66.5000 | 1.1320 | 87 | 58.75 | <.0001 | <.0001 | 0.05 | 64.2500 | 68.7500 |
| 1 | 8 | 3 | 10 | 65.0000 | 1.1320 | 87 | 57.42 | <.0001 | <.0001 | 0.05 | 62.7500 | 67.2500 |
| 1 | 8 | 4 | 5 | 69.0000 | 1.1320 | 87 | 60.95 | <.0001 | <.0001 | 0.05 | 66.7500 | 71.2500 |
| 1 | 8 | 4 | 6 | 67.5000 | 1.1320 | 87 | 59.63 | <.0001 | <.0001 | 0.05 | 65.2500 | 69.7500 |
| 1 | 8 | 4 | 7 | 66.5000 | 1.1320 | 87 | 58.75 | <.0001 | <.0001 | 0.05 | 64.2500 | 68.7500 |
| 1 | 8 | 4 | 8 | 64.7500 | 1.1320 | 87 | 57.20 | <.0001 | <.0001 | 0.05 | 62.5000 | 67.0000 |
| 1 | 8 | 4 | 9 | 63.0000 | 1.1320 | 87 | 55.65 | <.0001 | <.0001 | 0.05 | 60.7500 | 65.2500 |
| 1 | 8 | 4 | 10 | 63.0000 | 1.1320 | 87 | 55.65 | <.0001 | <.0001 | 0.05 | 60.7500 | 65.2500 |
| 1 | 8 | 5 | 5 | 74.0000 | 1.1320 | 87 | 65.37 | <.0001 | <.0001 | 0.05 | 71.7500 | 76.2500 |
| 1 | 8 | 5 | 6 | 72.7500 | 1.1320 | 87 | 64.27 | <.0001 | <.0001 | 0.05 | 70.5000 | 75.0000 |
| 1 | 8 | 5 | 7 | 72.0000 | 1.1320 | 87 | 63.60 | <.0001 | <.0001 | 0.05 | 69.7500 | 74.2500 |
| 1 | 8 | 5 | 8 | 71.7500 | 1.1320 | 87 | 63.38 | <.0001 | <.0001 | 0.05 | 69.5000 | 74.0000 |
| 1 | 8 | 5 | 9 | 69.7500 | 1.1320 | 87 | 61.62 | <.0001 | <.0001 | 0.05 | 67.5000 | 72.0000 |
| 1 | 8 | 5 | 10 | 68.0000 | 1.1320 | 87 | 60.07 | <.0001 | <.0001 | 0.05 | 65.7500 | 70.2500 |
| 1 | 8 | 6 | 5 | 73.5000 | 1.1320 | 87 | 64.93 | <.0001 | <.0001 | 0.05 | 71.2500 | 75.7500 |
| 1 | 8 | 6 | 6 | 71.7500 | 1.1320 | 87 | 63.38 | <.0001 | <.0001 | 0.05 | 69.5000 | 74.0000 |
| 1 | 8 | 6 | 7 | 71.2500 | 1.1320 | 87 | 62.94 | <.0001 | <.0001 | 0.05 | 69.0000 | 73.5000 |
| 1 | 8 | 6 | 8 | 70.7500 | 1.1320 | 87 | 62.50 | <.0001 | <.0001 | 0.05 | 68.5000 | 73.0000 |
| 1 | 8 | 6 | 9 | 70.7500 | 1.1320 | 87 | 62.50 | <.0001 | <.0001 | 0.05 | 68.5000 | 73.0000 |
| 1 | 8 | 6 | 10 | 70.0000 | 1.1320 | 87 | 61.84 | <.0001 | <.0001 | 0.05 | 67.7500 | 72.2500 |
| 1 | 9 | 1 | 10 | -1.2500 | 0.7196 | 87 | -1.74 | 0.0859 | 0.9983 | 0.05 | -2.6803 | 0.1803 |
| 1 | 9 | 2 | 5 | 67.2500 | 1.1320 | 87 | 59.41 | <.0001 | <.0001 | 0.05 | 65.0000 | 69.5000 |
| 1 | 9 | 2 | 6 | 66.2500 | 1.1320 | 87 | 58.52 | <.0001 | <.0001 | 0.05 | 64.0000 | 68.5000 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 1 | 8 | 1 | 10 | -6.5993 | -0.9007 |
| 1 | 8 | 2 | 5 | 60.2677 | 69.2324 |
| 1 | 8 | 2 | 6 | 59.2677 | 68.2324 |
| 1 | 8 | 2 | 7 | 59.0177 | 67.9824 |
| 1 | 8 | 2 | 8 | 58.5177 | 67.4824 |
| 1 | 8 | 2 | 9 | 57.7677 | 66.7324 |
| 1 | 8 | 2 | 10 | 56.5177 | 65.4824 |
| 1 | 8 | 3 | 5 | 66.0177 | 74.9824 |
| 1 | 8 | 3 | 6 | 64.5177 | 73.4824 |
| 1 | 8 | 3 | 7 | 64.0177 | 72.9824 |
| 1 | 8 | 3 | 8 | 63.2677 | 72.2324 |
| 1 | 8 | 3 | 9 | 62.0177 | 70.9824 |
| 1 | 8 | 3 | 10 | 60.5177 | 69.4824 |
| 1 | 8 | 4 | 5 | 64.5177 | 73.4824 |
| 1 | 8 | 4 | 6 | 63.0177 | 71.9824 |
| 1 | 8 | 4 | 7 | 62.0177 | 70.9824 |
| 1 | 8 | 4 | 8 | 60.2677 | 69.2324 |
| 1 | 8 | 4 | 9 | 58.5177 | 67.4824 |
| 1 | 8 | 4 | 10 | 58.5177 | 67.4824 |
| 1 | 8 | 5 | 5 | 69.5177 | 78.4824 |
| 1 | 8 | 5 | 6 | 68.2677 | 77.2324 |
| 1 | 8 | 5 | 7 | 67.5177 | 76.4824 |
| 1 | 8 | 5 | 8 | 67.2677 | 76.2324 |
| 1 | 8 | 5 | 9 | 65.2677 | 74.2324 |
| 1 | 8 | 5 | 10 | 63.5177 | 72.4824 |
| 1 | 8 | 6 | 5 | 69.0177 | 77.9824 |
| 1 | 8 | 6 | 6 | 67.2677 | 76.2324 |
| 1 | 8 | 6 | 7 | 66.7677 | 75.7324 |
| 1 | 8 | 6 | 8 | 66.2677 | 75.2324 |
| 1 | 8 | 6 | 9 | 66.2677 | 75.2324 |
| 1 | 8 | 6 | 10 | 65.5177 | 74.4824 |
| 1 | 9 | 1 | 10 | -4.0993 | 1.5993 |
| 1 | 9 | 2 | 5 | 62.7677 | 71.7324 |
| 1 | 9 | 2 | 6 | 61.7677 | 70.7324 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 1 | 9 | 2 | 7 | 66.0000 | 1.1320 | 87 | 58.30 | <.0001 | <.0001 | 0.05 | 63.7500 | 68.2500 |
| 1 | 9 | 2 | 8 | 65.5000 | 1.1320 | 87 | 57.86 | <.0001 | <.0001 | 0.05 | 63.2500 | 67.7500 |
| 1 | 9 | 2 | 9 | 64.7500 | 1.1320 | 87 | 57.20 | <.0001 | <.0001 | 0.05 | 62.5000 | 67.0000 |
| 1 | 9 | 2 | 10 | 63.5000 | 1.1320 | 87 | 56.10 | <.0001 | <.0001 | 0.05 | 61.2500 | 65.7500 |
| 1 | 9 | 3 | 5 | 73.0000 | 1.1320 | 87 | 64.49 | <.0001 | <.0001 | 0.05 | 70.7500 | 75.2500 |
| 1 | 9 | 3 | 6 | 71.5000 | 1.1320 | 87 | 63.16 | <.0001 | <.0001 | 0.05 | 69.2500 | 73.7500 |
| 1 | 9 | 3 | 7 | 71.0000 | 1.1320 | 87 | 62.72 | <.0001 | <.0001 | 0.05 | 68.7500 | 73.2500 |
| 1 | 9 | 3 | 8 | 70.2500 | 1.1320 | 87 | 62.06 | <.0001 | <.0001 | 0.05 | 68.0000 | 72.5000 |
| 1 | 9 | 3 | 9 | 69.0000 | 1.1320 | 87 | 60.95 | <.0001 | <.0001 | 0.05 | 66.7500 | 71.2500 |
| 1 | 9 | 3 | 10 | 67.5000 | 1.1320 | 87 | 59.63 | <.0001 | <.0001 | 0.05 | 65.2500 | 69.7500 |
| 1 | 9 | 4 | 5 | 71.5000 | 1.1320 | 87 | 63.16 | <.0001 | <.0001 | 0.05 | 69.2500 | 73.7500 |
| 1 | 9 | 4 | 6 | 70.0000 | 1.1320 | 87 | 61.84 | <.0001 | <.0001 | 0.05 | 67.7500 | 72.2500 |
| 1 | 9 | 4 | 7 | 69.0000 | 1.1320 | 87 | 60.95 | <.0001 | <.0001 | 0.05 | 66.7500 | 71.2500 |
| 1 | 9 | 4 | 8 | 67.2500 | 1.1320 | 87 | 59.41 | <.0001 | <.0001 | 0.05 | 65.0000 | 69.5000 |
| 1 | 9 | 4 | 9 | 65.5000 | 1.1320 | 87 | 57.86 | <.0001 | <.0001 | 0.05 | 63.2500 | 67.7500 |
| 1 | 9 | 4 | 10 | 65.5000 | 1.1320 | 87 | 57.86 | <.0001 | <.0001 | 0.05 | 63.2500 | 67.7500 |
| 1 | 9 | 5 | 5 | 76.5000 | 1.1320 | 87 | 67.58 | <.0001 | <.0001 | 0.05 | 74.2500 | 78.7500 |
| 1 | 9 | 5 | 6 | 75.2500 | 1.1320 | 87 | 66.47 | <.0001 | <.0001 | 0.05 | 73.0000 | 77.5000 |
| 1 | 9 | 5 | 7 | 74.5000 | 1.1320 | 87 | 65.81 | <.0001 | <.0001 | 0.05 | 72.2500 | 76.7500 |
| 1 | 9 | 5 | 8 | 74.2500 | 1.1320 | 87 | 65.59 | <.0001 | <.0001 | 0.05 | 72.0000 | 76.5000 |
| 1 | 9 | 5 | 9 | 72.2500 | 1.1320 | 87 | 63.82 | <.0001 | <.0001 | 0.05 | 70.0000 | 74.5000 |
| 1 | 9 | 5 | 10 | 70.5000 | 1.1320 | 87 | 62.28 | <.0001 | <.0001 | 0.05 | 68.2500 | 72.7500 |
| 1 | 9 | 6 | 5 | 76.0000 | 1.1320 | 87 | 67.14 | <.0001 | <.0001 | 0.05 | 73.7500 | 78.2500 |
| 1 | 9 | 6 | 6 | 74.2500 | 1.1320 | 87 | 65.59 | <.0001 | <.0001 | 0.05 | 72.0000 | 76.5000 |
| 1 | 9 | 6 | 7 | 73.7500 | 1.1320 | 87 | 65.15 | <.0001 | <.0001 | 0.05 | 71.5000 | 76.0000 |
| 1 | 9 | 6 | 8 | 73.2500 | 1.1320 | 87 | 64.71 | <.0001 | <.0001 | 0.05 | 71.0000 | 75.5000 |
| 1 | 9 | 6 | 9 | 73.2500 | 1.1320 | 87 | 64.71 | <.0001 | <.0001 | 0.05 | 71.0000 | 75.5000 |
| 1 | 9 | 6 | 10 | 72.5000 | 1.1320 | 87 | 64.05 | <.0001 | <.0001 | 0.05 | 70.2500 | 74.7500 |
| 1 | 10 | 2 | 5 | 68.5000 | 1.1320 | 87 | 60.51 | <.0001 | <.0001 | 0.05 | 66.2500 | 70.7500 |
| 1 | 10 | 2 | 6 | 67.5000 | 1.1320 | 87 | 59.63 | <.0001 | <.0001 | 0.05 | 65.2500 | 69.7500 |
| 1 | 10 | 2 | 7 | 67.2500 | 1.1320 | 87 | 59.41 | <.0001 | <.0001 | 0.05 | 65.0000 | 69.5000 |
| 1 | 10 | 2 | 8 | 66.7500 | 1.1320 | 87 | 58.97 | <.0001 | <.0001 | 0.05 | 64.5000 | 69.0000 |
| 1 | 10 | 2 | 9 | 66.0000 | 1.1320 | 87 | 58.30 | <.0001 | <.0001 | 0.05 | 63.7500 | 68.2500 |
| 1 | 10 | 2 | 10 | 64.7500 | 1.1320 | 87 | 57.20 | <.0001 | <.0001 | 0.05 | 62.5000 | 67.0000 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 1 | 9 | 2 | 7 | 61.5177 | 70.4824 |
| 1 | 9 | 2 | 8 | 61.0177 | 69.9824 |
| 1 | 9 | 2 | 9 | 60.2677 | 69.2324 |
| 1 | 9 | 2 | 10 | 59.0177 | 67.9824 |
| 1 | 9 | 3 | 5 | 68.5177 | 77.4824 |
| 1 | 9 | 3 | 6 | 67.0177 | 75.9824 |
| 1 | 9 | 3 | 7 | 66.5177 | 75.4824 |
| 1 | 9 | 3 | 8 | 65.7677 | 74.7324 |
| 1 | 9 | 3 | 9 | 64.5177 | 73.4824 |
| 1 | 9 | 3 | 10 | 63.0177 | 71.9824 |
| 1 | 9 | 4 | 5 | 67.0177 | 75.9824 |
| 1 | 9 | 4 | 6 | 65.5177 | 74.4824 |
| 1 | 9 | 4 | 7 | 64.5177 | 73.4824 |
| 1 | 9 | 4 | 8 | 62.7677 | 71.7324 |
| 1 | 9 | 4 | 9 | 61.0177 | 69.9824 |
| 1 | 9 | 4 | 10 | 61.0177 | 69.9824 |
| 1 | 9 | 5 | 5 | 72.0177 | 80.9824 |
| 1 | 9 | 5 | 6 | 70.7677 | 79.7324 |
| 1 | 9 | 5 | 7 | 70.0177 | 78.9824 |
| 1 | 9 | 5 | 8 | 69.7677 | 78.7324 |
| 1 | 9 | 5 | 9 | 67.7677 | 76.7324 |
| 1 | 9 | 5 | 10 | 66.0177 | 74.9824 |
| 1 | 9 | 6 | 5 | 71.5177 | 80.4824 |
| 1 | 9 | 6 | 6 | 69.7677 | 78.7324 |
| 1 | 9 | 6 | 7 | 69.2677 | 78.2324 |
| 1 | 9 | 6 | 8 | 68.7677 | 77.7324 |
| 1 | 9 | 6 | 9 | 68.7677 | 77.7324 |
| 1 | 9 | 6 | 10 | 68.0177 | 76.9824 |
| 1 | 10 | 2 | 5 | 64.0177 | 72.9824 |
| 1 | 10 | 2 | 6 | 63.0177 | 71.9824 |
| 1 | 10 | 2 | 7 | 62.7677 | 71.7324 |
| 1 | 10 | 2 | 8 | 62.2677 | 71.2324 |
| 1 | 10 | 2 | 9 | 61.5177 | 70.4824 |
| 1 | 10 | 2 | 10 | 60.2677 | 69.2324 |

## The PLM Procedure

**Differences of treatment*number Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey-Kramer**

| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10 | 3 | 5 | 74.2500 | 1.1320 | 87 | 65.59 | <.0001 | <.0001 | 0.05 | 72.0000 | 76.5000 |
| 1 | 10 | 3 | 6 | 72.7500 | 1.1320 | 87 | 64.27 | <.0001 | <.0001 | 0.05 | 70.5000 | 75.0000 |
| 1 | 10 | 3 | 7 | 72.2500 | 1.1320 | 87 | 63.82 | <.0001 | <.0001 | 0.05 | 70.0000 | 74.5000 |
| 1 | 10 | 3 | 8 | 71.5000 | 1.1320 | 87 | 63.16 | <.0001 | <.0001 | 0.05 | 69.2500 | 73.7500 |
| 1 | 10 | 3 | 9 | 70.2500 | 1.1320 | 87 | 62.06 | <.0001 | <.0001 | 0.05 | 68.0000 | 72.5000 |
| 1 | 10 | 3 | 10 | 68.7500 | 1.1320 | 87 | 60.73 | <.0001 | <.0001 | 0.05 | 66.5000 | 71.0000 |
| 1 | 10 | 4 | 5 | 72.7500 | 1.1320 | 87 | 64.27 | <.0001 | <.0001 | 0.05 | 70.5000 | 75.0000 |
| 1 | 10 | 4 | 6 | 71.2500 | 1.1320 | 87 | 62.94 | <.0001 | <.0001 | 0.05 | 69.0000 | 73.5000 |
| 1 | 10 | 4 | 7 | 70.2500 | 1.1320 | 87 | 62.06 | <.0001 | <.0001 | 0.05 | 68.0000 | 72.5000 |
| 1 | 10 | 4 | 8 | 68.5000 | 1.1320 | 87 | 60.51 | <.0001 | <.0001 | 0.05 | 66.2500 | 70.7500 |
| 1 | 10 | 4 | 9 | 66.7500 | 1.1320 | 87 | 58.97 | <.0001 | <.0001 | 0.05 | 64.5000 | 69.0000 |
| 1 | 10 | 4 | 10 | 66.7500 | 1.1320 | 87 | 58.97 | <.0001 | <.0001 | 0.05 | 64.5000 | 69.0000 |
| 1 | 10 | 5 | 5 | 77.7500 | 1.1320 | 87 | 68.68 | <.0001 | <.0001 | 0.05 | 75.5000 | 80.0000 |
| 1 | 10 | 5 | 6 | 76.5000 | 1.1320 | 87 | 67.58 | <.0001 | <.0001 | 0.05 | 74.2500 | 78.7500 |
| 1 | 10 | 5 | 7 | 75.7500 | 1.1320 | 87 | 66.92 | <.0001 | <.0001 | 0.05 | 73.5000 | 78.0000 |
| 1 | 10 | 5 | 8 | 75.5000 | 1.1320 | 87 | 66.70 | <.0001 | <.0001 | 0.05 | 73.2500 | 77.7500 |
| 1 | 10 | 5 | 9 | 73.5000 | 1.1320 | 87 | 64.93 | <.0001 | <.0001 | 0.05 | 71.2500 | 75.7500 |
| 1 | 10 | 5 | 10 | 71.7500 | 1.1320 | 87 | 63.38 | <.0001 | <.0001 | 0.05 | 69.5000 | 74.0000 |
| 1 | 10 | 6 | 5 | 77.2500 | 1.1320 | 87 | 68.24 | <.0001 | <.0001 | 0.05 | 75.0000 | 79.5000 |
| 1 | 10 | 6 | 6 | 75.5000 | 1.1320 | 87 | 66.70 | <.0001 | <.0001 | 0.05 | 73.2500 | 77.7500 |
| 1 | 10 | 6 | 7 | 75.0000 | 1.1320 | 87 | 66.25 | <.0001 | <.0001 | 0.05 | 72.7500 | 77.2500 |
| 1 | 10 | 6 | 8 | 74.5000 | 1.1320 | 87 | 65.81 | <.0001 | <.0001 | 0.05 | 72.2500 | 76.7500 |
| 1 | 10 | 6 | 9 | 74.5000 | 1.1320 | 87 | 65.81 | <.0001 | <.0001 | 0.05 | 72.2500 | 76.7500 |
| 1 | 10 | 6 | 10 | 73.7500 | 1.1320 | 87 | 65.15 | <.0001 | <.0001 | 0.05 | 71.5000 | 76.0000 |
| 2 | 5 | 2 | 6 | -1.0000 | 0.7196 | 87 | -1.39 | 0.1682 | 1.0000 | 0.05 | -2.4303 | 0.4303 |
| 2 | 5 | 2 | 7 | -1.2500 | 0.7196 | 87 | -1.74 | 0.0859 | 0.9983 | 0.05 | -2.6803 | 0.1803 |
| 2 | 5 | 2 | 8 | -1.7500 | 0.7196 | 87 | -2.43 | 0.0171 | 0.8641 | 0.05 | -3.1803 | -0.3197 |
| 2 | 5 | 2 | 9 | -2.5000 | 0.7196 | 87 | -3.47 | 0.0008 | 0.1835 | 0.05 | -3.9303 | -1.0697 |
| 2 | 5 | 2 | 10 | -3.7500 | 0.7196 | 87 | -5.21 | <.0001 | 0.0006 | 0.05 | -5.1803 | -2.3197 |
| 2 | 5 | 3 | 5 | 5.7500 | 1.1320 | 87 | 5.08 | <.0001 | 0.0010 | 0.05 | 3.5000 | 8.0000 |
| 2 | 5 | 3 | 6 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 2 | 5 | 3 | 7 | 3.7500 | 1.1320 | 87 | 3.31 | 0.0013 | 0.2633 | 0.05 | 1.5000 | 6.0000 |
| 2 | 5 | 3 | 8 | 3.0000 | 1.1320 | 87 | 2.65 | 0.0096 | 0.7325 | 0.05 | 0.7500 | 5.2500 |
| 2 | 5 | 3 | 9 | 1.7500 | 1.1320 | 87 | 1.55 | 0.1258 | 0.9998 | 0.05 | -0.5000 | 4.0000 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 1 | 10 | 3 | 5 | 69.7677 | 78.7324 |
| 1 | 10 | 3 | 6 | 68.2677 | 77.2324 |
| 1 | 10 | 3 | 7 | 67.7677 | 76.7324 |
| 1 | 10 | 3 | 8 | 67.0177 | 75.9824 |
| 1 | 10 | 3 | 9 | 65.7677 | 74.7324 |
| 1 | 10 | 3 | 10 | 64.2677 | 73.2324 |
| 1 | 10 | 4 | 5 | 68.2677 | 77.2324 |
| 1 | 10 | 4 | 6 | 66.7677 | 75.7324 |
| 1 | 10 | 4 | 7 | 65.7677 | 74.7324 |
| 1 | 10 | 4 | 8 | 64.0177 | 72.9824 |
| 1 | 10 | 4 | 9 | 62.2677 | 71.2324 |
| 1 | 10 | 4 | 10 | 62.2677 | 71.2324 |
| 1 | 10 | 5 | 5 | 73.2677 | 82.2324 |
| 1 | 10 | 5 | 6 | 72.0177 | 80.9824 |
| 1 | 10 | 5 | 7 | 71.2677 | 80.2324 |
| 1 | 10 | 5 | 8 | 71.0177 | 79.9824 |
| 1 | 10 | 5 | 9 | 69.0177 | 77.9824 |
| 1 | 10 | 5 | 10 | 67.2677 | 76.2324 |
| 1 | 10 | 6 | 5 | 72.7677 | 81.7324 |
| 1 | 10 | 6 | 6 | 71.0177 | 79.9824 |
| 1 | 10 | 6 | 7 | 70.5177 | 79.4824 |
| 1 | 10 | 6 | 8 | 70.0177 | 78.9824 |
| 1 | 10 | 6 | 9 | 70.0177 | 78.9824 |
| 1 | 10 | 6 | 10 | 69.2677 | 78.2324 |
| 2 | 5 | 2 | 6 | -3.8493 | 1.8493 |
| 2 | 5 | 2 | 7 | -4.0993 | 1.5993 |
| 2 | 5 | 2 | 8 | -4.5993 | 1.0993 |
| 2 | 5 | 2 | 9 | -5.3493 | 0.3493 |
| 2 | 5 | 2 | 10 | -6.5993 | -0.9007 |
| 2 | 5 | 3 | 5 | 1.2677 | 10.2323 |
| 2 | 5 | 3 | 6 | -0.2323 | 8.7323 |
| 2 | 5 | 3 | 7 | -0.7323 | 8.2323 |
| 2 | 5 | 3 | 8 | -1.4823 | 7.4823 |
| 2 | 5 | 3 | 9 | -2.7323 | 6.2323 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 2 | 5 | 3 | 10 | 0.2500 | 1.1320 | 87 | 0.22 | 0.8257 | 1.0000 | 0.05 | -2.0000 | 2.5000 |
| 2 | 5 | 4 | 5 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 2 | 5 | 4 | 6 | 2.7500 | 1.1320 | 87 | 2.43 | 0.0172 | 0.8654 | 0.05 | 0.5000 | 5.0000 |
| 2 | 5 | 4 | 7 | 1.7500 | 1.1320 | 87 | 1.55 | 0.1258 | 0.9998 | 0.05 | -0.5000 | 4.0000 |
| 2 | 5 | 4 | 8 | -115E-16 | 1.1320 | 87 | -0.00 | 1.0000 | 1.0000 | 0.05 | -2.2500 | 2.2500 |
| 2 | 5 | 4 | 9 | -1.7500 | 1.1320 | 87 | -1.55 | 0.1258 | 0.9998 | 0.05 | -4.0000 | 0.5000 |
| 2 | 5 | 4 | 10 | -1.7500 | 1.1320 | 87 | -1.55 | 0.1258 | 0.9998 | 0.05 | -4.0000 | 0.5000 |
| 2 | 5 | 5 | 5 | 9.2500 | 1.1320 | 87 | 8.17 | <.0001 | <.0001 | 0.05 | 7.0000 | 11.5000 |
| 2 | 5 | 5 | 6 | 8.0000 | 1.1320 | 87 | 7.07 | <.0001 | <.0001 | 0.05 | 5.7500 | 10.2500 |
| 2 | 5 | 5 | 7 | 7.2500 | 1.1320 | 87 | 6.40 | <.0001 | <.0001 | 0.05 | 5.0000 | 9.5000 |
| 2 | 5 | 5 | 8 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 2 | 5 | 5 | 9 | 5.0000 | 1.1320 | 87 | 4.42 | <.0001 | 0.0116 | 0.05 | 2.7500 | 7.2500 |
| 2 | 5 | 5 | 10 | 3.2500 | 1.1320 | 87 | 2.87 | 0.0051 | 0.5684 | 0.05 | 1.0000 | 5.5000 |
| 2 | 5 | 6 | 5 | 8.7500 | 1.1320 | 87 | 7.73 | <.0001 | <.0001 | 0.05 | 6.5000 | 11.0000 |
| 2 | 5 | 6 | 6 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 2 | 5 | 6 | 7 | 6.5000 | 1.1320 | 87 | 5.74 | <.0001 | <.0001 | 0.05 | 4.2500 | 8.7500 |
| 2 | 5 | 6 | 8 | 6.0000 | 1.1320 | 87 | 5.30 | <.0001 | 0.0004 | 0.05 | 3.7500 | 8.2500 |
| 2 | 5 | 6 | 9 | 6.0000 | 1.1320 | 87 | 5.30 | <.0001 | 0.0004 | 0.05 | 3.7500 | 8.2500 |
| 2 | 5 | 6 | 10 | 5.2500 | 1.1320 | 87 | 4.64 | <.0001 | 0.0054 | 0.05 | 3.0000 | 7.5000 |
| 2 | 6 | 2 | 7 | -0.2500 | 0.7196 | 87 | -0.35 | 0.7291 | 1.0000 | 0.05 | -1.6803 | 1.1803 |
| 2 | 6 | 2 | 8 | -0.7500 | 0.7196 | 87 | -1.04 | 0.3002 | 1.0000 | 0.05 | -2.1803 | 0.6803 |
| 2 | 6 | 2 | 9 | -1.5000 | 0.7196 | 87 | -2.08 | 0.0400 | 0.9743 | 0.05 | -2.9303 | -0.06973 |
| 2 | 6 | 2 | 10 | -2.7500 | 0.7196 | 87 | -3.82 | 0.0002 | 0.0745 | 0.05 | -4.1803 | -1.3197 |
| 2 | 6 | 3 | 5 | 6.7500 | 1.1320 | 87 | 5.96 | <.0001 | <.0001 | 0.05 | 4.5000 | 9.0000 |
| 2 | 6 | 3 | 6 | 5.2500 | 1.1320 | 87 | 4.64 | <.0001 | 0.0054 | 0.05 | 3.0000 | 7.5000 |
| 2 | 6 | 3 | 7 | 4.7500 | 1.1320 | 87 | 4.20 | <.0001 | 0.0241 | 0.05 | 2.5000 | 7.0000 |
| 2 | 6 | 3 | 8 | 4.0000 | 1.1320 | 87 | 3.53 | 0.0007 | 0.1591 | 0.05 | 1.7500 | 6.2500 |
| 2 | 6 | 3 | 9 | 2.7500 | 1.1320 | 87 | 2.43 | 0.0172 | 0.8654 | 0.05 | 0.5000 | 5.0000 |
| 2 | 6 | 3 | 10 | 1.2500 | 1.1320 | 87 | 1.10 | 0.2725 | 1.0000 | 0.05 | -1.0000 | 3.5000 |
| 2 | 6 | 4 | 5 | 5.2500 | 1.1320 | 87 | 4.64 | <.0001 | 0.0054 | 0.05 | 3.0000 | 7.5000 |
| 2 | 6 | 4 | 6 | 3.7500 | 1.1320 | 87 | 3.31 | 0.0013 | 0.2633 | 0.05 | 1.5000 | 6.0000 |
| 2 | 6 | 4 | 7 | 2.7500 | 1.1320 | 87 | 2.43 | 0.0172 | 0.8654 | 0.05 | 0.5000 | 5.0000 |
| 2 | 6 | 4 | 8 | 1.0000 | 1.1320 | 87 | 0.88 | 0.3795 | 1.0000 | 0.05 | -1.2500 | 3.2500 |
| 2 | 6 | 4 | 9 | -0.7500 | 1.1320 | 87 | -0.66 | 0.5094 | 1.0000 | 0.05 | -3.0000 | 1.5000 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 2 | 5 | 3 | 10 | -4.2323 | 4.7323 |
| 2 | 5 | 4 | 5 | -0.2323 | 8.7323 |
| 2 | 5 | 4 | 6 | -1.7323 | 7.2323 |
| 2 | 5 | 4 | 7 | -2.7323 | 6.2323 |
| 2 | 5 | 4 | 8 | -4.4823 | 4.4823 |
| 2 | 5 | 4 | 9 | -6.2323 | 2.7323 |
| 2 | 5 | 4 | 10 | -6.2323 | 2.7323 |
| 2 | 5 | 5 | 5 | 4.7677 | 13.7323 |
| 2 | 5 | 5 | 6 | 3.5177 | 12.4823 |
| 2 | 5 | 5 | 7 | 2.7677 | 11.7323 |
| 2 | 5 | 5 | 8 | 2.5177 | 11.4823 |
| 2 | 5 | 5 | 9 | 0.5177 | 9.4823 |
| 2 | 5 | 5 | 10 | -1.2323 | 7.7323 |
| 2 | 5 | 6 | 5 | 4.2677 | 13.2323 |
| 2 | 5 | 6 | 6 | 2.5177 | 11.4823 |
| 2 | 5 | 6 | 7 | 2.0177 | 10.9823 |
| 2 | 5 | 6 | 8 | 1.5177 | 10.4823 |
| 2 | 5 | 6 | 9 | 1.5177 | 10.4823 |
| 2 | 5 | 6 | 10 | 0.7677 | 9.7323 |
| 2 | 6 | 2 | 7 | -3.0993 | 2.5993 |
| 2 | 6 | 2 | 8 | -3.5993 | 2.0993 |
| 2 | 6 | 2 | 9 | -4.3493 | 1.3493 |
| 2 | 6 | 2 | 10 | -5.5993 | 0.09933 |
| 2 | 6 | 3 | 5 | 2.2677 | 11.2323 |
| 2 | 6 | 3 | 6 | 0.7677 | 9.7323 |
| 2 | 6 | 3 | 7 | 0.2677 | 9.2323 |
| 2 | 6 | 3 | 8 | -0.4823 | 8.4823 |
| 2 | 6 | 3 | 9 | -1.7323 | 7.2323 |
| 2 | 6 | 3 | 10 | -3.2323 | 5.7323 |
| 2 | 6 | 4 | 5 | 0.7677 | 9.7323 |
| 2 | 6 | 4 | 6 | -0.7323 | 8.2323 |
| 2 | 6 | 4 | 7 | -1.7323 | 7.2323 |
| 2 | 6 | 4 | 8 | -3.4823 | 5.4823 |
| 2 | 6 | 4 | 9 | -5.2323 | 3.7323 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 2 | 6 | 4 | 10 | -0.7500 | 1.1320 | 87 | -0.66 | 0.5094 | 1.0000 | 0.05 | -3.0000 | 1.5000 |
| 2 | 6 | 5 | 5 | 10.2500 | 1.1320 | 87 | 9.05 | <.0001 | <.0001 | 0.05 | 8.0000 | 12.5000 |
| 2 | 6 | 5 | 6 | 9.0000 | 1.1320 | 87 | 7.95 | <.0001 | <.0001 | 0.05 | 6.7500 | 11.2500 |
| 2 | 6 | 5 | 7 | 8.2500 | 1.1320 | 87 | 7.29 | <.0001 | <.0001 | 0.05 | 6.0000 | 10.5000 |
| 2 | 6 | 5 | 8 | 8.0000 | 1.1320 | 87 | 7.07 | <.0001 | <.0001 | 0.05 | 5.7500 | 10.2500 |
| 2 | 6 | 5 | 9 | 6.0000 | 1.1320 | 87 | 5.30 | <.0001 | 0.0004 | 0.05 | 3.7500 | 8.2500 |
| 2 | 6 | 5 | 10 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 2 | 6 | 6 | 5 | 9.7500 | 1.1320 | 87 | 8.61 | <.0001 | <.0001 | 0.05 | 7.5000 | 12.0000 |
| 2 | 6 | 6 | 6 | 8.0000 | 1.1320 | 87 | 7.07 | <.0001 | <.0001 | 0.05 | 5.7500 | 10.2500 |
| 2 | 6 | 6 | 7 | 7.5000 | 1.1320 | 87 | 6.63 | <.0001 | <.0001 | 0.05 | 5.2500 | 9.7500 |
| 2 | 6 | 6 | 8 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 2 | 6 | 6 | 9 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 2 | 6 | 6 | 10 | 6.2500 | 1.1320 | 87 | 5.52 | <.0001 | 0.0002 | 0.05 | 4.0000 | 8.5000 |
| 2 | 7 | 2 | 8 | -0.5000 | 0.7196 | 87 | -0.69 | 0.4890 | 1.0000 | 0.05 | -1.9303 | 0.9303 |
| 2 | 7 | 2 | 9 | -1.2500 | 0.7196 | 87 | -1.74 | 0.0859 | 0.9983 | 0.05 | -2.6803 | 0.1803 |
| 2 | 7 | 2 | 10 | -2.5000 | 0.7196 | 87 | -3.47 | 0.0008 | 0.1835 | 0.05 | -3.9303 | -1.0697 |
| 2 | 7 | 3 | 5 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 2 | 7 | 3 | 6 | 5.5000 | 1.1320 | 87 | 4.86 | <.0001 | 0.0024 | 0.05 | 3.2500 | 7.7500 |
| 2 | 7 | 3 | 7 | 5.0000 | 1.1320 | 87 | 4.42 | <.0001 | 0.0116 | 0.05 | 2.7500 | 7.2500 |
| 2 | 7 | 3 | 8 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 2 | 7 | 3 | 9 | 3.0000 | 1.1320 | 87 | 2.65 | 0.0096 | 0.7325 | 0.05 | 0.7500 | 5.2500 |
| 2 | 7 | 3 | 10 | 1.5000 | 1.1320 | 87 | 1.33 | 0.1886 | 1.0000 | 0.05 | -0.7500 | 3.7500 |
| 2 | 7 | 4 | 5 | 5.5000 | 1.1320 | 87 | 4.86 | <.0001 | 0.0024 | 0.05 | 3.2500 | 7.7500 |
| 2 | 7 | 4 | 6 | 4.0000 | 1.1320 | 87 | 3.53 | 0.0007 | 0.1591 | 0.05 | 1.7500 | 6.2500 |
| 2 | 7 | 4 | 7 | 3.0000 | 1.1320 | 87 | 2.65 | 0.0096 | 0.7325 | 0.05 | 0.7500 | 5.2500 |
| 2 | 7 | 4 | 8 | 1.2500 | 1.1320 | 87 | 1.10 | 0.2725 | 1.0000 | 0.05 | -1.0000 | 3.5000 |
| 2 | 7 | 4 | 9 | -0.5000 | 1.1320 | 87 | -0.44 | 0.6598 | 1.0000 | 0.05 | -2.7500 | 1.7500 |
| 2 | 7 | 4 | 10 | -0.5000 | 1.1320 | 87 | -0.44 | 0.6598 | 1.0000 | 0.05 | -2.7500 | 1.7500 |
| 2 | 7 | 5 | 5 | 10.5000 | 1.1320 | 87 | 9.28 | <.0001 | <.0001 | 0.05 | 8.2500 | 12.7500 |
| 2 | 7 | 5 | 6 | 9.2500 | 1.1320 | 87 | 8.17 | <.0001 | <.0001 | 0.05 | 7.0000 | 11.5000 |
| 2 | 7 | 5 | 7 | 8.5000 | 1.1320 | 87 | 7.51 | <.0001 | <.0001 | 0.05 | 6.2500 | 10.7500 |
| 2 | 7 | 5 | 8 | 8.2500 | 1.1320 | 87 | 7.29 | <.0001 | <.0001 | 0.05 | 6.0000 | 10.5000 |
| 2 | 7 | 5 | 9 | 6.2500 | 1.1320 | 87 | 5.52 | <.0001 | 0.0002 | 0.05 | 4.0000 | 8.5000 |
| 2 | 7 | 5 | 10 | 4.5000 | 1.1320 | 87 | 3.98 | 0.0001 | 0.0477 | 0.05 | 2.2500 | 6.7500 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 2 | 6 | 4 | 10 | -5.2323 | 3.7323 |
| 2 | 6 | 5 | 5 | 5.7677 | 14.7323 |
| 2 | 6 | 5 | 6 | 4.5177 | 13.4823 |
| 2 | 6 | 5 | 7 | 3.7677 | 12.7323 |
| 2 | 6 | 5 | 8 | 3.5177 | 12.4823 |
| 2 | 6 | 5 | 9 | 1.5177 | 10.4823 |
| 2 | 6 | 5 | 10 | -0.2323 | 8.7323 |
| 2 | 6 | 6 | 5 | 5.2677 | 14.2323 |
| 2 | 6 | 6 | 6 | 3.5177 | 12.4823 |
| 2 | 6 | 6 | 7 | 3.0177 | 11.9823 |
| 2 | 6 | 6 | 8 | 2.5177 | 11.4823 |
| 2 | 6 | 6 | 9 | 2.5177 | 11.4823 |
| 2 | 6 | 6 | 10 | 1.7677 | 10.7323 |
| 2 | 7 | 2 | 8 | -3.3493 | 2.3493 |
| 2 | 7 | 2 | 9 | -4.0993 | 1.5993 |
| 2 | 7 | 2 | 10 | -5.3493 | 0.3493 |
| 2 | 7 | 3 | 5 | 2.5177 | 11.4823 |
| 2 | 7 | 3 | 6 | 1.0177 | 9.9823 |
| 2 | 7 | 3 | 7 | 0.5177 | 9.4823 |
| 2 | 7 | 3 | 8 | -0.2323 | 8.7323 |
| 2 | 7 | 3 | 9 | -1.4823 | 7.4823 |
| 2 | 7 | 3 | 10 | -2.9823 | 5.9823 |
| 2 | 7 | 4 | 5 | 1.0177 | 9.9823 |
| 2 | 7 | 4 | 6 | -0.4823 | 8.4823 |
| 2 | 7 | 4 | 7 | -1.4823 | 7.4823 |
| 2 | 7 | 4 | 8 | -3.2323 | 5.7323 |
| 2 | 7 | 4 | 9 | -4.9823 | 3.9823 |
| 2 | 7 | 4 | 10 | -4.9823 | 3.9823 |
| 2 | 7 | 5 | 5 | 6.0177 | 14.9823 |
| 2 | 7 | 5 | 6 | 4.7677 | 13.7323 |
| 2 | 7 | 5 | 7 | 4.0177 | 12.9823 |
| 2 | 7 | 5 | 8 | 3.7677 | 12.7323 |
| 2 | 7 | 5 | 9 | 1.7677 | 10.7323 |
| 2 | 7 | 5 | 10 | 0.01765 | 8.9823 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 2 | 7 | 6 | 5 | 10.0000 | 1.1320 | 87 | 8.83 | <.0001 | <.0001 | 0.05 | 7.7500 | 12.2500 |
| 2 | 7 | 6 | 6 | 8.2500 | 1.1320 | 87 | 7.29 | <.0001 | <.0001 | 0.05 | 6.0000 | 10.5000 |
| 2 | 7 | 6 | 7 | 7.7500 | 1.1320 | 87 | 6.85 | <.0001 | <.0001 | 0.05 | 5.5000 | 10.0000 |
| 2 | 7 | 6 | 8 | 7.2500 | 1.1320 | 87 | 6.40 | <.0001 | <.0001 | 0.05 | 5.0000 | 9.5000 |
| 2 | 7 | 6 | 9 | 7.2500 | 1.1320 | 87 | 6.40 | <.0001 | <.0001 | 0.05 | 5.0000 | 9.5000 |
| 2 | 7 | 6 | 10 | 6.5000 | 1.1320 | 87 | 5.74 | <.0001 | <.0001 | 0.05 | 4.2500 | 8.7500 |
| 2 | 8 | 2 | 9 | -0.7500 | 0.7196 | 87 | -1.04 | 0.3002 | 1.0000 | 0.05 | -2.1803 | 0.6803 |
| 2 | 8 | 2 | 10 | -2.0000 | 0.7196 | 87 | -2.78 | 0.0067 | 0.6384 | 0.05 | -3.4303 | -0.5697 |
| 2 | 8 | 3 | 5 | 7.5000 | 1.1320 | 87 | 6.63 | <.0001 | <.0001 | 0.05 | 5.2500 | 9.7500 |
| 2 | 8 | 3 | 6 | 6.0000 | 1.1320 | 87 | 5.30 | <.0001 | 0.0004 | 0.05 | 3.7500 | 8.2500 |
| 2 | 8 | 3 | 7 | 5.5000 | 1.1320 | 87 | 4.86 | <.0001 | 0.0024 | 0.05 | 3.2500 | 7.7500 |
| 2 | 8 | 3 | 8 | 4.7500 | 1.1320 | 87 | 4.20 | <.0001 | 0.0241 | 0.05 | 2.5000 | 7.0000 |
| 2 | 8 | 3 | 9 | 3.5000 | 1.1320 | 87 | 3.09 | 0.0027 | 0.4036 | 0.05 | 1.2500 | 5.7500 |
| 2 | 8 | 3 | 10 | 2.0000 | 1.1320 | 87 | 1.77 | 0.0808 | 0.9977 | 0.05 | -0.2500 | 4.2500 |
| 2 | 8 | 4 | 5 | 6.0000 | 1.1320 | 87 | 5.30 | <.0001 | 0.0004 | 0.05 | 3.7500 | 8.2500 |
| 2 | 8 | 4 | 6 | 4.5000 | 1.1320 | 87 | 3.98 | 0.0001 | 0.0477 | 0.05 | 2.2500 | 6.7500 |
| 2 | 8 | 4 | 7 | 3.5000 | 1.1320 | 87 | 3.09 | 0.0027 | 0.4036 | 0.05 | 1.2500 | 5.7500 |
| 2 | 8 | 4 | 8 | 1.7500 | 1.1320 | 87 | 1.55 | 0.1258 | 0.9998 | 0.05 | -0.5000 | 4.0000 |
| 2 | 8 | 4 | 9 | -105E-16 | 1.1320 | 87 | -0.00 | 1.0000 | 1.0000 | 0.05 | -2.2500 | 2.2500 |
| 2 | 8 | 4 | 10 | 2.5E-7 | 1.1320 | 87 | 0.00 | 1.0000 | 1.0000 | 0.05 | -2.2500 | 2.2500 |
| 2 | 8 | 5 | 5 | 11.0000 | 1.1320 | 87 | 9.72 | <.0001 | <.0001 | 0.05 | 8.7500 | 13.2500 |
| 2 | 8 | 5 | 6 | 9.7500 | 1.1320 | 87 | 8.61 | <.0001 | <.0001 | 0.05 | 7.5000 | 12.0000 |
| 2 | 8 | 5 | 7 | 9.0000 | 1.1320 | 87 | 7.95 | <.0001 | <.0001 | 0.05 | 6.7500 | 11.2500 |
| 2 | 8 | 5 | 8 | 8.7500 | 1.1320 | 87 | 7.73 | <.0001 | <.0001 | 0.05 | 6.5000 | 11.0000 |
| 2 | 8 | 5 | 9 | 6.7500 | 1.1320 | 87 | 5.96 | <.0001 | <.0001 | 0.05 | 4.5000 | 9.0000 |
| 2 | 8 | 5 | 10 | 5.0000 | 1.1320 | 87 | 4.42 | <.0001 | 0.0116 | 0.05 | 2.7500 | 7.2500 |
| 2 | 8 | 6 | 5 | 10.5000 | 1.1320 | 87 | 9.28 | <.0001 | <.0001 | 0.05 | 8.2500 | 12.7500 |
| 2 | 8 | 6 | 6 | 8.7500 | 1.1320 | 87 | 7.73 | <.0001 | <.0001 | 0.05 | 6.5000 | 11.0000 |
| 2 | 8 | 6 | 7 | 8.2500 | 1.1320 | 87 | 7.29 | <.0001 | <.0001 | 0.05 | 6.0000 | 10.5000 |
| 2 | 8 | 6 | 8 | 7.7500 | 1.1320 | 87 | 6.85 | <.0001 | <.0001 | 0.05 | 5.5000 | 10.0000 |
| 2 | 8 | 6 | 9 | 7.7500 | 1.1320 | 87 | 6.85 | <.0001 | <.0001 | 0.05 | 5.5000 | 10.0000 |
| 2 | 8 | 6 | 10 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 2 | 9 | 2 | 10 | -1.2500 | 0.7196 | 87 | -1.74 | 0.0859 | 0.9983 | 0.05 | -2.6803 | 0.1803 |
| 2 | 9 | 3 | 5 | 8.2500 | 1.1320 | 87 | 7.29 | <.0001 | <.0001 | 0.05 | 6.0000 | 10.5000 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 2 | 7 | 6 | 5 | 5.5177 | 14.4823 |
| 2 | 7 | 6 | 6 | 3.7677 | 12.7323 |
| 2 | 7 | 6 | 7 | 3.2677 | 12.2323 |
| 2 | 7 | 6 | 8 | 2.7677 | 11.7323 |
| 2 | 7 | 6 | 9 | 2.7677 | 11.7323 |
| 2 | 7 | 6 | 10 | 2.0177 | 10.9823 |
| 2 | 8 | 2 | 9 | -3.5993 | 2.0993 |
| 2 | 8 | 2 | 10 | -4.8493 | 0.8493 |
| 2 | 8 | 3 | 5 | 3.0177 | 11.9823 |
| 2 | 8 | 3 | 6 | 1.5177 | 10.4823 |
| 2 | 8 | 3 | 7 | 1.0177 | 9.9823 |
| 2 | 8 | 3 | 8 | 0.2677 | 9.2323 |
| 2 | 8 | 3 | 9 | -0.9823 | 7.9823 |
| 2 | 8 | 3 | 10 | -2.4823 | 6.4823 |
| 2 | 8 | 4 | 5 | 1.5177 | 10.4823 |
| 2 | 8 | 4 | 6 | 0.01765 | 8.9823 |
| 2 | 8 | 4 | 7 | -0.9823 | 7.9823 |
| 2 | 8 | 4 | 8 | -2.7323 | 6.2323 |
| 2 | 8 | 4 | 9 | -4.4823 | 4.4823 |
| 2 | 8 | 4 | 10 | -4.4823 | 4.4823 |
| 2 | 8 | 5 | 5 | 6.5177 | 15.4823 |
| 2 | 8 | 5 | 6 | 5.2677 | 14.2323 |
| 2 | 8 | 5 | 7 | 4.5177 | 13.4823 |
| 2 | 8 | 5 | 8 | 4.2677 | 13.2323 |
| 2 | 8 | 5 | 9 | 2.2677 | 11.2323 |
| 2 | 8 | 5 | 10 | 0.5177 | 9.4823 |
| 2 | 8 | 6 | 5 | 6.0177 | 14.9823 |
| 2 | 8 | 6 | 6 | 4.2677 | 13.2323 |
| 2 | 8 | 6 | 7 | 3.7677 | 12.7323 |
| 2 | 8 | 6 | 8 | 3.2677 | 12.2323 |
| 2 | 8 | 6 | 9 | 3.2677 | 12.2323 |
| 2 | 8 | 6 | 10 | 2.5177 | 11.4823 |
| 2 | 9 | 2 | 10 | -4.0993 | 1.5993 |
| 2 | 9 | 3 | 5 | 3.7677 | 12.7323 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 2 | 9 | 3 | 6 | 6.7500 | 1.1320 | 87 | 5.96 | <.0001 | <.0001 | 0.05 | 4.5000 | 9.0000 |
| 2 | 9 | 3 | 7 | 6.2500 | 1.1320 | 87 | 5.52 | <.0001 | 0.0002 | 0.05 | 4.0000 | 8.5000 |
| 2 | 9 | 3 | 8 | 5.5000 | 1.1320 | 87 | 4.86 | <.0001 | 0.0024 | 0.05 | 3.2500 | 7.7500 |
| 2 | 9 | 3 | 9 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 2 | 9 | 3 | 10 | 2.7500 | 1.1320 | 87 | 2.43 | 0.0172 | 0.8654 | 0.05 | 0.5000 | 5.0000 |
| 2 | 9 | 4 | 5 | 6.7500 | 1.1320 | 87 | 5.96 | <.0001 | <.0001 | 0.05 | 4.5000 | 9.0000 |
| 2 | 9 | 4 | 6 | 5.2500 | 1.1320 | 87 | 4.64 | <.0001 | 0.0054 | 0.05 | 3.0000 | 7.5000 |
| 2 | 9 | 4 | 7 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 2 | 9 | 4 | 8 | 2.5000 | 1.1320 | 87 | 2.21 | 0.0298 | 0.9486 | 0.05 | 0.2500 | 4.7500 |
| 2 | 9 | 4 | 9 | 0.7500 | 1.1320 | 87 | 0.66 | 0.5094 | 1.0000 | 0.05 | -1.5000 | 3.0000 |
| 2 | 9 | 4 | 10 | 0.7500 | 1.1320 | 87 | 0.66 | 0.5094 | 1.0000 | 0.05 | -1.5000 | 3.0000 |
| 2 | 9 | 5 | 5 | 11.7500 | 1.1320 | 87 | 10.38 | <.0001 | <.0001 | 0.05 | 9.5000 | 14.0000 |
| 2 | 9 | 5 | 6 | 10.5000 | 1.1320 | 87 | 9.28 | <.0001 | <.0001 | 0.05 | 8.2500 | 12.7500 |
| 2 | 9 | 5 | 7 | 9.7500 | 1.1320 | 87 | 8.61 | <.0001 | <.0001 | 0.05 | 7.5000 | 12.0000 |
| 2 | 9 | 5 | 8 | 9.5000 | 1.1320 | 87 | 8.39 | <.0001 | <.0001 | 0.05 | 7.2500 | 11.7500 |
| 2 | 9 | 5 | 9 | 7.5000 | 1.1320 | 87 | 6.63 | <.0001 | <.0001 | 0.05 | 5.2500 | 9.7500 |
| 2 | 9 | 5 | 10 | 5.7500 | 1.1320 | 87 | 5.08 | <.0001 | 0.0010 | 0.05 | 3.5000 | 8.0000 |
| 2 | 9 | 6 | 5 | 11.2500 | 1.1320 | 87 | 9.94 | <.0001 | <.0001 | 0.05 | 9.0000 | 13.5000 |
| 2 | 9 | 6 | 6 | 9.5000 | 1.1320 | 87 | 8.39 | <.0001 | <.0001 | 0.05 | 7.2500 | 11.7500 |
| 2 | 9 | 6 | 7 | 9.0000 | 1.1320 | 87 | 7.95 | <.0001 | <.0001 | 0.05 | 6.7500 | 11.2500 |
| 2 | 9 | 6 | 8 | 8.5000 | 1.1320 | 87 | 7.51 | <.0001 | <.0001 | 0.05 | 6.2500 | 10.7500 |
| 2 | 9 | 6 | 9 | 8.5000 | 1.1320 | 87 | 7.51 | <.0001 | <.0001 | 0.05 | 6.2500 | 10.7500 |
| 2 | 9 | 6 | 10 | 7.7500 | 1.1320 | 87 | 6.85 | <.0001 | <.0001 | 0.05 | 5.5000 | 10.0000 |
| 2 | 10 | 3 | 5 | 9.5000 | 1.1320 | 87 | 8.39 | <.0001 | <.0001 | 0.05 | 7.2500 | 11.7500 |
| 2 | 10 | 3 | 6 | 8.0000 | 1.1320 | 87 | 7.07 | <.0001 | <.0001 | 0.05 | 5.7500 | 10.2500 |
| 2 | 10 | 3 | 7 | 7.5000 | 1.1320 | 87 | 6.63 | <.0001 | <.0001 | 0.05 | 5.2500 | 9.7500 |
| 2 | 10 | 3 | 8 | 6.7500 | 1.1320 | 87 | 5.96 | <.0001 | <.0001 | 0.05 | 4.5000 | 9.0000 |
| 2 | 10 | 3 | 9 | 5.5000 | 1.1320 | 87 | 4.86 | <.0001 | 0.0024 | 0.05 | 3.2500 | 7.7500 |
| 2 | 10 | 3 | 10 | 4.0000 | 1.1320 | 87 | 3.53 | 0.0007 | 0.1591 | 0.05 | 1.7500 | 6.2500 |
| 2 | 10 | 4 | 5 | 8.0000 | 1.1320 | 87 | 7.07 | <.0001 | <.0001 | 0.05 | 5.7500 | 10.2500 |
| 2 | 10 | 4 | 6 | 6.5000 | 1.1320 | 87 | 5.74 | <.0001 | <.0001 | 0.05 | 4.2500 | 8.7500 |
| 2 | 10 | 4 | 7 | 5.5000 | 1.1320 | 87 | 4.86 | <.0001 | 0.0024 | 0.05 | 3.2500 | 7.7500 |
| 2 | 10 | 4 | 8 | 3.7500 | 1.1320 | 87 | 3.31 | 0.0013 | 0.2633 | 0.05 | 1.5000 | 6.0000 |
| 2 | 10 | 4 | 9 | 2.0000 | 1.1320 | 87 | 1.77 | 0.0808 | 0.9977 | 0.05 | -0.2500 | 4.2500 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 2 | 9 | 3 | 6 | 2.2677 | 11.2323 |
| 2 | 9 | 3 | 7 | 1.7677 | 10.7323 |
| 2 | 9 | 3 | 8 | 1.0177 | 9.9823 |
| 2 | 9 | 3 | 9 | -0.2323 | 8.7323 |
| 2 | 9 | 3 | 10 | -1.7323 | 7.2323 |
| 2 | 9 | 4 | 5 | 2.2677 | 11.2323 |
| 2 | 9 | 4 | 6 | 0.7677 | 9.7323 |
| 2 | 9 | 4 | 7 | -0.2323 | 8.7323 |
| 2 | 9 | 4 | 8 | -1.9823 | 6.9823 |
| 2 | 9 | 4 | 9 | -3.7323 | 5.2323 |
| 2 | 9 | 4 | 10 | -3.7323 | 5.2323 |
| 2 | 9 | 5 | 5 | 7.2677 | 16.2323 |
| 2 | 9 | 5 | 6 | 6.0177 | 14.9823 |
| 2 | 9 | 5 | 7 | 5.2677 | 14.2323 |
| 2 | 9 | 5 | 8 | 5.0177 | 13.9823 |
| 2 | 9 | 5 | 9 | 3.0177 | 11.9823 |
| 2 | 9 | 5 | 10 | 1.2677 | 10.2323 |
| 2 | 9 | 6 | 5 | 6.7677 | 15.7323 |
| 2 | 9 | 6 | 6 | 5.0177 | 13.9823 |
| 2 | 9 | 6 | 7 | 4.5177 | 13.4823 |
| 2 | 9 | 6 | 8 | 4.0177 | 12.9823 |
| 2 | 9 | 6 | 9 | 4.0177 | 12.9823 |
| 2 | 9 | 6 | 10 | 3.2677 | 12.2323 |
| 2 | 10 | 3 | 5 | 5.0177 | 13.9823 |
| 2 | 10 | 3 | 6 | 3.5177 | 12.4823 |
| 2 | 10 | 3 | 7 | 3.0177 | 11.9823 |
| 2 | 10 | 3 | 8 | 2.2677 | 11.2323 |
| 2 | 10 | 3 | 9 | 1.0177 | 9.9823 |
| 2 | 10 | 3 | 10 | -0.4823 | 8.4823 |
| 2 | 10 | 4 | 5 | 3.5177 | 12.4823 |
| 2 | 10 | 4 | 6 | 2.0177 | 10.9823 |
| 2 | 10 | 4 | 7 | 1.0177 | 9.9823 |
| 2 | 10 | 4 | 8 | -0.7323 | 8.2323 |
| 2 | 10 | 4 | 9 | -2.4823 | 6.4823 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 2 | 10 | 4 | 10 | 2.0000 | 1.1320 | 87 | 1.77 | 0.0808 | 0.9977 | 0.05 | -0.2500 | 4.2500 |
| 2 | 10 | 5 | 5 | 13.0000 | 1.1320 | 87 | 11.48 | <.0001 | <.0001 | 0.05 | 10.7500 | 15.2500 |
| 2 | 10 | 5 | 6 | 11.7500 | 1.1320 | 87 | 10.38 | <.0001 | <.0001 | 0.05 | 9.5000 | 14.0000 |
| 2 | 10 | 5 | 7 | 11.0000 | 1.1320 | 87 | 9.72 | <.0001 | <.0001 | 0.05 | 8.7500 | 13.2500 |
| 2 | 10 | 5 | 8 | 10.7500 | 1.1320 | 87 | 9.50 | <.0001 | <.0001 | 0.05 | 8.5000 | 13.0000 |
| 2 | 10 | 5 | 9 | 8.7500 | 1.1320 | 87 | 7.73 | <.0001 | <.0001 | 0.05 | 6.5000 | 11.0000 |
| 2 | 10 | 5 | 10 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 2 | 10 | 6 | 5 | 12.5000 | 1.1320 | 87 | 11.04 | <.0001 | <.0001 | 0.05 | 10.2500 | 14.7500 |
| 2 | 10 | 6 | 6 | 10.7500 | 1.1320 | 87 | 9.50 | <.0001 | <.0001 | 0.05 | 8.5000 | 13.0000 |
| 2 | 10 | 6 | 7 | 10.2500 | 1.1320 | 87 | 9.05 | <.0001 | <.0001 | 0.05 | 8.0000 | 12.5000 |
| 2 | 10 | 6 | 8 | 9.7500 | 1.1320 | 87 | 8.61 | <.0001 | <.0001 | 0.05 | 7.5000 | 12.0000 |
| 2 | 10 | 6 | 9 | 9.7500 | 1.1320 | 87 | 8.61 | <.0001 | <.0001 | 0.05 | 7.5000 | 12.0000 |
| 2 | 10 | 6 | 10 | 9.0000 | 1.1320 | 87 | 7.95 | <.0001 | <.0001 | 0.05 | 6.7500 | 11.2500 |
| 3 | 5 | 3 | 6 | -1.5000 | 0.7196 | 87 | -2.08 | 0.0400 | 0.9743 | 0.05 | -2.9303 | -0.06973 |
| 3 | 5 | 3 | 7 | -2.0000 | 0.7196 | 87 | -2.78 | 0.0067 | 0.6384 | 0.05 | -3.4303 | -0.5697 |
| 3 | 5 | 3 | 8 | -2.7500 | 0.7196 | 87 | -3.82 | 0.0002 | 0.0745 | 0.05 | -4.1803 | -1.3197 |
| 3 | 5 | 3 | 9 | -4.0000 | 0.7196 | 87 | -5.56 | <.0001 | 0.0002 | 0.05 | -5.4303 | -2.5697 |
| 3 | 5 | 3 | 10 | -5.5000 | 0.7196 | 87 | -7.64 | <.0001 | <.0001 | 0.05 | -6.9303 | -4.0697 |
| 3 | 5 | 4 | 5 | -1.5000 | 1.1320 | 87 | -1.33 | 0.1886 | 1.0000 | 0.05 | -3.7500 | 0.7500 |
| 3 | 5 | 4 | 6 | -3.0000 | 1.1320 | 87 | -2.65 | 0.0096 | 0.7325 | 0.05 | -5.2500 | -0.7500 |
| 3 | 5 | 4 | 7 | -4.0000 | 1.1320 | 87 | -3.53 | 0.0007 | 0.1591 | 0.05 | -6.2500 | -1.7500 |
| 3 | 5 | 4 | 8 | -5.7500 | 1.1320 | 87 | -5.08 | <.0001 | 0.0010 | 0.05 | -8.0000 | -3.5000 |
| 3 | 5 | 4 | 9 | -7.5000 | 1.1320 | 87 | -6.63 | <.0001 | <.0001 | 0.05 | -9.7500 | -5.2500 |
| 3 | 5 | 4 | 10 | -7.5000 | 1.1320 | 87 | -6.63 | <.0001 | <.0001 | 0.05 | -9.7500 | -5.2500 |
| 3 | 5 | 5 | 5 | 3.5000 | 1.1320 | 87 | 3.09 | 0.0027 | 0.4036 | 0.05 | 1.2500 | 5.7500 |
| 3 | 5 | 5 | 6 | 2.2500 | 1.1320 | 87 | 1.99 | 0.0500 | 0.9863 | 0.05 | 0.000014 | 4.5000 |
| 3 | 5 | 5 | 7 | 1.5000 | 1.1320 | 87 | 1.33 | 0.1886 | 1.0000 | 0.05 | -0.7500 | 3.7500 |
| 3 | 5 | 5 | 8 | 1.2500 | 1.1320 | 87 | 1.10 | 0.2725 | 1.0000 | 0.05 | -1.0000 | 3.5000 |
| 3 | 5 | 5 | 9 | -0.7500 | 1.1320 | 87 | -0.66 | 0.5094 | 1.0000 | 0.05 | -3.0000 | 1.5000 |
| 3 | 5 | 5 | 10 | -2.5000 | 1.1320 | 87 | -2.21 | 0.0298 | 0.9486 | 0.05 | -4.7500 | -0.2500 |
| 3 | 5 | 6 | 5 | 3.0000 | 1.1320 | 87 | 2.65 | 0.0096 | 0.7325 | 0.05 | 0.7500 | 5.2500 |
| 3 | 5 | 6 | 6 | 1.2500 | 1.1320 | 87 | 1.10 | 0.2725 | 1.0000 | 0.05 | -1.0000 | 3.5000 |
| 3 | 5 | 6 | 7 | 0.7500 | 1.1320 | 87 | 0.66 | 0.5094 | 1.0000 | 0.05 | -1.5000 | 3.0000 |
| 3 | 5 | 6 | 8 | 0.2500 | 1.1320 | 87 | 0.22 | 0.8257 | 1.0000 | 0.05 | -2.0000 | 2.5000 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 2 | 10 | 4 | 10 | -2.4823 | 6.4823 |
| 2 | 10 | 5 | 5 | 8.5177 | 17.4823 |
| 2 | 10 | 5 | 6 | 7.2677 | 16.2323 |
| 2 | 10 | 5 | 7 | 6.5177 | 15.4823 |
| 2 | 10 | 5 | 8 | 6.2677 | 15.2323 |
| 2 | 10 | 5 | 9 | 4.2677 | 13.2323 |
| 2 | 10 | 5 | 10 | 2.5177 | 11.4823 |
| 2 | 10 | 6 | 5 | 8.0177 | 16.9823 |
| 2 | 10 | 6 | 6 | 6.2677 | 15.2323 |
| 2 | 10 | 6 | 7 | 5.7677 | 14.7323 |
| 2 | 10 | 6 | 8 | 5.2677 | 14.2323 |
| 2 | 10 | 6 | 9 | 5.2677 | 14.2323 |
| 2 | 10 | 6 | 10 | 4.5177 | 13.4823 |
| 3 | 5 | 3 | 6 | -4.3493 | 1.3493 |
| 3 | 5 | 3 | 7 | -4.8493 | 0.8493 |
| 3 | 5 | 3 | 8 | -5.5993 | 0.09933 |
| 3 | 5 | 3 | 9 | -6.8493 | -1.1507 |
| 3 | 5 | 3 | 10 | -8.3493 | -2.6507 |
| 3 | 5 | 4 | 5 | -5.9823 | 2.9823 |
| 3 | 5 | 4 | 6 | -7.4823 | 1.4823 |
| 3 | 5 | 4 | 7 | -8.4823 | 0.4823 |
| 3 | 5 | 4 | 8 | -10.2323 | -1.2677 |
| 3 | 5 | 4 | 9 | -11.9823 | -3.0177 |
| 3 | 5 | 4 | 10 | -11.9823 | -3.0177 |
| 3 | 5 | 5 | 5 | -0.9823 | 7.9823 |
| 3 | 5 | 5 | 6 | -2.2323 | 6.7323 |
| 3 | 5 | 5 | 7 | -2.9823 | 5.9823 |
| 3 | 5 | 5 | 8 | -3.2323 | 5.7323 |
| 3 | 5 | 5 | 9 | -5.2323 | 3.7323 |
| 3 | 5 | 5 | 10 | -6.9823 | 1.9823 |
| 3 | 5 | 6 | 5 | -1.4823 | 7.4823 |
| 3 | 5 | 6 | 6 | -3.2323 | 5.7323 |
| 3 | 5 | 6 | 7 | -3.7323 | 5.2323 |
| 3 | 5 | 6 | 8 | -4.2323 | 4.7323 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 3 | 5 | 6 | 9 | 0.2500 | 1.1320 | 87 | 0.22 | 0.8257 | 1.0000 | 0.05 | -2.0000 | 2.5000 |
| 3 | 5 | 6 | 10 | -0.5000 | 1.1320 | 87 | -0.44 | 0.6598 | 1.0000 | 0.05 | -2.7500 | 1.7500 |
| 3 | 6 | 3 | 7 | -0.5000 | 0.7196 | 87 | -0.69 | 0.4890 | 1.0000 | 0.05 | -1.9303 | 0.9303 |
| 3 | 6 | 3 | 8 | -1.2500 | 0.7196 | 87 | -1.74 | 0.0859 | 0.9983 | 0.05 | -2.6803 | 0.1803 |
| 3 | 6 | 3 | 9 | -2.5000 | 0.7196 | 87 | -3.47 | 0.0008 | 0.1835 | 0.05 | -3.9303 | -1.0697 |
| 3 | 6 | 3 | 10 | -4.0000 | 0.7196 | 87 | -5.56 | <.0001 | 0.0002 | 0.05 | -5.4303 | -2.5697 |
| 3 | 6 | 4 | 5 | -2.5E-7 | 1.1320 | 87 | -0.00 | 1.0000 | 1.0000 | 0.05 | -2.2500 | 2.2500 |
| 3 | 6 | 4 | 6 | -1.5000 | 1.1320 | 87 | -1.33 | 0.1886 | 1.0000 | 0.05 | -3.7500 | 0.7500 |
| 3 | 6 | 4 | 7 | -2.5000 | 1.1320 | 87 | -2.21 | 0.0298 | 0.9486 | 0.05 | -4.7500 | -0.2500 |
| 3 | 6 | 4 | 8 | -4.2500 | 1.1320 | 87 | -3.75 | 0.0003 | 0.0898 | 0.05 | -6.5000 | -2.0000 |
| 3 | 6 | 4 | 9 | -6.0000 | 1.1320 | 87 | -5.30 | <.0001 | 0.0004 | 0.05 | -8.2500 | -3.7500 |
| 3 | 6 | 4 | 10 | -6.0000 | 1.1320 | 87 | -5.30 | <.0001 | 0.0004 | 0.05 | -8.2500 | -3.7500 |
| 3 | 6 | 5 | 5 | 5.0000 | 1.1320 | 87 | 4.42 | <.0001 | 0.0116 | 0.05 | 2.7500 | 7.2500 |
| 3 | 6 | 5 | 6 | 3.7500 | 1.1320 | 87 | 3.31 | 0.0013 | 0.2633 | 0.05 | 1.5000 | 6.0000 |
| 3 | 6 | 5 | 7 | 3.0000 | 1.1320 | 87 | 2.65 | 0.0096 | 0.7325 | 0.05 | 0.7500 | 5.2500 |
| 3 | 6 | 5 | 8 | 2.7500 | 1.1320 | 87 | 2.43 | 0.0172 | 0.8654 | 0.05 | 0.5000 | 5.0000 |
| 3 | 6 | 5 | 9 | 0.7500 | 1.1320 | 87 | 0.66 | 0.5094 | 1.0000 | 0.05 | -1.5000 | 3.0000 |
| 3 | 6 | 5 | 10 | -1.0000 | 1.1320 | 87 | -0.88 | 0.3795 | 1.0000 | 0.05 | -3.2500 | 1.2500 |
| 3 | 6 | 6 | 5 | 4.5000 | 1.1320 | 87 | 3.98 | 0.0001 | 0.0477 | 0.05 | 2.2500 | 6.7500 |
| 3 | 6 | 6 | 6 | 2.7500 | 1.1320 | 87 | 2.43 | 0.0172 | 0.8654 | 0.05 | 0.5000 | 5.0000 |
| 3 | 6 | 6 | 7 | 2.2500 | 1.1320 | 87 | 1.99 | 0.0500 | 0.9863 | 0.05 | 0.000014 | 4.5000 |
| 3 | 6 | 6 | 8 | 1.7500 | 1.1320 | 87 | 1.55 | 0.1258 | 0.9998 | 0.05 | -0.5000 | 4.0000 |
| 3 | 6 | 6 | 9 | 1.7500 | 1.1320 | 87 | 1.55 | 0.1258 | 0.9998 | 0.05 | -0.5000 | 4.0000 |
| 3 | 6 | 6 | 10 | 1.0000 | 1.1320 | 87 | 0.88 | 0.3795 | 1.0000 | 0.05 | -1.2500 | 3.2500 |
| 3 | 7 | 3 | 8 | -0.7500 | 0.7196 | 87 | -1.04 | 0.3002 | 1.0000 | 0.05 | -2.1803 | 0.6803 |
| 3 | 7 | 3 | 9 | -2.0000 | 0.7196 | 87 | -2.78 | 0.0067 | 0.6384 | 0.05 | -3.4303 | -0.5697 |
| 3 | 7 | 3 | 10 | -3.5000 | 0.7196 | 87 | -4.86 | <.0001 | 0.0023 | 0.05 | -4.9303 | -2.0697 |
| 3 | 7 | 4 | 5 | 0.5000 | 1.1320 | 87 | 0.44 | 0.6598 | 1.0000 | 0.05 | -1.7500 | 2.7500 |
| 3 | 7 | 4 | 6 | -1.0000 | 1.1320 | 87 | -0.88 | 0.3795 | 1.0000 | 0.05 | -3.2500 | 1.2500 |
| 3 | 7 | 4 | 7 | -2.0000 | 1.1320 | 87 | -1.77 | 0.0808 | 0.9977 | 0.05 | -4.2500 | 0.2500 |
| 3 | 7 | 4 | 8 | -3.7500 | 1.1320 | 87 | -3.31 | 0.0013 | 0.2633 | 0.05 | -6.0000 | -1.5000 |
| 3 | 7 | 4 | 9 | -5.5000 | 1.1320 | 87 | -4.86 | <.0001 | 0.0024 | 0.05 | -7.7500 | -3.2500 |
| 3 | 7 | 4 | 10 | -5.5000 | 1.1320 | 87 | -4.86 | <.0001 | 0.0024 | 0.05 | -7.7500 | -3.2500 |
| 3 | 7 | 5 | 5 | 5.5000 | 1.1320 | 87 | 4.86 | <.0001 | 0.0024 | 0.05 | 3.2500 | 7.7500 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 3 | 5 | 6 | 9 | -4.2323 | 4.7323 |
| 3 | 5 | 6 | 10 | -4.9823 | 3.9823 |
| 3 | 6 | 3 | 7 | -3.3493 | 2.3493 |
| 3 | 6 | 3 | 8 | -4.0993 | 1.5993 |
| 3 | 6 | 3 | 9 | -5.3493 | 0.3493 |
| 3 | 6 | 3 | 10 | -6.8493 | -1.1507 |
| 3 | 6 | 4 | 5 | -4.4823 | 4.4823 |
| 3 | 6 | 4 | 6 | -5.9823 | 2.9823 |
| 3 | 6 | 4 | 7 | -6.9823 | 1.9823 |
| 3 | 6 | 4 | 8 | -8.7323 | 0.2323 |
| 3 | 6 | 4 | 9 | -10.4823 | -1.5177 |
| 3 | 6 | 4 | 10 | -10.4823 | -1.5177 |
| 3 | 6 | 5 | 5 | 0.5177 | 9.4823 |
| 3 | 6 | 5 | 6 | -0.7323 | 8.2323 |
| 3 | 6 | 5 | 7 | -1.4823 | 7.4823 |
| 3 | 6 | 5 | 8 | -1.7323 | 7.2323 |
| 3 | 6 | 5 | 9 | -3.7323 | 5.2323 |
| 3 | 6 | 5 | 10 | -5.4823 | 3.4823 |
| 3 | 6 | 6 | 5 | 0.01765 | 8.9823 |
| 3 | 6 | 6 | 6 | -1.7323 | 7.2323 |
| 3 | 6 | 6 | 7 | -2.2323 | 6.7323 |
| 3 | 6 | 6 | 8 | -2.7323 | 6.2323 |
| 3 | 6 | 6 | 9 | -2.7323 | 6.2323 |
| 3 | 6 | 6 | 10 | -3.4823 | 5.4823 |
| 3 | 7 | 3 | 8 | -3.5993 | 2.0993 |
| 3 | 7 | 3 | 9 | -4.8493 | 0.8493 |
| 3 | 7 | 3 | 10 | -6.3493 | -0.6507 |
| 3 | 7 | 4 | 5 | -3.9823 | 4.9823 |
| 3 | 7 | 4 | 6 | -5.4823 | 3.4823 |
| 3 | 7 | 4 | 7 | -6.4823 | 2.4823 |
| 3 | 7 | 4 | 8 | -8.2323 | 0.7323 |
| 3 | 7 | 4 | 9 | -9.9823 | -1.0177 |
| 3 | 7 | 4 | 10 | -9.9823 | -1.0177 |
| 3 | 7 | 5 | 5 | 1.0177 | 9.9823 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 3 | 7 | 5 | 6 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 3 | 7 | 5 | 7 | 3.5000 | 1.1320 | 87 | 3.09 | 0.0027 | 0.4036 | 0.05 | 1.2500 | 5.7500 |
| 3 | 7 | 5 | 8 | 3.2500 | 1.1320 | 87 | 2.87 | 0.0051 | 0.5684 | 0.05 | 1.0000 | 5.5000 |
| 3 | 7 | 5 | 9 | 1.2500 | 1.1320 | 87 | 1.10 | 0.2725 | 1.0000 | 0.05 | -1.0000 | 3.5000 |
| 3 | 7 | 5 | 10 | -0.5000 | 1.1320 | 87 | -0.44 | 0.6598 | 1.0000 | 0.05 | -2.7500 | 1.7500 |
| 3 | 7 | 6 | 5 | 5.0000 | 1.1320 | 87 | 4.42 | <.0001 | 0.0116 | 0.05 | 2.7500 | 7.2500 |
| 3 | 7 | 6 | 6 | 3.2500 | 1.1320 | 87 | 2.87 | 0.0051 | 0.5684 | 0.05 | 1.0000 | 5.5000 |
| 3 | 7 | 6 | 7 | 2.7500 | 1.1320 | 87 | 2.43 | 0.0172 | 0.8654 | 0.05 | 0.5000 | 5.0000 |
| 3 | 7 | 6 | 8 | 2.2500 | 1.1320 | 87 | 1.99 | 0.0500 | 0.9863 | 0.05 | 0.000014 | 4.5000 |
| 3 | 7 | 6 | 9 | 2.2500 | 1.1320 | 87 | 1.99 | 0.0500 | 0.9863 | 0.05 | 0.000014 | 4.5000 |
| 3 | 7 | 6 | 10 | 1.5000 | 1.1320 | 87 | 1.33 | 0.1886 | 1.0000 | 0.05 | -0.7500 | 3.7500 |
| 3 | 8 | 3 | 9 | -1.2500 | 0.7196 | 87 | -1.74 | 0.0859 | 0.9983 | 0.05 | -2.6803 | 0.1803 |
| 3 | 8 | 3 | 10 | -2.7500 | 0.7196 | 87 | -3.82 | 0.0002 | 0.0745 | 0.05 | -4.1803 | -1.3197 |
| 3 | 8 | 4 | 5 | 1.2500 | 1.1320 | 87 | 1.10 | 0.2725 | 1.0000 | 0.05 | -1.0000 | 3.5000 |
| 3 | 8 | 4 | 6 | -0.2500 | 1.1320 | 87 | -0.22 | 0.8257 | 1.0000 | 0.05 | -2.5000 | 2.0000 |
| 3 | 8 | 4 | 7 | -1.2500 | 1.1320 | 87 | -1.10 | 0.2725 | 1.0000 | 0.05 | -3.5000 | 1.0000 |
| 3 | 8 | 4 | 8 | -3.0000 | 1.1320 | 87 | -2.65 | 0.0096 | 0.7325 | 0.05 | -5.2500 | -0.7500 |
| 3 | 8 | 4 | 9 | -4.7500 | 1.1320 | 87 | -4.20 | <.0001 | 0.0241 | 0.05 | -7.0000 | -2.5000 |
| 3 | 8 | 4 | 10 | -4.7500 | 1.1320 | 87 | -4.20 | <.0001 | 0.0241 | 0.05 | -7.0000 | -2.5000 |
| 3 | 8 | 5 | 5 | 6.2500 | 1.1320 | 87 | 5.52 | <.0001 | 0.0002 | 0.05 | 4.0000 | 8.5000 |
| 3 | 8 | 5 | 6 | 5.0000 | 1.1320 | 87 | 4.42 | <.0001 | 0.0116 | 0.05 | 2.7500 | 7.2500 |
| 3 | 8 | 5 | 7 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 3 | 8 | 5 | 8 | 4.0000 | 1.1320 | 87 | 3.53 | 0.0007 | 0.1591 | 0.05 | 1.7500 | 6.2500 |
| 3 | 8 | 5 | 9 | 2.0000 | 1.1320 | 87 | 1.77 | 0.0808 | 0.9977 | 0.05 | -0.2500 | 4.2500 |
| 3 | 8 | 5 | 10 | 0.2500 | 1.1320 | 87 | 0.22 | 0.8257 | 1.0000 | 0.05 | -2.0000 | 2.5000 |
| 3 | 8 | 6 | 5 | 5.7500 | 1.1320 | 87 | 5.08 | <.0001 | 0.0010 | 0.05 | 3.5000 | 8.0000 |
| 3 | 8 | 6 | 6 | 4.0000 | 1.1320 | 87 | 3.53 | 0.0007 | 0.1591 | 0.05 | 1.7500 | 6.2500 |
| 3 | 8 | 6 | 7 | 3.5000 | 1.1320 | 87 | 3.09 | 0.0027 | 0.4036 | 0.05 | 1.2500 | 5.7500 |
| 3 | 8 | 6 | 8 | 3.0000 | 1.1320 | 87 | 2.65 | 0.0096 | 0.7325 | 0.05 | 0.7500 | 5.2500 |
| 3 | 8 | 6 | 9 | 3.0000 | 1.1320 | 87 | 2.65 | 0.0096 | 0.7325 | 0.05 | 0.7500 | 5.2500 |
| 3 | 8 | 6 | 10 | 2.2500 | 1.1320 | 87 | 1.99 | 0.0500 | 0.9863 | 0.05 | 0.000014 | 4.5000 |
| 3 | 9 | 3 | 10 | -1.5000 | 0.7196 | 87 | -2.08 | 0.0400 | 0.9743 | 0.05 | -2.9303 | -0.06973 |
| 3 | 9 | 4 | 5 | 2.5000 | 1.1320 | 87 | 2.21 | 0.0298 | 0.9486 | 0.05 | 0.2500 | 4.7500 |
| 3 | 9 | 4 | 6 | 1.0000 | 1.1320 | 87 | 0.88 | 0.3795 | 1.0000 | 0.05 | -1.2500 | 3.2500 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 3 | 7 | 5 | 6 | -0.2323 | 8.7323 |
| 3 | 7 | 5 | 7 | -0.9823 | 7.9823 |
| 3 | 7 | 5 | 8 | -1.2323 | 7.7323 |
| 3 | 7 | 5 | 9 | -3.2323 | 5.7323 |
| 3 | 7 | 5 | 10 | -4.9823 | 3.9823 |
| 3 | 7 | 6 | 5 | 0.5177 | 9.4823 |
| 3 | 7 | 6 | 6 | -1.2323 | 7.7323 |
| 3 | 7 | 6 | 7 | -1.7323 | 7.2323 |
| 3 | 7 | 6 | 8 | -2.2323 | 6.7323 |
| 3 | 7 | 6 | 9 | -2.2323 | 6.7323 |
| 3 | 7 | 6 | 10 | -2.9823 | 5.9823 |
| 3 | 8 | 3 | 9 | -4.0993 | 1.5993 |
| 3 | 8 | 3 | 10 | -5.5993 | 0.09933 |
| 3 | 8 | 4 | 5 | -3.2323 | 5.7323 |
| 3 | 8 | 4 | 6 | -4.7323 | 4.2323 |
| 3 | 8 | 4 | 7 | -5.7323 | 3.2323 |
| 3 | 8 | 4 | 8 | -7.4823 | 1.4823 |
| 3 | 8 | 4 | 9 | -9.2323 | -0.2677 |
| 3 | 8 | 4 | 10 | -9.2323 | -0.2677 |
| 3 | 8 | 5 | 5 | 1.7677 | 10.7323 |
| 3 | 8 | 5 | 6 | 0.5177 | 9.4823 |
| 3 | 8 | 5 | 7 | -0.2323 | 8.7323 |
| 3 | 8 | 5 | 8 | -0.4823 | 8.4823 |
| 3 | 8 | 5 | 9 | -2.4823 | 6.4823 |
| 3 | 8 | 5 | 10 | -4.2323 | 4.7323 |
| 3 | 8 | 6 | 5 | 1.2677 | 10.2323 |
| 3 | 8 | 6 | 6 | -0.4823 | 8.4823 |
| 3 | 8 | 6 | 7 | -0.9823 | 7.9823 |
| 3 | 8 | 6 | 8 | -1.4823 | 7.4823 |
| 3 | 8 | 6 | 9 | -1.4823 | 7.4823 |
| 3 | 8 | 6 | 10 | -2.2323 | 6.7323 |
| 3 | 9 | 3 | 10 | -4.3493 | 1.3493 |
| 3 | 9 | 4 | 5 | -1.9823 | 6.9823 |
| 3 | 9 | 4 | 6 | -3.4823 | 5.4823 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 3 | 9 | 4 | 7 | 2.89E-14 | 1.1320 | 87 | 0.00 | 1.0000 | 1.0000 | 0.05 | -2.2500 | 2.2500 |
| 3 | 9 | 4 | 8 | -1.7500 | 1.1320 | 87 | -1.55 | 0.1258 | 0.9998 | 0.05 | -4.0000 | 0.5000 |
| 3 | 9 | 4 | 9 | -3.5000 | 1.1320 | 87 | -3.09 | 0.0027 | 0.4036 | 0.05 | -5.7500 | -1.2500 |
| 3 | 9 | 4 | 10 | -3.5000 | 1.1320 | 87 | -3.09 | 0.0027 | 0.4036 | 0.05 | -5.7500 | -1.2500 |
| 3 | 9 | 5 | 5 | 7.5000 | 1.1320 | 87 | 6.63 | <.0001 | <.0001 | 0.05 | 5.2500 | 9.7500 |
| 3 | 9 | 5 | 6 | 6.2500 | 1.1320 | 87 | 5.52 | <.0001 | 0.0002 | 0.05 | 4.0000 | 8.5000 |
| 3 | 9 | 5 | 7 | 5.5000 | 1.1320 | 87 | 4.86 | <.0001 | 0.0024 | 0.05 | 3.2500 | 7.7500 |
| 3 | 9 | 5 | 8 | 5.2500 | 1.1320 | 87 | 4.64 | <.0001 | 0.0054 | 0.05 | 3.0000 | 7.5000 |
| 3 | 9 | 5 | 9 | 3.2500 | 1.1320 | 87 | 2.87 | 0.0051 | 0.5684 | 0.05 | 1.0000 | 5.5000 |
| 3 | 9 | 5 | 10 | 1.5000 | 1.1320 | 87 | 1.33 | 0.1886 | 1.0000 | 0.05 | -0.7500 | 3.7500 |
| 3 | 9 | 6 | 5 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 3 | 9 | 6 | 6 | 5.2500 | 1.1320 | 87 | 4.64 | <.0001 | 0.0054 | 0.05 | 3.0000 | 7.5000 |
| 3 | 9 | 6 | 7 | 4.7500 | 1.1320 | 87 | 4.20 | <.0001 | 0.0241 | 0.05 | 2.5000 | 7.0000 |
| 3 | 9 | 6 | 8 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 3 | 9 | 6 | 9 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 3 | 9 | 6 | 10 | 3.5000 | 1.1320 | 87 | 3.09 | 0.0027 | 0.4036 | 0.05 | 1.2500 | 5.7500 |
| 3 | 10 | 4 | 5 | 4.0000 | 1.1320 | 87 | 3.53 | 0.0007 | 0.1591 | 0.05 | 1.7500 | 6.2500 |
| 3 | 10 | 4 | 6 | 2.5000 | 1.1320 | 87 | 2.21 | 0.0298 | 0.9486 | 0.05 | 0.2500 | 4.7500 |
| 3 | 10 | 4 | 7 | 1.5000 | 1.1320 | 87 | 1.33 | 0.1886 | 1.0000 | 0.05 | -0.7500 | 3.7500 |
| 3 | 10 | 4 | 8 | -0.2500 | 1.1320 | 87 | -0.22 | 0.8257 | 1.0000 | 0.05 | -2.5000 | 2.0000 |
| 3 | 10 | 4 | 9 | -2.0000 | 1.1320 | 87 | -1.77 | 0.0808 | 0.9977 | 0.05 | -4.2500 | 0.2500 |
| 3 | 10 | 4 | 10 | -2.0000 | 1.1320 | 87 | -1.77 | 0.0808 | 0.9977 | 0.05 | -4.2500 | 0.2500 |
| 3 | 10 | 5 | 5 | 9.0000 | 1.1320 | 87 | 7.95 | <.0001 | <.0001 | 0.05 | 6.7500 | 11.2500 |
| 3 | 10 | 5 | 6 | 7.7500 | 1.1320 | 87 | 6.85 | <.0001 | <.0001 | 0.05 | 5.5000 | 10.0000 |
| 3 | 10 | 5 | 7 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 3 | 10 | 5 | 8 | 6.7500 | 1.1320 | 87 | 5.96 | <.0001 | <.0001 | 0.05 | 4.5000 | 9.0000 |
| 3 | 10 | 5 | 9 | 4.7500 | 1.1320 | 87 | 4.20 | <.0001 | 0.0241 | 0.05 | 2.5000 | 7.0000 |
| 3 | 10 | 5 | 10 | 3.0000 | 1.1320 | 87 | 2.65 | 0.0096 | 0.7325 | 0.05 | 0.7500 | 5.2500 |
| 3 | 10 | 6 | 5 | 8.5000 | 1.1320 | 87 | 7.51 | <.0001 | <.0001 | 0.05 | 6.2500 | 10.7500 |
| 3 | 10 | 6 | 6 | 6.7500 | 1.1320 | 87 | 5.96 | <.0001 | <.0001 | 0.05 | 4.5000 | 9.0000 |
| 3 | 10 | 6 | 7 | 6.2500 | 1.1320 | 87 | 5.52 | <.0001 | 0.0002 | 0.05 | 4.0000 | 8.5000 |
| 3 | 10 | 6 | 8 | 5.7500 | 1.1320 | 87 | 5.08 | <.0001 | 0.0010 | 0.05 | 3.5000 | 8.0000 |
| 3 | 10 | 6 | 9 | 5.7500 | 1.1320 | 87 | 5.08 | <.0001 | 0.0010 | 0.05 | 3.5000 | 8.0000 |
| 3 | 10 | 6 | 10 | 5.0000 | 1.1320 | 87 | 4.42 | <.0001 | 0.0116 | 0.05 | 2.7500 | 7.2500 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 3 | 9 | 4 | 7 | -4.4823 | 4.4823 |
| 3 | 9 | 4 | 8 | -6.2323 | 2.7323 |
| 3 | 9 | 4 | 9 | -7.9823 | 0.9823 |
| 3 | 9 | 4 | 10 | -7.9823 | 0.9823 |
| 3 | 9 | 5 | 5 | 3.0177 | 11.9823 |
| 3 | 9 | 5 | 6 | 1.7677 | 10.7323 |
| 3 | 9 | 5 | 7 | 1.0177 | 9.9823 |
| 3 | 9 | 5 | 8 | 0.7677 | 9.7323 |
| 3 | 9 | 5 | 9 | -1.2323 | 7.7323 |
| 3 | 9 | 5 | 10 | -2.9823 | 5.9823 |
| 3 | 9 | 6 | 5 | 2.5177 | 11.4823 |
| 3 | 9 | 6 | 6 | 0.7677 | 9.7323 |
| 3 | 9 | 6 | 7 | 0.2677 | 9.2323 |
| 3 | 9 | 6 | 8 | -0.2323 | 8.7323 |
| 3 | 9 | 6 | 9 | -0.2323 | 8.7323 |
| 3 | 9 | 6 | 10 | -0.9823 | 7.9823 |
| 3 | 10 | 4 | 5 | -0.4823 | 8.4823 |
| 3 | 10 | 4 | 6 | -1.9823 | 6.9823 |
| 3 | 10 | 4 | 7 | -2.9823 | 5.9823 |
| 3 | 10 | 4 | 8 | -4.7323 | 4.2323 |
| 3 | 10 | 4 | 9 | -6.4823 | 2.4823 |
| 3 | 10 | 4 | 10 | -6.4823 | 2.4823 |
| 3 | 10 | 5 | 5 | 4.5177 | 13.4823 |
| 3 | 10 | 5 | 6 | 3.2677 | 12.2323 |
| 3 | 10 | 5 | 7 | 2.5177 | 11.4823 |
| 3 | 10 | 5 | 8 | 2.2677 | 11.2323 |
| 3 | 10 | 5 | 9 | 0.2677 | 9.2323 |
| 3 | 10 | 5 | 10 | -1.4823 | 7.4823 |
| 3 | 10 | 6 | 5 | 4.0177 | 12.9823 |
| 3 | 10 | 6 | 6 | 2.2677 | 11.2323 |
| 3 | 10 | 6 | 7 | 1.7677 | 10.7323 |
| 3 | 10 | 6 | 8 | 1.2677 | 10.2323 |
| 3 | 10 | 6 | 9 | 1.2677 | 10.2323 |
| 3 | 10 | 6 | 10 | 0.5177 | 9.4823 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 4 | 5 | 4 | 6 | -1.5000 | 0.7196 | 87 | -2.08 | 0.0400 | 0.9743 | 0.05 | -2.9303 | -0.06973 |
| 4 | 5 | 4 | 7 | -2.5000 | 0.7196 | 87 | -3.47 | 0.0008 | 0.1835 | 0.05 | -3.9303 | -1.0697 |
| 4 | 5 | 4 | 8 | -4.2500 | 0.7196 | 87 | -5.91 | <.0001 | <.0001 | 0.05 | -5.6803 | -2.8197 |
| 4 | 5 | 4 | 9 | -6.0000 | 0.7196 | 87 | -8.34 | <.0001 | <.0001 | 0.05 | -7.4303 | -4.5697 |
| 4 | 5 | 4 | 10 | -6.0000 | 0.7196 | 87 | -8.34 | <.0001 | <.0001 | 0.05 | -7.4303 | -4.5697 |
| 4 | 5 | 5 | 5 | 5.0000 | 1.1320 | 87 | 4.42 | <.0001 | 0.0116 | 0.05 | 2.7500 | 7.2500 |
| 4 | 5 | 5 | 6 | 3.7500 | 1.1320 | 87 | 3.31 | 0.0013 | 0.2633 | 0.05 | 1.5000 | 6.0000 |
| 4 | 5 | 5 | 7 | 3.0000 | 1.1320 | 87 | 2.65 | 0.0096 | 0.7325 | 0.05 | 0.7500 | 5.2500 |
| 4 | 5 | 5 | 8 | 2.7500 | 1.1320 | 87 | 2.43 | 0.0172 | 0.8654 | 0.05 | 0.5000 | 5.0000 |
| 4 | 5 | 5 | 9 | 0.7500 | 1.1320 | 87 | 0.66 | 0.5094 | 1.0000 | 0.05 | -1.5000 | 3.0000 |
| 4 | 5 | 5 | 10 | -1.0000 | 1.1320 | 87 | -0.88 | 0.3795 | 1.0000 | 0.05 | -3.2500 | 1.2500 |
| 4 | 5 | 6 | 5 | 4.5000 | 1.1320 | 87 | 3.98 | 0.0001 | 0.0477 | 0.05 | 2.2500 | 6.7500 |
| 4 | 5 | 6 | 6 | 2.7500 | 1.1320 | 87 | 2.43 | 0.0172 | 0.8654 | 0.05 | 0.5000 | 5.0000 |
| 4 | 5 | 6 | 7 | 2.2500 | 1.1320 | 87 | 1.99 | 0.0500 | 0.9863 | 0.05 | 0.000014 | 4.5000 |
| 4 | 5 | 6 | 8 | 1.7500 | 1.1320 | 87 | 1.55 | 0.1258 | 0.9998 | 0.05 | -0.5000 | 4.0000 |
| 4 | 5 | 6 | 9 | 1.7500 | 1.1320 | 87 | 1.55 | 0.1258 | 0.9998 | 0.05 | -0.5000 | 4.0000 |
| 4 | 5 | 6 | 10 | 1.0000 | 1.1320 | 87 | 0.88 | 0.3795 | 1.0000 | 0.05 | -1.2500 | 3.2500 |
| 4 | 6 | 4 | 7 | -1.0000 | 0.7196 | 87 | -1.39 | 0.1682 | 1.0000 | 0.05 | -2.4303 | 0.4303 |
| 4 | 6 | 4 | 8 | -2.7500 | 0.7196 | 87 | -3.82 | 0.0002 | 0.0745 | 0.05 | -4.1803 | -1.3197 |
| 4 | 6 | 4 | 9 | -4.5000 | 0.7196 | 87 | -6.25 | <.0001 | <.0001 | 0.05 | -5.9303 | -3.0697 |
| 4 | 6 | 4 | 10 | -4.5000 | 0.7196 | 87 | -6.25 | <.0001 | <.0001 | 0.05 | -5.9303 | -3.0697 |
| 4 | 6 | 5 | 5 | 6.5000 | 1.1320 | 87 | 5.74 | <.0001 | <.0001 | 0.05 | 4.2500 | 8.7500 |
| 4 | 6 | 5 | 6 | 5.2500 | 1.1320 | 87 | 4.64 | <.0001 | 0.0054 | 0.05 | 3.0000 | 7.5000 |
| 4 | 6 | 5 | 7 | 4.5000 | 1.1320 | 87 | 3.98 | 0.0001 | 0.0477 | 0.05 | 2.2500 | 6.7500 |
| 4 | 6 | 5 | 8 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 4 | 6 | 5 | 9 | 2.2500 | 1.1320 | 87 | 1.99 | 0.0500 | 0.9863 | 0.05 | 0.000014 | 4.5000 |
| 4 | 6 | 5 | 10 | 0.5000 | 1.1320 | 87 | 0.44 | 0.6598 | 1.0000 | 0.05 | -1.7500 | 2.7500 |
| 4 | 6 | 6 | 5 | 6.0000 | 1.1320 | 87 | 5.30 | <.0001 | 0.0004 | 0.05 | 3.7500 | 8.2500 |
| 4 | 6 | 6 | 6 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 4 | 6 | 6 | 7 | 3.7500 | 1.1320 | 87 | 3.31 | 0.0013 | 0.2633 | 0.05 | 1.5000 | 6.0000 |
| 4 | 6 | 6 | 8 | 3.2500 | 1.1320 | 87 | 2.87 | 0.0051 | 0.5684 | 0.05 | 1.0000 | 5.5000 |
| 4 | 6 | 6 | 9 | 3.2500 | 1.1320 | 87 | 2.87 | 0.0051 | 0.5684 | 0.05 | 1.0000 | 5.5000 |
| 4 | 6 | 6 | 10 | 2.5000 | 1.1320 | 87 | 2.21 | 0.0298 | 0.9486 | 0.05 | 0.2500 | 4.7500 |
| 4 | 7 | 4 | 8 | -1.7500 | 0.7196 | 87 | -2.43 | 0.0171 | 0.8641 | 0.05 | -3.1803 | -0.3197 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 4 | 5 | 4 | 6 | -4.3493 | 1.3493 |
| 4 | 5 | 4 | 7 | -5.3493 | 0.3493 |
| 4 | 5 | 4 | 8 | -7.0993 | -1.4007 |
| 4 | 5 | 4 | 9 | -8.8493 | -3.1507 |
| 4 | 5 | 4 | 10 | -8.8493 | -3.1507 |
| 4 | 5 | 5 | 5 | 0.5177 | 9.4823 |
| 4 | 5 | 5 | 6 | -0.7323 | 8.2323 |
| 4 | 5 | 5 | 7 | -1.4823 | 7.4823 |
| 4 | 5 | 5 | 8 | -1.7323 | 7.2323 |
| 4 | 5 | 5 | 9 | -3.7323 | 5.2323 |
| 4 | 5 | 5 | 10 | -5.4823 | 3.4823 |
| 4 | 5 | 6 | 5 | 0.01765 | 8.9823 |
| 4 | 5 | 6 | 6 | -1.7323 | 7.2323 |
| 4 | 5 | 6 | 7 | -2.2323 | 6.7323 |
| 4 | 5 | 6 | 8 | -2.7323 | 6.2323 |
| 4 | 5 | 6 | 9 | -2.7323 | 6.2323 |
| 4 | 5 | 6 | 10 | -3.4823 | 5.4823 |
| 4 | 6 | 4 | 7 | -3.8493 | 1.8493 |
| 4 | 6 | 4 | 8 | -5.5993 | 0.09933 |
| 4 | 6 | 4 | 9 | -7.3493 | -1.6507 |
| 4 | 6 | 4 | 10 | -7.3493 | -1.6507 |
| 4 | 6 | 5 | 5 | 2.0177 | 10.9823 |
| 4 | 6 | 5 | 6 | 0.7677 | 9.7323 |
| 4 | 6 | 5 | 7 | 0.01765 | 8.9823 |
| 4 | 6 | 5 | 8 | -0.2323 | 8.7323 |
| 4 | 6 | 5 | 9 | -2.2323 | 6.7323 |
| 4 | 6 | 5 | 10 | -3.9823 | 4.9823 |
| 4 | 6 | 6 | 5 | 1.5177 | 10.4823 |
| 4 | 6 | 6 | 6 | -0.2323 | 8.7323 |
| 4 | 6 | 6 | 7 | -0.7323 | 8.2323 |
| 4 | 6 | 6 | 8 | -1.2323 | 7.7323 |
| 4 | 6 | 6 | 9 | -1.2323 | 7.7323 |
| 4 | 6 | 6 | 10 | -1.9823 | 6.9823 |
| 4 | 7 | 4 | 8 | -4.5993 | 1.0993 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 4 | 7 | 4 | 9 | -3.5000 | 0.7196 | 87 | -4.86 | <.0001 | 0.0023 | 0.05 | -4.9303 | -2.0697 |
| 4 | 7 | 4 | 10 | -3.5000 | 0.7196 | 87 | -4.86 | <.0001 | 0.0023 | 0.05 | -4.9303 | -2.0697 |
| 4 | 7 | 5 | 5 | 7.5000 | 1.1320 | 87 | 6.63 | <.0001 | <.0001 | 0.05 | 5.2500 | 9.7500 |
| 4 | 7 | 5 | 6 | 6.2500 | 1.1320 | 87 | 5.52 | <.0001 | 0.0002 | 0.05 | 4.0000 | 8.5000 |
| 4 | 7 | 5 | 7 | 5.5000 | 1.1320 | 87 | 4.86 | <.0001 | 0.0024 | 0.05 | 3.2500 | 7.7500 |
| 4 | 7 | 5 | 8 | 5.2500 | 1.1320 | 87 | 4.64 | <.0001 | 0.0054 | 0.05 | 3.0000 | 7.5000 |
| 4 | 7 | 5 | 9 | 3.2500 | 1.1320 | 87 | 2.87 | 0.0051 | 0.5684 | 0.05 | 1.0000 | 5.5000 |
| 4 | 7 | 5 | 10 | 1.5000 | 1.1320 | 87 | 1.33 | 0.1886 | 1.0000 | 0.05 | -0.7500 | 3.7500 |
| 4 | 7 | 6 | 5 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 4 | 7 | 6 | 6 | 5.2500 | 1.1320 | 87 | 4.64 | <.0001 | 0.0054 | 0.05 | 3.0000 | 7.5000 |
| 4 | 7 | 6 | 7 | 4.7500 | 1.1320 | 87 | 4.20 | <.0001 | 0.0241 | 0.05 | 2.5000 | 7.0000 |
| 4 | 7 | 6 | 8 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 4 | 7 | 6 | 9 | 4.2500 | 1.1320 | 87 | 3.75 | 0.0003 | 0.0898 | 0.05 | 2.0000 | 6.5000 |
| 4 | 7 | 6 | 10 | 3.5000 | 1.1320 | 87 | 3.09 | 0.0027 | 0.4036 | 0.05 | 1.2500 | 5.7500 |
| 4 | 8 | 4 | 9 | -1.7500 | 0.7196 | 87 | -2.43 | 0.0171 | 0.8641 | 0.05 | -3.1803 | -0.3197 |
| 4 | 8 | 4 | 10 | -1.7500 | 0.7196 | 87 | -2.43 | 0.0171 | 0.8641 | 0.05 | -3.1803 | -0.3197 |
| 4 | 8 | 5 | 5 | 9.2500 | 1.1320 | 87 | 8.17 | <.0001 | <.0001 | 0.05 | 7.0000 | 11.5000 |
| 4 | 8 | 5 | 6 | 8.0000 | 1.1320 | 87 | 7.07 | <.0001 | <.0001 | 0.05 | 5.7500 | 10.2500 |
| 4 | 8 | 5 | 7 | 7.2500 | 1.1320 | 87 | 6.40 | <.0001 | <.0001 | 0.05 | 5.0000 | 9.5000 |
| 4 | 8 | 5 | 8 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 4 | 8 | 5 | 9 | 5.0000 | 1.1320 | 87 | 4.42 | <.0001 | 0.0116 | 0.05 | 2.7500 | 7.2500 |
| 4 | 8 | 5 | 10 | 3.2500 | 1.1320 | 87 | 2.87 | 0.0051 | 0.5684 | 0.05 | 1.0000 | 5.5000 |
| 4 | 8 | 6 | 5 | 8.7500 | 1.1320 | 87 | 7.73 | <.0001 | <.0001 | 0.05 | 6.5000 | 11.0000 |
| 4 | 8 | 6 | 6 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 4 | 8 | 6 | 7 | 6.5000 | 1.1320 | 87 | 5.74 | <.0001 | <.0001 | 0.05 | 4.2500 | 8.7500 |
| 4 | 8 | 6 | 8 | 6.0000 | 1.1320 | 87 | 5.30 | <.0001 | 0.0004 | 0.05 | 3.7500 | 8.2500 |
| 4 | 8 | 6 | 9 | 6.0000 | 1.1320 | 87 | 5.30 | <.0001 | 0.0004 | 0.05 | 3.7500 | 8.2500 |
| 4 | 8 | 6 | 10 | 5.2500 | 1.1320 | 87 | 4.64 | <.0001 | 0.0054 | 0.05 | 3.0000 | 7.5000 |
| 4 | 9 | 4 | 10 | 2.5E-7 | 0.7196 | 87 | 0.00 | 1.0000 | 1.0000 | 0.05 | -1.4303 | 1.4303 |
| 4 | 9 | 5 | 5 | 11.0000 | 1.1320 | 87 | 9.72 | <.0001 | <.0001 | 0.05 | 8.7500 | 13.2500 |
| 4 | 9 | 5 | 6 | 9.7500 | 1.1320 | 87 | 8.61 | <.0001 | <.0001 | 0.05 | 7.5000 | 12.0000 |
| 4 | 9 | 5 | 7 | 9.0000 | 1.1320 | 87 | 7.95 | <.0001 | <.0001 | 0.05 | 6.7500 | 11.2500 |
| 4 | 9 | 5 | 8 | 8.7500 | 1.1320 | 87 | 7.73 | <.0001 | <.0001 | 0.05 | 6.5000 | 11.0000 |
| 4 | 9 | 5 | 9 | 6.7500 | 1.1320 | 87 | 5.96 | <.0001 | <.0001 | 0.05 | 4.5000 | 9.0000 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 4 | 7 | 4 | 9 | -6.3493 | -0.6507 |
| 4 | 7 | 4 | 10 | -6.3493 | -0.6507 |
| 4 | 7 | 5 | 5 | 3.0177 | 11.9823 |
| 4 | 7 | 5 | 6 | 1.7677 | 10.7323 |
| 4 | 7 | 5 | 7 | 1.0177 | 9.9823 |
| 4 | 7 | 5 | 8 | 0.7677 | 9.7323 |
| 4 | 7 | 5 | 9 | -1.2323 | 7.7323 |
| 4 | 7 | 5 | 10 | -2.9823 | 5.9823 |
| 4 | 7 | 6 | 5 | 2.5177 | 11.4823 |
| 4 | 7 | 6 | 6 | 0.7677 | 9.7323 |
| 4 | 7 | 6 | 7 | 0.2677 | 9.2323 |
| 4 | 7 | 6 | 8 | -0.2323 | 8.7323 |
| 4 | 7 | 6 | 9 | -0.2323 | 8.7323 |
| 4 | 7 | 6 | 10 | -0.9823 | 7.9823 |
| 4 | 8 | 4 | 9 | -4.5993 | 1.0993 |
| 4 | 8 | 4 | 10 | -4.5993 | 1.0993 |
| 4 | 8 | 5 | 5 | 4.7677 | 13.7323 |
| 4 | 8 | 5 | 6 | 3.5177 | 12.4823 |
| 4 | 8 | 5 | 7 | 2.7677 | 11.7323 |
| 4 | 8 | 5 | 8 | 2.5177 | 11.4823 |
| 4 | 8 | 5 | 9 | 0.5177 | 9.4823 |
| 4 | 8 | 5 | 10 | -1.2323 | 7.7323 |
| 4 | 8 | 6 | 5 | 4.2677 | 13.2323 |
| 4 | 8 | 6 | 6 | 2.5177 | 11.4823 |
| 4 | 8 | 6 | 7 | 2.0177 | 10.9823 |
| 4 | 8 | 6 | 8 | 1.5177 | 10.4823 |
| 4 | 8 | 6 | 9 | 1.5177 | 10.4823 |
| 4 | 8 | 6 | 10 | 0.7677 | 9.7323 |
| 4 | 9 | 4 | 10 | -2.8493 | 2.8493 |
| 4 | 9 | 5 | 5 | 6.5177 | 15.4823 |
| 4 | 9 | 5 | 6 | 5.2677 | 14.2323 |
| 4 | 9 | 5 | 7 | 4.5177 | 13.4823 |
| 4 | 9 | 5 | 8 | 4.2677 | 13.2323 |
| 4 | 9 | 5 | 9 | 2.2677 | 11.2323 |

## The PLM Procedure

**Differences of treatment*number Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey-Kramer**

| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 9 | 5 | 10 | 5.0000 | 1.1320 | 87 | 4.42 | <.0001 | 0.0116 | 0.05 | 2.7500 | 7.2500 |
| 4 | 9 | 6 | 5 | 10.5000 | 1.1320 | 87 | 9.28 | <.0001 | <.0001 | 0.05 | 8.2500 | 12.7500 |
| 4 | 9 | 6 | 6 | 8.7500 | 1.1320 | 87 | 7.73 | <.0001 | <.0001 | 0.05 | 6.5000 | 11.0000 |
| 4 | 9 | 6 | 7 | 8.2500 | 1.1320 | 87 | 7.29 | <.0001 | <.0001 | 0.05 | 6.0000 | 10.5000 |
| 4 | 9 | 6 | 8 | 7.7500 | 1.1320 | 87 | 6.85 | <.0001 | <.0001 | 0.05 | 5.5000 | 10.0000 |
| 4 | 9 | 6 | 9 | 7.7500 | 1.1320 | 87 | 6.85 | <.0001 | <.0001 | 0.05 | 5.5000 | 10.0000 |
| 4 | 9 | 6 | 10 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 4 | 10 | 5 | 5 | 11.0000 | 1.1320 | 87 | 9.72 | <.0001 | <.0001 | 0.05 | 8.7500 | 13.2500 |
| 4 | 10 | 5 | 6 | 9.7500 | 1.1320 | 87 | 8.61 | <.0001 | <.0001 | 0.05 | 7.5000 | 12.0000 |
| 4 | 10 | 5 | 7 | 9.0000 | 1.1320 | 87 | 7.95 | <.0001 | <.0001 | 0.05 | 6.7500 | 11.2500 |
| 4 | 10 | 5 | 8 | 8.7500 | 1.1320 | 87 | 7.73 | <.0001 | <.0001 | 0.05 | 6.5000 | 11.0000 |
| 4 | 10 | 5 | 9 | 6.7500 | 1.1320 | 87 | 5.96 | <.0001 | <.0001 | 0.05 | 4.5000 | 9.0000 |
| 4 | 10 | 5 | 10 | 5.0000 | 1.1320 | 87 | 4.42 | <.0001 | 0.0116 | 0.05 | 2.7500 | 7.2500 |
| 4 | 10 | 6 | 5 | 10.5000 | 1.1320 | 87 | 9.28 | <.0001 | <.0001 | 0.05 | 8.2500 | 12.7500 |
| 4 | 10 | 6 | 6 | 8.7500 | 1.1320 | 87 | 7.73 | <.0001 | <.0001 | 0.05 | 6.5000 | 11.0000 |
| 4 | 10 | 6 | 7 | 8.2500 | 1.1320 | 87 | 7.29 | <.0001 | <.0001 | 0.05 | 6.0000 | 10.5000 |
| 4 | 10 | 6 | 8 | 7.7500 | 1.1320 | 87 | 6.85 | <.0001 | <.0001 | 0.05 | 5.5000 | 10.0000 |
| 4 | 10 | 6 | 9 | 7.7500 | 1.1320 | 87 | 6.85 | <.0001 | <.0001 | 0.05 | 5.5000 | 10.0000 |
| 4 | 10 | 6 | 10 | 7.0000 | 1.1320 | 87 | 6.18 | <.0001 | <.0001 | 0.05 | 4.7500 | 9.2500 |
| 5 | 5 | 5 | 6 | -1.2500 | 0.7196 | 87 | -1.74 | 0.0859 | 0.9983 | 0.05 | -2.6803 | 0.1803 |
| 5 | 5 | 5 | 7 | -2.0000 | 0.7196 | 87 | -2.78 | 0.0067 | 0.6384 | 0.05 | -3.4303 | -0.5697 |
| 5 | 5 | 5 | 8 | -2.2500 | 0.7196 | 87 | -3.13 | 0.0024 | 0.3793 | 0.05 | -3.6803 | -0.8197 |
| 5 | 5 | 5 | 9 | -4.2500 | 0.7196 | 87 | -5.91 | <.0001 | <.0001 | 0.05 | -5.6803 | -2.8197 |
| 5 | 5 | 5 | 10 | -6.0000 | 0.7196 | 87 | -8.34 | <.0001 | <.0001 | 0.05 | -7.4303 | -4.5697 |
| 5 | 5 | 6 | 5 | -0.5000 | 1.1320 | 87 | -0.44 | 0.6598 | 1.0000 | 0.05 | -2.7500 | 1.7500 |
| 5 | 5 | 6 | 6 | -2.2500 | 1.1320 | 87 | -1.99 | 0.0500 | 0.9863 | 0.05 | -4.5000 | -0.00001 |
| 5 | 5 | 6 | 7 | -2.7500 | 1.1320 | 87 | -2.43 | 0.0172 | 0.8654 | 0.05 | -5.0000 | -0.5000 |
| 5 | 5 | 6 | 8 | -3.2500 | 1.1320 | 87 | -2.87 | 0.0051 | 0.5684 | 0.05 | -5.5000 | -1.0000 |
| 5 | 5 | 6 | 9 | -3.2500 | 1.1320 | 87 | -2.87 | 0.0051 | 0.5684 | 0.05 | -5.5000 | -1.0000 |
| 5 | 5 | 6 | 10 | -4.0000 | 1.1320 | 87 | -3.53 | 0.0007 | 0.1591 | 0.05 | -6.2500 | -1.7500 |
| 5 | 6 | 5 | 7 | -0.7500 | 0.7196 | 87 | -1.04 | 0.3002 | 1.0000 | 0.05 | -2.1803 | 0.6803 |
| 5 | 6 | 5 | 8 | -1.0000 | 0.7196 | 87 | -1.39 | 0.1682 | 1.0000 | 0.05 | -2.4303 | 0.4303 |
| 5 | 6 | 5 | 9 | -3.0000 | 0.7196 | 87 | -4.17 | <.0001 | 0.0262 | 0.05 | -4.4303 | -1.5697 |
| 5 | 6 | 5 | 10 | -4.7500 | 0.7196 | 87 | -6.60 | <.0001 | <.0001 | 0.05 | -6.1803 | -3.3197 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 4 | 9 | 5 | 10 | 0.5177 | 9.4823 |
| 4 | 9 | 6 | 5 | 6.0177 | 14.9823 |
| 4 | 9 | 6 | 6 | 4.2677 | 13.2323 |
| 4 | 9 | 6 | 7 | 3.7677 | 12.7323 |
| 4 | 9 | 6 | 8 | 3.2677 | 12.2323 |
| 4 | 9 | 6 | 9 | 3.2677 | 12.2323 |
| 4 | 9 | 6 | 10 | 2.5177 | 11.4823 |
| 4 | 10 | 5 | 5 | 6.5177 | 15.4823 |
| 4 | 10 | 5 | 6 | 5.2677 | 14.2323 |
| 4 | 10 | 5 | 7 | 4.5177 | 13.4823 |
| 4 | 10 | 5 | 8 | 4.2677 | 13.2323 |
| 4 | 10 | 5 | 9 | 2.2677 | 11.2323 |
| 4 | 10 | 5 | 10 | 0.5177 | 9.4823 |
| 4 | 10 | 6 | 5 | 6.0177 | 14.9823 |
| 4 | 10 | 6 | 6 | 4.2677 | 13.2323 |
| 4 | 10 | 6 | 7 | 3.7677 | 12.7323 |
| 4 | 10 | 6 | 8 | 3.2677 | 12.2323 |
| 4 | 10 | 6 | 9 | 3.2677 | 12.2323 |
| 4 | 10 | 6 | 10 | 2.5177 | 11.4823 |
| 5 | 5 | 5 | 6 | -4.0993 | 1.5993 |
| 5 | 5 | 5 | 7 | -4.8493 | 0.8493 |
| 5 | 5 | 5 | 8 | -5.0993 | 0.5993 |
| 5 | 5 | 5 | 9 | -7.0993 | -1.4007 |
| 5 | 5 | 5 | 10 | -8.8493 | -3.1507 |
| 5 | 5 | 6 | 5 | -4.9823 | 3.9823 |
| 5 | 5 | 6 | 6 | -6.7323 | 2.2323 |
| 5 | 5 | 6 | 7 | -7.2323 | 1.7323 |
| 5 | 5 | 6 | 8 | -7.7323 | 1.2323 |
| 5 | 5 | 6 | 9 | -7.7323 | 1.2323 |
| 5 | 5 | 6 | 10 | -8.4823 | 0.4823 |
| 5 | 6 | 5 | 7 | -3.5993 | 2.0993 |
| 5 | 6 | 5 | 8 | -3.8493 | 1.8493 |
| 5 | 6 | 5 | 9 | -5.8493 | -0.1507 |
| 5 | 6 | 5 | 10 | -7.5993 | -1.9007 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 5 | 6 | 6 | 5 | 0.7500 | 1.1320 | 87 | 0.66 | 0.5094 | 1.0000 | 0.05 | -1.5000 | 3.0000 |
| 5 | 6 | 6 | 6 | -1.0000 | 1.1320 | 87 | -0.88 | 0.3795 | 1.0000 | 0.05 | -3.2500 | 1.2500 |
| 5 | 6 | 6 | 7 | -1.5000 | 1.1320 | 87 | -1.33 | 0.1886 | 1.0000 | 0.05 | -3.7500 | 0.7500 |
| 5 | 6 | 6 | 8 | -2.0000 | 1.1320 | 87 | -1.77 | 0.0808 | 0.9977 | 0.05 | -4.2500 | 0.2500 |
| 5 | 6 | 6 | 9 | -2.0000 | 1.1320 | 87 | -1.77 | 0.0808 | 0.9977 | 0.05 | -4.2500 | 0.2500 |
| 5 | 6 | 6 | 10 | -2.7500 | 1.1320 | 87 | -2.43 | 0.0172 | 0.8654 | 0.05 | -5.0000 | -0.5000 |
| 5 | 7 | 5 | 8 | -0.2500 | 0.7196 | 87 | -0.35 | 0.7291 | 1.0000 | 0.05 | -1.6803 | 1.1803 |
| 5 | 7 | 5 | 9 | -2.2500 | 0.7196 | 87 | -3.13 | 0.0024 | 0.3793 | 0.05 | -3.6803 | -0.8197 |
| 5 | 7 | 5 | 10 | -4.0000 | 0.7196 | 87 | -5.56 | <.0001 | 0.0002 | 0.05 | -5.4303 | -2.5697 |
| 5 | 7 | 6 | 5 | 1.5000 | 1.1320 | 87 | 1.33 | 0.1886 | 1.0000 | 0.05 | -0.7500 | 3.7500 |
| 5 | 7 | 6 | 6 | -0.2500 | 1.1320 | 87 | -0.22 | 0.8257 | 1.0000 | 0.05 | -2.5000 | 2.0000 |
| 5 | 7 | 6 | 7 | -0.7500 | 1.1320 | 87 | -0.66 | 0.5094 | 1.0000 | 0.05 | -3.0000 | 1.5000 |
| 5 | 7 | 6 | 8 | -1.2500 | 1.1320 | 87 | -1.10 | 0.2725 | 1.0000 | 0.05 | -3.5000 | 1.0000 |
| 5 | 7 | 6 | 9 | -1.2500 | 1.1320 | 87 | -1.10 | 0.2725 | 1.0000 | 0.05 | -3.5000 | 1.0000 |
| 5 | 7 | 6 | 10 | -2.0000 | 1.1320 | 87 | -1.77 | 0.0808 | 0.9977 | 0.05 | -4.2500 | 0.2500 |
| 5 | 8 | 5 | 9 | -2.0000 | 0.7196 | 87 | -2.78 | 0.0067 | 0.6384 | 0.05 | -3.4303 | -0.5697 |
| 5 | 8 | 5 | 10 | -3.7500 | 0.7196 | 87 | -5.21 | <.0001 | 0.0006 | 0.05 | -5.1803 | -2.3197 |
| 5 | 8 | 6 | 5 | 1.7500 | 1.1320 | 87 | 1.55 | 0.1258 | 0.9998 | 0.05 | -0.5000 | 4.0000 |
| 5 | 8 | 6 | 6 | -54E-13 | 1.1320 | 87 | -0.00 | 1.0000 | 1.0000 | 0.05 | -2.2500 | 2.2500 |
| 5 | 8 | 6 | 7 | -0.5000 | 1.1320 | 87 | -0.44 | 0.6598 | 1.0000 | 0.05 | -2.7500 | 1.7500 |
| 5 | 8 | 6 | 8 | -1.0000 | 1.1320 | 87 | -0.88 | 0.3795 | 1.0000 | 0.05 | -3.2500 | 1.2500 |
| 5 | 8 | 6 | 9 | -1.0000 | 1.1320 | 87 | -0.88 | 0.3795 | 1.0000 | 0.05 | -3.2500 | 1.2500 |
| 5 | 8 | 6 | 10 | -1.7500 | 1.1320 | 87 | -1.55 | 0.1258 | 0.9998 | 0.05 | -4.0000 | 0.5000 |
| 5 | 9 | 5 | 10 | -1.7500 | 0.7196 | 87 | -2.43 | 0.0171 | 0.8641 | 0.05 | -3.1803 | -0.3197 |
| 5 | 9 | 6 | 5 | 3.7500 | 1.1320 | 87 | 3.31 | 0.0013 | 0.2633 | 0.05 | 1.5000 | 6.0000 |
| 5 | 9 | 6 | 6 | 2.0000 | 1.1320 | 87 | 1.77 | 0.0808 | 0.9977 | 0.05 | -0.2500 | 4.2500 |
| 5 | 9 | 6 | 7 | 1.5000 | 1.1320 | 87 | 1.33 | 0.1886 | 1.0000 | 0.05 | -0.7500 | 3.7500 |
| 5 | 9 | 6 | 8 | 1.0000 | 1.1320 | 87 | 0.88 | 0.3795 | 1.0000 | 0.05 | -1.2500 | 3.2500 |
| 5 | 9 | 6 | 9 | 1.0000 | 1.1320 | 87 | 0.88 | 0.3795 | 1.0000 | 0.05 | -1.2500 | 3.2500 |
| 5 | 9 | 6 | 10 | 0.2500 | 1.1320 | 87 | 0.22 | 0.8257 | 1.0000 | 0.05 | -2.0000 | 2.5000 |
| 5 | 10 | 6 | 5 | 5.5000 | 1.1320 | 87 | 4.86 | <.0001 | 0.0024 | 0.05 | 3.2500 | 7.7500 |
| 5 | 10 | 6 | 6 | 3.7500 | 1.1320 | 87 | 3.31 | 0.0013 | 0.2633 | 0.05 | 1.5000 | 6.0000 |
| 5 | 10 | 6 | 7 | 3.2500 | 1.1320 | 87 | 2.87 | 0.0051 | 0.5684 | 0.05 | 1.0000 | 5.5000 |
| 5 | 10 | 6 | 8 | 2.7500 | 1.1320 | 87 | 2.43 | 0.0172 | 0.8654 | 0.05 | 0.5000 | 5.0000 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 5 | 6 | 6 | 5 | -3.7323 | 5.2323 |
| 5 | 6 | 6 | 6 | -5.4823 | 3.4823 |
| 5 | 6 | 6 | 7 | -5.9823 | 2.9823 |
| 5 | 6 | 6 | 8 | -6.4823 | 2.4823 |
| 5 | 6 | 6 | 9 | -6.4823 | 2.4823 |
| 5 | 6 | 6 | 10 | -7.2323 | 1.7323 |
| 5 | 7 | 5 | 8 | -3.0993 | 2.5993 |
| 5 | 7 | 5 | 9 | -5.0993 | 0.5993 |
| 5 | 7 | 5 | 10 | -6.8493 | -1.1507 |
| 5 | 7 | 6 | 5 | -2.9823 | 5.9823 |
| 5 | 7 | 6 | 6 | -4.7323 | 4.2323 |
| 5 | 7 | 6 | 7 | -5.2323 | 3.7323 |
| 5 | 7 | 6 | 8 | -5.7323 | 3.2323 |
| 5 | 7 | 6 | 9 | -5.7323 | 3.2323 |
| 5 | 7 | 6 | 10 | -6.4823 | 2.4823 |
| 5 | 8 | 5 | 9 | -4.8493 | 0.8493 |
| 5 | 8 | 5 | 10 | -6.5993 | -0.9007 |
| 5 | 8 | 6 | 5 | -2.7323 | 6.2323 |
| 5 | 8 | 6 | 6 | -4.4823 | 4.4823 |
| 5 | 8 | 6 | 7 | -4.9823 | 3.9823 |
| 5 | 8 | 6 | 8 | -5.4823 | 3.4823 |
| 5 | 8 | 6 | 9 | -5.4823 | 3.4823 |
| 5 | 8 | 6 | 10 | -6.2323 | 2.7323 |
| 5 | 9 | 5 | 10 | -4.5993 | 1.0993 |
| 5 | 9 | 6 | 5 | -0.7323 | 8.2323 |
| 5 | 9 | 6 | 6 | -2.4823 | 6.4823 |
| 5 | 9 | 6 | 7 | -2.9823 | 5.9823 |
| 5 | 9 | 6 | 8 | -3.4823 | 5.4823 |
| 5 | 9 | 6 | 9 | -3.4823 | 5.4823 |
| 5 | 9 | 6 | 10 | -4.2323 | 4.7323 |
| 5 | 10 | 6 | 5 | 1.0177 | 9.9823 |
| 5 | 10 | 6 | 6 | -0.7323 | 8.2323 |
| 5 | 10 | 6 | 7 | -1.2323 | 7.7323 |
| 5 | 10 | 6 | 8 | -1.7323 | 7.2323 |

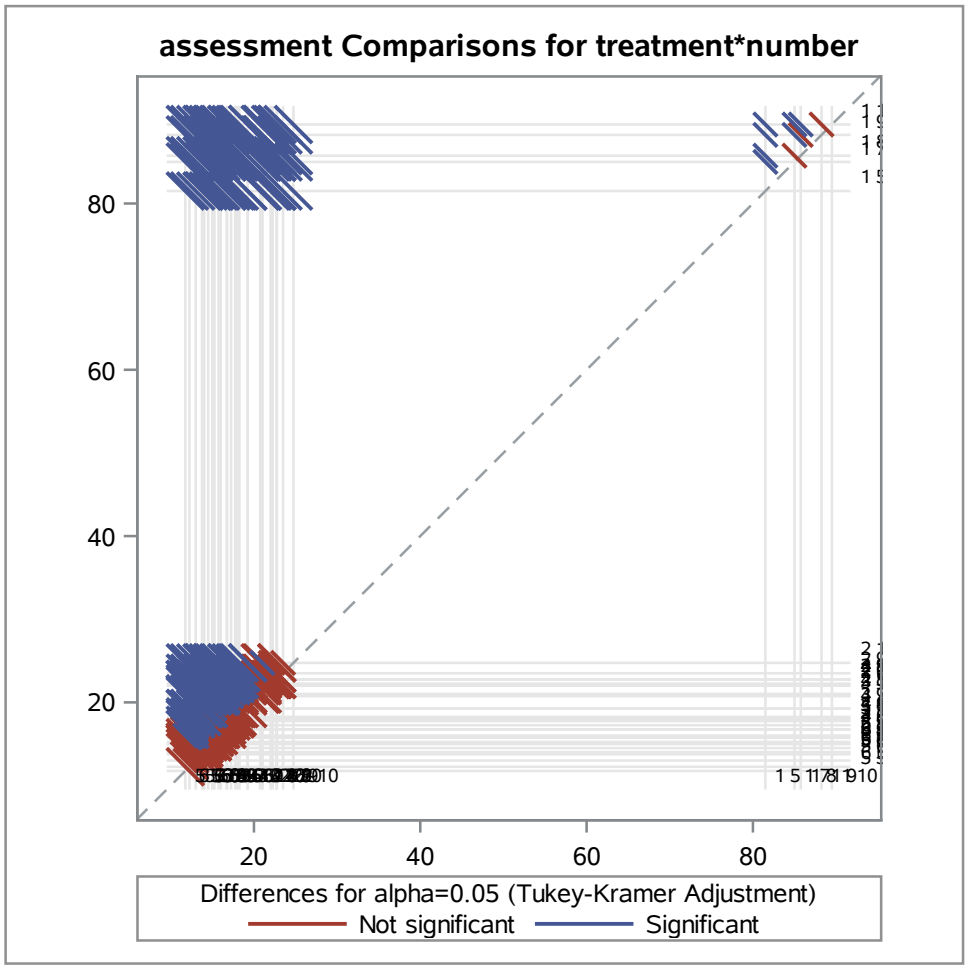
## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr > \|t\| | Adj P | Alpha | Lower | Upper |
| 5 | 10 | 6 | 9 | 2.7500 | 1.1320 | 87 | 2.43 | 0.0172 | 0.8654 | 0.05 | 0.5000 | 5.0000 |
| 5 | 10 | 6 | 10 | 2.0000 | 1.1320 | 87 | 1.77 | 0.0808 | 0.9977 | 0.05 | -0.2500 | 4.2500 |
| 6 | 5 | 6 | 6 | -1.7500 | 0.7196 | 87 | -2.43 | 0.0171 | 0.8641 | 0.05 | -3.1803 | -0.3197 |
| 6 | 5 | 6 | 7 | -2.2500 | 0.7196 | 87 | -3.13 | 0.0024 | 0.3793 | 0.05 | -3.6803 | -0.8197 |
| 6 | 5 | 6 | 8 | -2.7500 | 0.7196 | 87 | -3.82 | 0.0002 | 0.0745 | 0.05 | -4.1803 | -1.3197 |
| 6 | 5 | 6 | 9 | -2.7500 | 0.7196 | 87 | -3.82 | 0.0002 | 0.0745 | 0.05 | -4.1803 | -1.3197 |
| 6 | 5 | 6 | 10 | -3.5000 | 0.7196 | 87 | -4.86 | <.0001 | 0.0023 | 0.05 | -4.9303 | -2.0697 |
| 6 | 6 | 6 | 7 | -0.5000 | 0.7196 | 87 | -0.69 | 0.4890 | 1.0000 | 0.05 | -1.9303 | 0.9303 |
| 6 | 6 | 6 | 8 | -1.0000 | 0.7196 | 87 | -1.39 | 0.1682 | 1.0000 | 0.05 | -2.4303 | 0.4303 |
| 6 | 6 | 6 | 9 | -1.0000 | 0.7196 | 87 | -1.39 | 0.1682 | 1.0000 | 0.05 | -2.4303 | 0.4303 |
| 6 | 6 | 6 | 10 | -1.7500 | 0.7196 | 87 | -2.43 | 0.0171 | 0.8641 | 0.05 | -3.1803 | -0.3197 |
| 6 | 7 | 6 | 8 | -0.5000 | 0.7196 | 87 | -0.69 | 0.4890 | 1.0000 | 0.05 | -1.9303 | 0.9303 |
| 6 | 7 | 6 | 9 | -0.5000 | 0.7196 | 87 | -0.69 | 0.4890 | 1.0000 | 0.05 | -1.9303 | 0.9303 |
| 6 | 7 | 6 | 10 | -1.2500 | 0.7196 | 87 | -1.74 | 0.0859 | 0.9983 | 0.05 | -2.6803 | 0.1803 |
| 6 | 8 | 6 | 9 | 2.16E-14 | 0.7196 | 87 | 0.00 | 1.0000 | 1.0000 | 0.05 | -1.4303 | 1.4303 |
| 6 | 8 | 6 | 10 | -0.7500 | 0.7196 | 87 | -1.04 | 0.3002 | 1.0000 | 0.05 | -2.1803 | 0.6803 |
| 6 | 9 | 6 | 10 | -0.7500 | 0.7196 | 87 | -1.04 | 0.3002 | 1.0000 | 0.05 | -2.1803 | 0.6803 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer | | | | | |
|---|---|---|---|---|---|
| treatment | number | _treatment | _number | Adj Lower | Adj Upper |
| 5 | 10 | 6 | 9 | -1.7323 | 7.2323 |
| 5 | 10 | 6 | 10 | -2.4823 | 6.4823 |
| 6 | 5 | 6 | 6 | -4.5993 | 1.0993 |
| 6 | 5 | 6 | 7 | -5.0993 | 0.5993 |
| 6 | 5 | 6 | 8 | -5.5993 | 0.09933 |
| 6 | 5 | 6 | 9 | -5.5993 | 0.09933 |
| 6 | 5 | 6 | 10 | -6.3493 | -0.6507 |
| 6 | 6 | 6 | 7 | -3.3493 | 2.3493 |
| 6 | 6 | 6 | 8 | -3.8493 | 1.8493 |
| 6 | 6 | 6 | 9 | -3.8493 | 1.8493 |
| 6 | 6 | 6 | 10 | -4.5993 | 1.0993 |
| 6 | 7 | 6 | 8 | -3.3493 | 2.3493 |
| 6 | 7 | 6 | 9 | -3.3493 | 2.3493 |
| 6 | 7 | 6 | 10 | -4.0993 | 1.5993 |
| 6 | 8 | 6 | 9 | -2.8493 | 2.8493 |
| 6 | 8 | 6 | 10 | -3.5993 | 2.0993 |
| 6 | 9 | 6 | 10 | -3.5993 | 2.0993 |

The PLM Procedure




| Conservative Tukey-Kramer Grouping for treatment*number Least Squares Means (Alpha=0.05) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | | | | | |
| treatment | number | Estimate | | | | | | |
| 1 | 10 | 89.5000 | | | | A | | |
| | | | | | | A | | |
| 1 | 9 | 88.2500 | | B | | A | | |
| | | | | B | | | | |
| 1 | 8 | 85.7500 | | B | | C | | |
| | | | | | | C | | |
| 1 | 7 | 85.0000 | | | | C | | |
| | | | | | | | | |
| 1 | 5 | 81.5000 | | | | D | | |
| | | | | | | | | |
| 2 | 10 | 24.7500 | | | | E | | |
| | | | | | | E | | |
| 2 | 9 | 23.5000 | | F | | E | | |
| | | | | F | | E | | |

## The PLM Procedure

| Conservative Tukey-Kramer Grouping for treatment*number Least Squares Means (Alpha=0.05) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | | | | | |
| treatment | number | Estimate | | | | | | |
| 4 | 9 | 22.7500 | | F | | E | | |
| | | | | F | | E | | |
| 2 | 8 | 22.7500 | | F | | E | | |
| | | | | F | | E | | |
| 4 | 10 | 22.7500 | | F | | E | | |
| | | | | F | | E | | |
| 2 | 7 | 22.2500 | | F | | E | G | |
| | | | | F | | E | G | |
| 2 | 6 | 22.0000 | | F | H | E | G | |
| | | | | F | H | E | G | |
| 4 | 8 | 21.0000 | I | F | H | E | G | |
| | | | I | F | H | E | G | |
| 2 | 5 | 21.0000 | I | F | H | E | G | |
| | | | I | F | H | E | G | |
| 3 | 10 | 20.7500 | I | F | H | E | G | |
| | | | I | F | H | | G | |
| 3 | 9 | 19.2500 | I | F | H | J | G | |
| | | | I | F | H | J | G | |
| 4 | 7 | 19.2500 | I | F | H | J | G | |
| | | | I | | H | J | G | |
| 4 | 6 | 18.2500 | I | K | H | J | G | |
| | | | I | K | H | J | G | |
| 3 | 8 | 18.0000 | I | K | H | J | G | L |
| | | | I | K | H | J | | L |
| 5 | 10 | 17.7500 | I | K | H | J | | L |
| | | | I | K | | J | | L |
| 3 | 7 | 17.2500 | I | K | | J | M | L |
| | | | I | K | | J | M | L |
| 4 | 5 | 16.7500 | I | K | | J | M | L |
| | | | I | K | | J | M | L |
| 3 | 6 | 16.7500 | I | K | | J | M | L |
| | | | | K | | J | M | L |
| 5 | 9 | 16.0000 | | K | N | J | M | L |
| | | | | K | N | J | M | L |

## The PLM Procedure

| Conservative Tukey-Kramer Grouping for treatment*number Least Squares Means (Alpha=0.05) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | | | | | |
| **treatment** | **number** | **Estimate** | | | | | | |
| 6 | 10 | 15.7500 | O | K | N | J | M | L |
| | | | O | K | N | J | M | L |
| 3 | 5 | 15.2500 | O | K | N | J | M | L |
| | | | O | K | N | J | M | L |
| 6 | 8 | 15.0000 | O | K | N | J | M | L |
| | | | O | K | N | J | M | L |
| 6 | 9 | 15.0000 | O | K | N | J | M | L |
| | | | O | K | N | | M | L |
| 6 | 7 | 14.5000 | O | K | N | | M | L |
| | | | O | K | N | | M | L |
| 6 | 6 | 14.0000 | O | K | N | | M | L |
| | | | O | K | N | | M | L |
| 5 | 8 | 14.0000 | O | K | N | | M | L |
| | | | O | | N | | M | L |
| 5 | 7 | 13.7500 | O | | N | | M | L |
| | | | O | | N | | M | |
| 5 | 6 | 13.0000 | O | | N | | M | |
| | | | O | | N | | | |
| 6 | 5 | 12.2500 | O | | N | | | |
| | | | O | | | | | |
| 5 | 5 | 11.7500 | O | | | | | |

# Split Plot - MIVQUE Variance components

## Variance Components Estimation Procedure

| Class Level Information | | |
|---|---|---|
| **Class** | **Levels** | **Values** |
| **replicate** | 4 | 1 2 3 4 |
| **treatment** | 6 | 1 2 3 4 5 6 |
| **number** | 6 | 5 6 7 8 9 10 |

| | |
|---|---|
| **Number of Observations Read** | 144 |
| **Number of Observations Used** | 140 |

| MIVQUE(0) SSQ Matrix | | | | |
|---|---|---|---|---|
| **Source** | **replicate** | **replicate*treatment** | **Error** | **assessment** |
| **replicate** | 3675.0 | 615.00000 | 105.00000 | 780.00019 |
| **replicate*treatment** | 615.00000 | 615.00000 | 105.00000 | 1022.0 |
| **Error** | 105.00000 | 105.00000 | 105.00000 | 267.00008 |

| MIVQUE(0) Estimates | |
|---|---|
| **Variance Component** | **assessment** |
| **Var(replicate)** | -0.07909 |
| **Var(replicate*treatment)** | 1.55948 |
| **Var(Error)** | 1.06247 |

## The GLM Procedure

| Class Level Information | | |
|---|---|---|
| **Class** | **Levels** | **Values** |
| **replicate** | 4 | 1 2 3 4 |
| **treatment** | 6 | 1 2 3 4 5 6 |

| | |
|---|---|
| **Number of Observations Read** | 24 |
| **Number of Observations Used** | 20 |

## The GLM Procedure

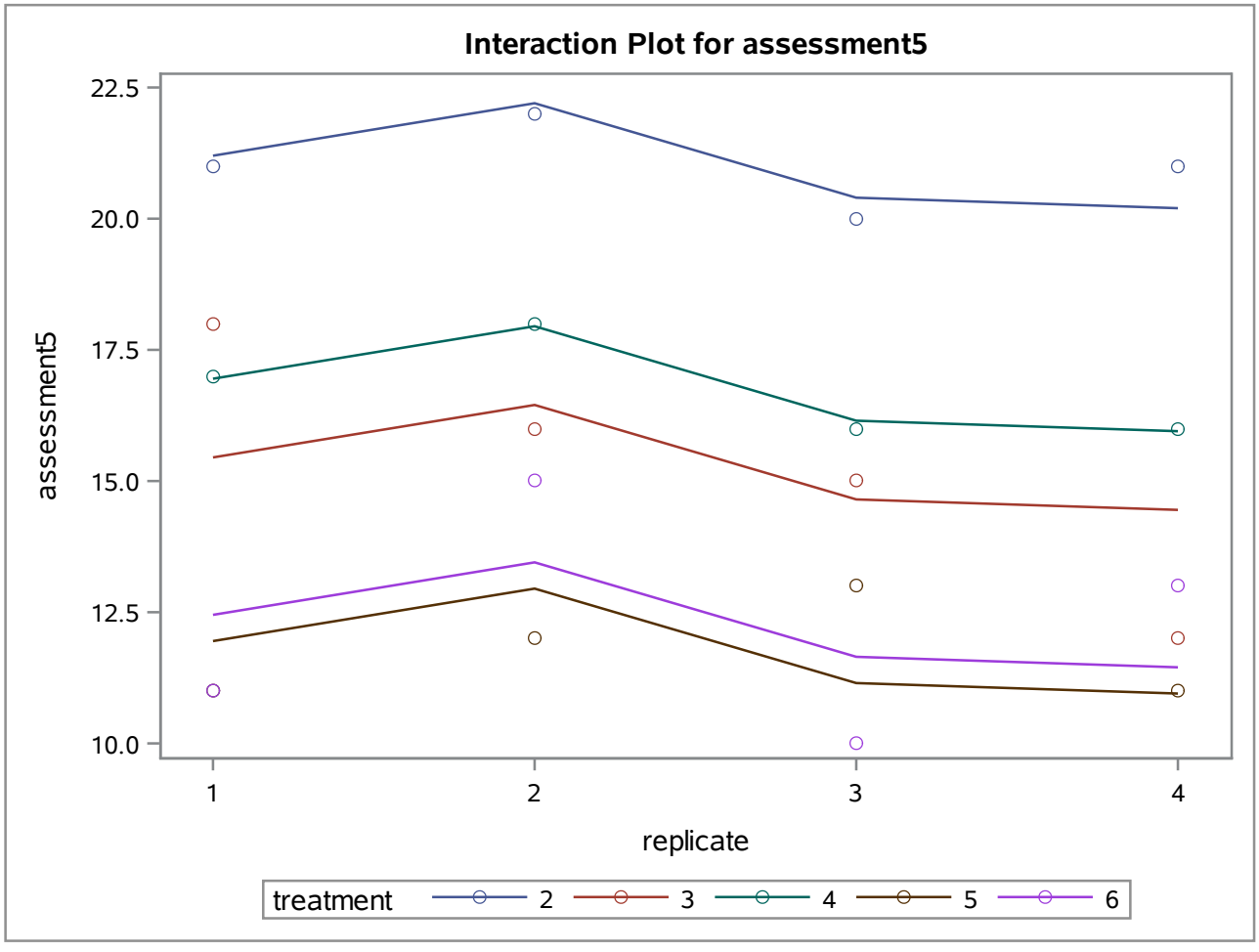
### Dependent Variable: assessment5

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 7 | 238.2000524 | 34.0285789 | 14.28 | <.0001 |
| Error | 12 | 28.6000080 | 2.3833340 | | |
| Corrected Total | 19 | 266.8000604 | | | |

| R-Square | Coeff Var | Root MSE | assessment5 Mean |
|---|---|---|---|
| 0.892804 | 10.02471 | 1.543805 | 15.40000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 12.4000040 | 4.1333347 | 1.73 | 0.2131 |
| treatment | 4 | 225.8000484 | 56.4500121 | 23.69 | <.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 12.4000040 | 4.1333347 | 1.73 | 0.2131 |
| treatment | 4 | 225.8000484 | 56.4500121 | 23.69 | <.0001 |



## The GLM Procedure

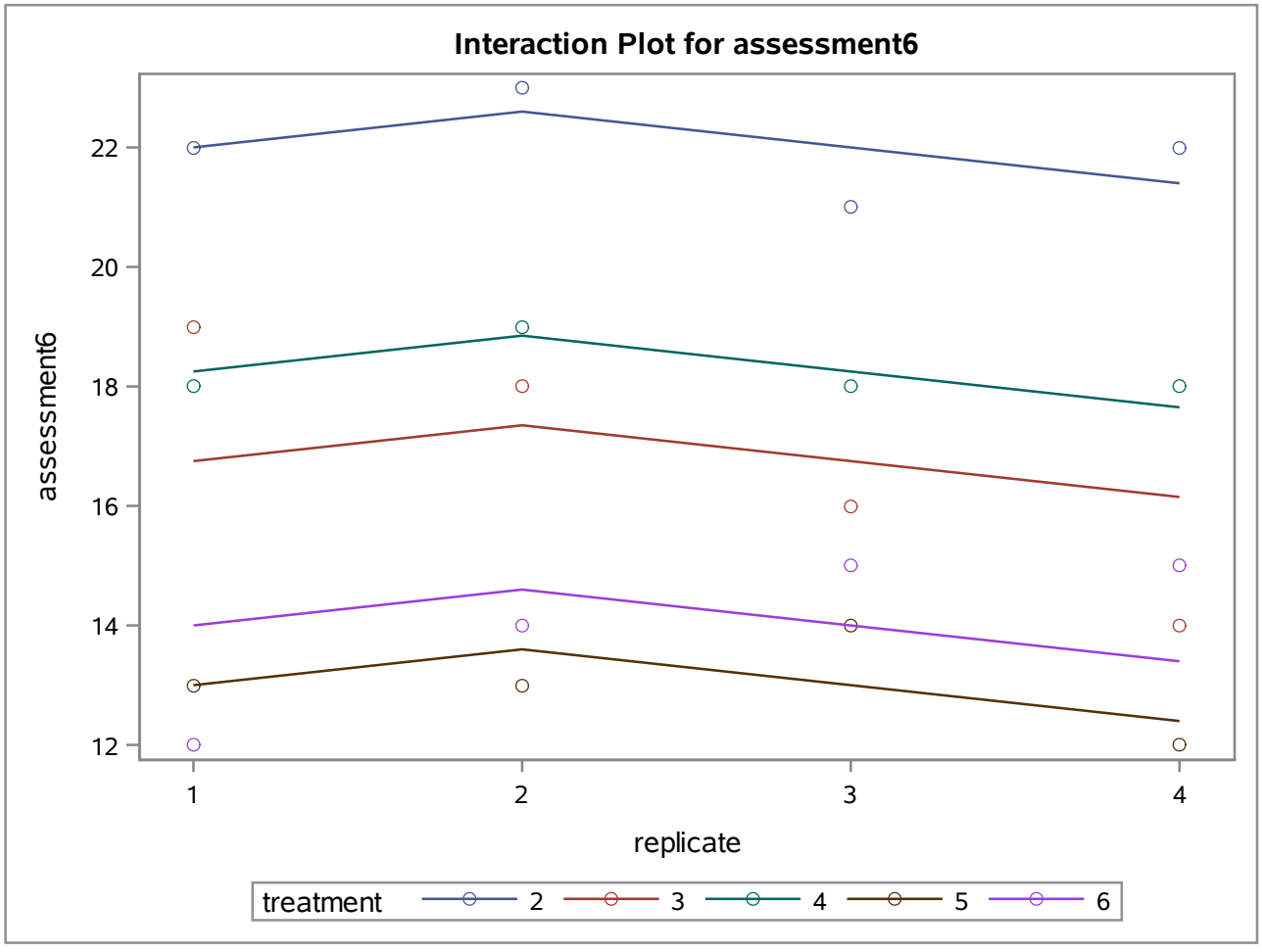
### Dependent Variable: assessment6

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 7 | 209.3000417 | 29.9000060 | 16.38 | <.0001 |
| Error | 12 | 21.9000095 | 1.8250008 | | |
| Corrected Total | 19 | 231.2000512 | | | |

| R-Square | Coeff Var | Root MSE | assessment6 Mean |
|---|---|---|---|
| 0.905277 | 8.041225 | 1.350926 | 16.80000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 3.6000000 | 1.2000000 | 0.66 | 0.5937 |
| treatment | 4 | 205.7000417 | 51.4250104 | 28.18 | <.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 3.6000000 | 1.2000000 | 0.66 | 0.5937 |
| treatment | 4 | 205.7000417 | 51.4250104 | 28.18 | <.0001 |



## The GLM Procedure

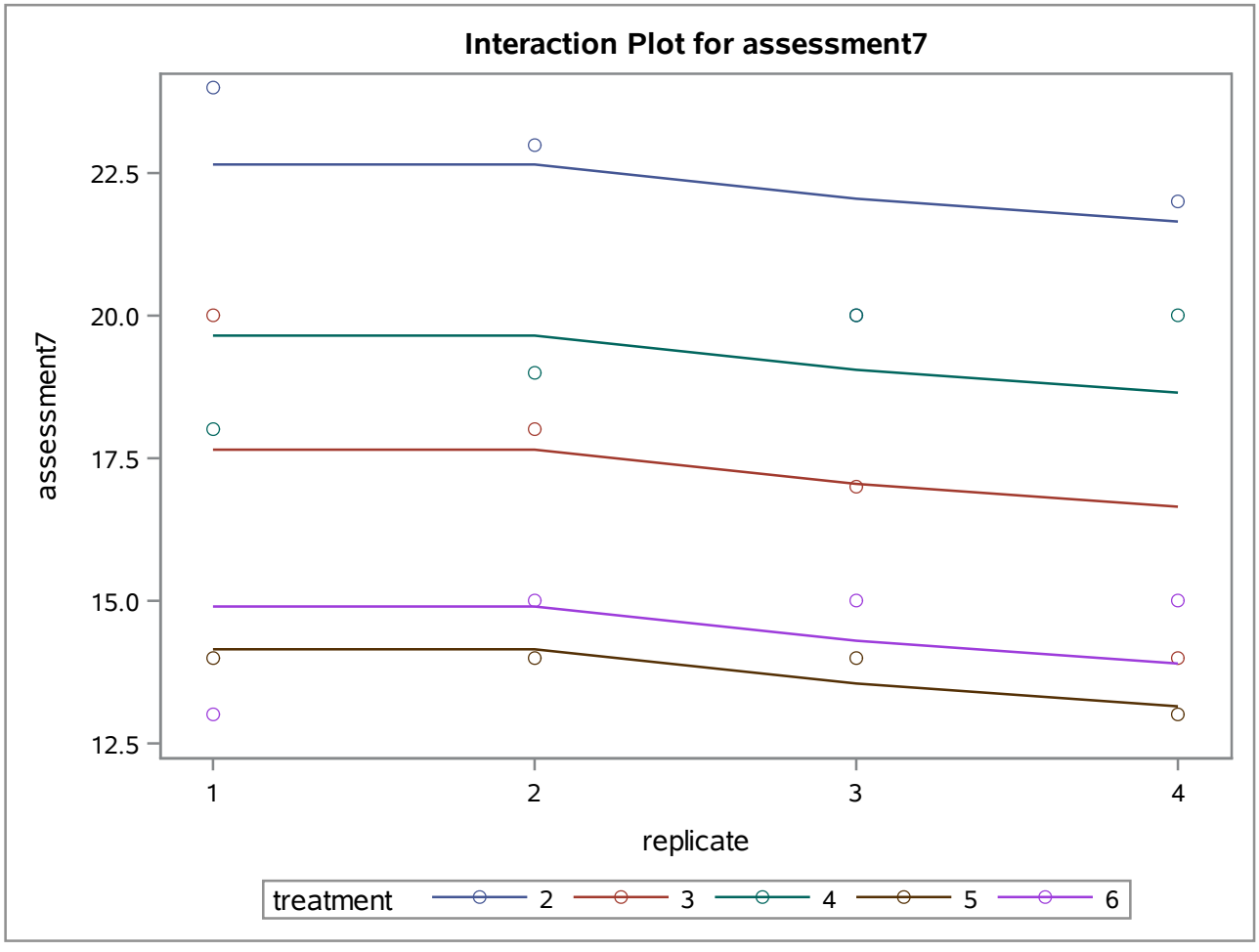
### Dependent Variable: assessment7

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 7 | 198.4000357 | 28.3428622 | 11.19 | 0.0002 |
| Error | 12 | 30.4000091 | 2.5333341 | | |
| Corrected Total | 19 | 228.8000448 | | | |

| R-Square | Coeff Var | Root MSE | assessment7 Mean |
|---|---|---|---|
| 0.867133 | 9.147385 | 1.591645 | 17.40000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 3.6000004 | 1.2000001 | 0.47 | 0.7063 |
| treatment | 4 | 194.8000353 | 48.7000088 | 19.22 | <.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 3.6000004 | 1.2000001 | 0.47 | 0.7063 |
| treatment | 4 | 194.8000353 | 48.7000088 | 19.22 | <.0001 |



## The GLM Procedure

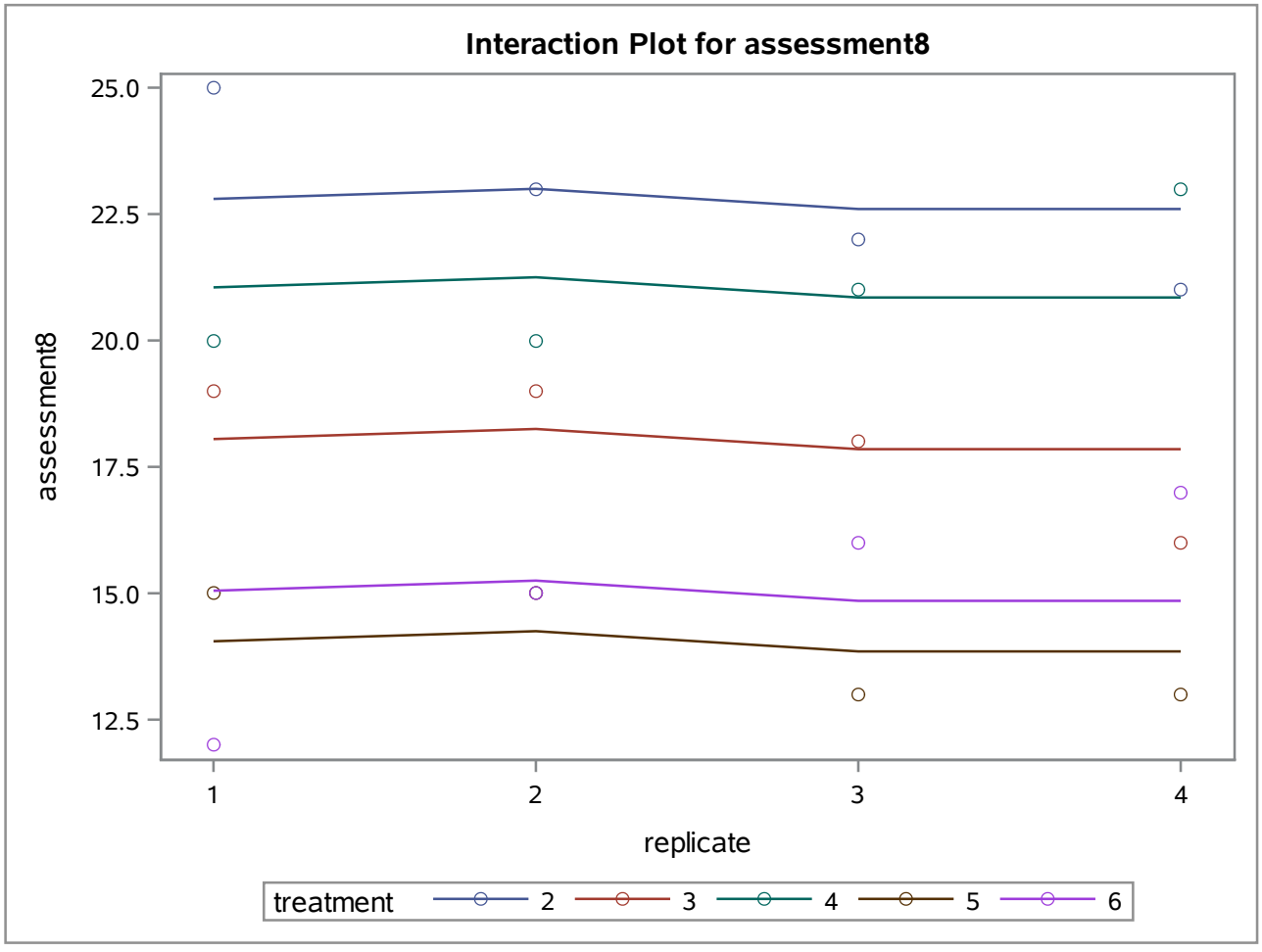
### Dependent Variable: assessment8

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 7 | 226.3500327 | 32.3357190 | 10.16 | 0.0003 |
| Error | 12 | 38.2000139 | 3.1833345 | | |
| Corrected Total | 19 | 264.5500466 | | | |

| R-Square | Coeff Var | Root MSE | assessment8 Mean |
|---|---|---|---|
| 0.855604 | 9.830248 | 1.784190 | 18.15000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 0.5500006 | 0.1833335 | 0.06 | 0.9810 |
| treatment | 4 | 225.8000321 | 56.4500080 | 17.73 | <.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 0.5500006 | 0.1833335 | 0.06 | 0.9810 |
| treatment | 4 | 225.8000321 | 56.4500080 | 17.73 | <.0001 |



## The GLM Procedure

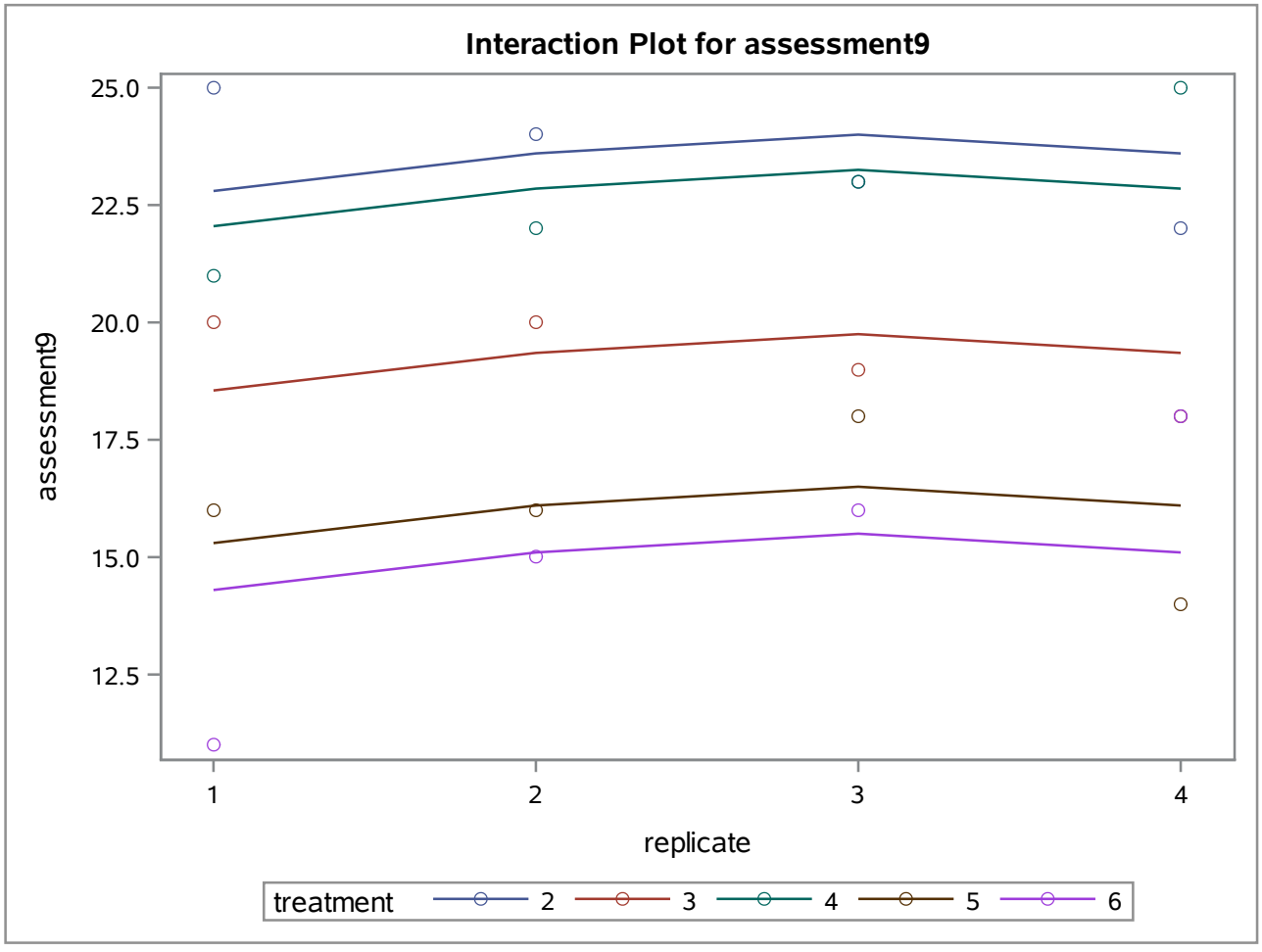
### Dependent Variable: assessment9

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 7 | 239.5000305 | 34.2142901 | 8.79 | 0.0006 |
| Error | 12 | 46.7000195 | 3.8916683 | | |
| Corrected Total | 19 | 286.2000500 | | | |

| R-Square | Coeff Var | Root MSE | assessment9 Mean |
|---|---|---|---|
| 0.836827 | 10.22140 | 1.972731 | 19.30000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 3.8000000 | 1.2666667 | 0.33 | 0.8070 |
| treatment | 4 | 235.7000305 | 58.9250076 | 15.14 | 0.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 3.8000000 | 1.2666667 | 0.33 | 0.8070 |
| treatment | 4 | 235.7000305 | 58.9250076 | 15.14 | 0.0001 |



## The GLM Procedure

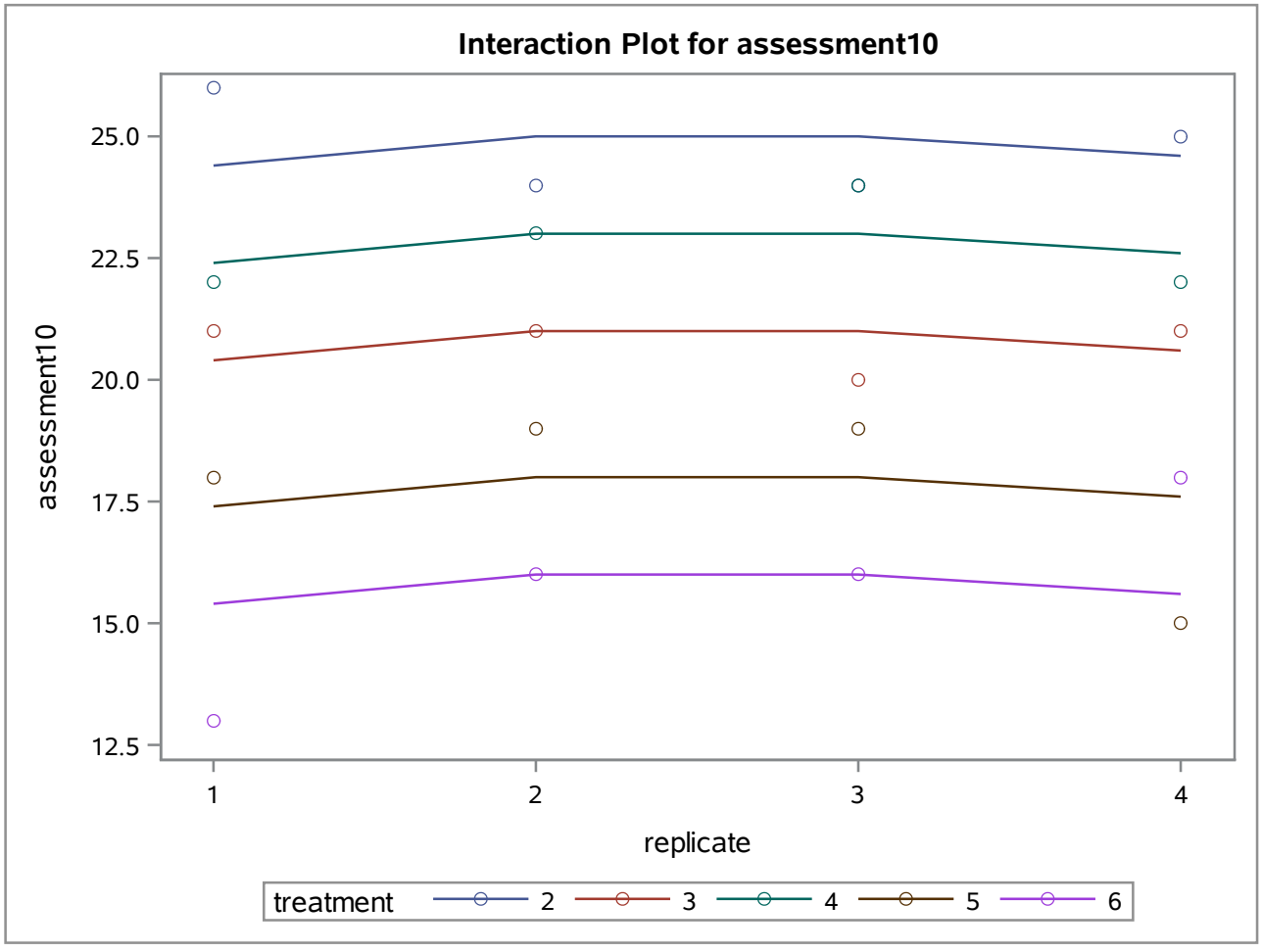
### Dependent Variable: assessment10

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 7 | 214.1500265 | 30.5928609 | 12.93 | <.0001 |
| Error | 12 | 28.4000088 | 2.3666674 | | |
| Corrected Total | 19 | 242.5500353 | | | |

| R-Square | Coeff Var | Root MSE | assessment10 Mean |
|---|---|---|---|
| 0.882911 | 7.559693 | 1.538398 | 20.35000 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 1.3499997 | 0.4499999 | 0.19 | 0.9011 |
| treatment | 4 | 212.8000268 | 53.2000067 | 22.48 | <.0001 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| replicate | 3 | 1.3499997 | 0.4499999 | 0.19 | 0.9011 |
| treatment | 4 | 212.8000268 | 53.2000067 | 22.48 | <.0001 |



## The GLM Procedure
## Repeated Measures Analysis of Variance

| Repeated Measures Level Information | | | | | | |
|---|---|---|---|---|---|---|
| Dependent Variable | assessment5 | assessment6 | assessment7 | assessment8 | assessment9 | assessment10 |
| Level of time | 1 | 2 | 3 | 4 | 5 | 6 |

| Partial Correlation Coefficients from the Error SSCP Matrix / Prob > \|r\| | | | | | | |
|---|---|---|---|---|---|---|
| DF = 12 | assessment5 | assessment6 | assessment7 | assessment8 | assessment9 | assessment10 |
| assessment5 | 1.000000 | 0.659294<br>0.0142 | 0.591801<br>0.0331 | 0.223881<br>0.4622 | 0.424121<br>0.1486 | 0.280703<br>0.3529 |
| assessment6 | 0.659294<br>0.0142 | 1.000000 | 0.813880<br>0.0007 | 0.580839<br>0.0374 | 0.703561<br>0.0073 | 0.473152<br>0.1025 |
| assessment7 | 0.591801<br>0.0331 | 0.813880<br>0.0007 | 1.000000 | 0.735088<br>0.0042 | 0.729856<br>0.0046 | 0.442433<br>0.1301 |
| assessment8 | 0.223881<br>0.4622 | 0.580839<br>0.0374 | 0.735088<br>0.0042 | 1.000000 | 0.876015<br><.0001 | 0.534345<br>0.0599 |
| assessment9 | 0.424121<br>0.1486 | 0.703561<br>0.0073 | 0.729856<br>0.0046 | 0.876015<br><.0001 | 1.000000 | 0.702947<br>0.0074 |
| assessment10 | 0.280703<br>0.3529 | 0.473152<br>0.1025 | 0.442433<br>0.1301 | 0.534345<br>0.0599 | 0.702947<br>0.0074 | 1.000000 |

| time_N represents the contrast between the nth level of time and the last<br>M Matrix Describing Transformed Variables | | | | | | |
|---|---|---|---|---|---|---|
| | assessment5 | assessment6 | assessment7 | assessment8 | assessment9 | assessment10 |
| time_1 | 1.000000000 | 0.000000000 | 0.000000000 | 0.000000000 | 0.000000000 | -1.000000000 |
| time_2 | 0.000000000 | 1.000000000 | 0.000000000 | 0.000000000 | 0.000000000 | -1.000000000 |
| time_3 | 0.000000000 | 0.000000000 | 1.000000000 | 0.000000000 | 0.000000000 | -1.000000000 |
| time_4 | 0.000000000 | 0.000000000 | 0.000000000 | 1.000000000 | 0.000000000 | -1.000000000 |
| time_5 | 0.000000000 | 0.000000000 | 0.000000000 | 0.000000000 | 1.000000000 | -1.000000000 |

| E = Error SSCP Matrix<br>time_N represents the contrast between the nth level of time and the last | | | | | |
|---|---|---|---|---|---|
| | time_1 | time_2 | time_3 | time_4 | time_5 |
| time_1 | 41.00 | 25.10 | 24.85 | 10.20 | 10.30 |
| time_2 | 25.10 | 26.70 | 24.60 | 15.80 | 13.50 |
| time_3 | 24.85 | 24.60 | 32.80 | 22.85 | 17.30 |
| time_4 | 10.20 | 15.80 | 22.85 | 31.40 | 22.20 |
| time_5 | 10.30 | 13.50 | 17.30 | 22.20 | 23.90 |

## The GLM Procedure
## Repeated Measures Analysis of Variance

| Partial Correlation Coefficients from the Error SSCP Matrix of the Variables Defined by the Specified Transformation / Prob > \|r\| | | | | | |
|---|---|---|---|---|---|
| **DF = 12** | **time_1** | **time_2** | **time_3** | **time_4** | **time_5** |
| **time_1** | 1.000000 | 0.758623<br>0.0026 | 0.677638<br>0.0109 | 0.284278<br>0.3465 | 0.329038<br>0.2723 |
| **time_2** | 0.758623<br>0.0026 | 1.000000 | 0.831271<br>0.0004 | 0.545678<br>0.0537 | 0.534416<br>0.0599 |
| **time_3** | 0.677638<br>0.0109 | 0.831271<br>0.0004 | 1.000000 | 0.712007<br>0.0063 | 0.617889<br>0.0244 |
| **time_4** | 0.284278<br>0.3465 | 0.545678<br>0.0537 | 0.712007<br>0.0063 | 1.000000 | 0.810381<br>0.0008 |
| **time_5** | 0.329038<br>0.2723 | 0.534416<br>0.0599 | 0.617889<br>0.0244 | 0.810381<br>0.0008 | 1.000000 |

| Sphericity Tests | | | | |
|---|---|---|---|---|
| **Variables** | **DF** | **Mauchly's Criterion** | **Chi-Square** | **Pr > ChiSq** |
| **Transformed Variates** | 14 | 0.0161933 | 41.643864 | 0.0001 |
| **Orthogonal Components** | 14 | 0.1755048 | 17.574899 | 0.2268 |

**MANOVA Test Criteria and Exact F Statistics for the Hypothesis of no time Effect**
**H = Type III SSCP Matrix for time**
**E = Error SSCP Matrix**

**S=1 M=1.5 N=3**

| Statistic | Value | F Value | Num DF | Den DF | Pr > F |
|---|---|---|---|---|---|
| **Wilks' Lambda** | 0.05707047 | 26.44 | 5 | 8 | <.0001 |
| **Pillai's Trace** | 0.94292953 | 26.44 | 5 | 8 | <.0001 |
| **Hotelling-Lawley Trace** | 16.52219725 | 26.44 | 5 | 8 | <.0001 |
| **Roy's Greatest Root** | 16.52219725 | 26.44 | 5 | 8 | <.0001 |

**MANOVA Test Criteria and F Approximations for the Hypothesis of no time*replicate Effect**
**H = Type III SSCP Matrix for time*replicate**
**E = Error SSCP Matrix**

**S=3 M=0.5 N=3**

| Statistic | Value | F Value | Num DF | Den DF | Pr > F |
|---|---|---|---|---|---|
| **Wilks' Lambda** | 0.43593683 | 0.53 | 15 | 22.486 | 0.8988 |
| **Pillai's Trace** | 0.66060099 | 0.56 | 15 | 30 | 0.8785 |
| **Hotelling-Lawley Trace** | 1.08087601 | 0.53 | 15 | 10.704 | 0.8722 |
| **Roy's Greatest Root** | 0.85240832 | 1.70 | 5 | 10 | 0.2210 |

**NOTE: F Statistic for Roy's Greatest Root is an upper bound.**

## The GLM Procedure
## Repeated Measures Analysis of Variance

**MANOVA Test Criteria and F Approximations for the Hypothesis of no time*treatment Effect**
**H = Type III SSCP Matrix for time*treatment**
**E = Error SSCP Matrix**

**S=4 M=0 N=3**

| Statistic | Value | F Value | Num DF | Den DF | Pr > F |
|---|---|---|---|---|---|
| **Wilks' Lambda** | 0.20599756 | 0.84 | 20 | 27.483 | 0.6536 |
| **Pillai's Trace** | 1.09111913 | 0.83 | 20 | 44 | 0.6720 |
| **Hotelling-Lawley Trace** | 2.53380559 | 0.92 | 20 | 11.512 | 0.5811 |
| **Roy's Greatest Root** | 1.94780546 | 4.29 | 5 | 11 | 0.0208 |

**NOTE: F Statistic for Roy's Greatest Root is an upper bound.**

## The GLM Procedure
## Repeated Measures Analysis of Variance
## Tests of Hypotheses for Between Subjects Effects

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| **replicate** | 3 | 10.733336 | 3.577779 | 0.34 | 0.7975 |
| **treatment** | 4 | 1263.133545 | 315.783386 | 29.93 | <.0001 |
| **Error** | 12 | 126.600045 | 10.550004 | | |

## The GLM Procedure
## Repeated Measures Analysis of Variance
## Univariate Tests of Hypotheses for Within Subject Effects

| Source | DF | Type III SS | Mean Square | F Value | Pr > F | Adj Pr > F | |
|---|---|---|---|---|---|---|---|
| | | | | | | G - G | H-F-L |
| time | 5 | 314.7000653 | 62.9400131 | 55.86 | <.0001 | <.0001 | <.0001 |
| time*replicate | 15 | 14.5666688 | 0.9711113 | 0.86 | 0.6078 | 0.5661 | 0.5908 |
| time*treatment | 20 | 37.4666700 | 1.8733335 | 1.66 | 0.0670 | 0.1182 | 0.0864 |
| Error(time) | 60 | 67.6000243 | 1.1266671 | | | | |

| | |
|---|---|
| Greenhouse-Geisser Epsilon | 0.5964 |
| Huynh-Feldt-Lecoutre Epsilon | 0.8155 |

## The GLM Procedure
## Repeated Measures Analysis of Variance
## Analysis of Variance of Contrast Variables

**time_N represents the contrast between the nth level of time and the last**

### Contrast Variable: time_1

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Mean | 1 | 490.0500891 | 490.0500891 | 143.43 | <.0001 |
| replicate | 3 | 11.7500045 | 3.9166682 | 1.15 | 0.3701 |
| treatment | 4 | 24.1999989 | 6.0499997 | 1.77 | 0.1995 |
| Error | 12 | 41.0000135 | 3.4166678 | | |

### Contrast Variable: time_2

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Mean | 1 | 252.0500568 | 252.0500568 | 113.28 | <.0001 |
| replicate | 3 | 2.5500004 | 0.8500001 | 0.38 | 0.7678 |
| treatment | 4 | 25.7000037 | 6.4250009 | 2.89 | 0.0690 |
| Error | 12 | 26.7000091 | 2.2250008 | | |

### Contrast Variable: time_3

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Mean | 1 | 174.0500413 | 174.0500413 | 63.68 | <.0001 |
| replicate | 3 | 4.9500003 | 1.6500001 | 0.60 | 0.6250 |
| treatment | 4 | 19.2000077 | 4.8000019 | 1.76 | 0.2025 |
| Error | 12 | 32.8000067 | 2.7333339 | | |

### Contrast Variable: time_4

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Mean | 1 | 96.80001320 | 96.80001320 | 36.99 | <.0001 |
| replicate | 3 | 1.60000080 | 0.53333360 | 0.20 | 0.8918 |
| treatment | 4 | 20.20000580 | 5.05000145 | 1.93 | 0.1700 |
| Error | 12 | 31.40000420 | 2.61666702 | | |

### Contrast Variable: time_5

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Mean | 1 | 22.05000210 | 22.05000210 | 11.07 | 0.0060 |
| replicate | 3 | 1.34999950 | 0.44999983 | 0.23 | 0.8765 |
| treatment | 4 | 7.70000390 | 1.92500098 | 0.97 | 0.4608 |
| Error | 12 | 23.90000850 | 1.99166738 | | |

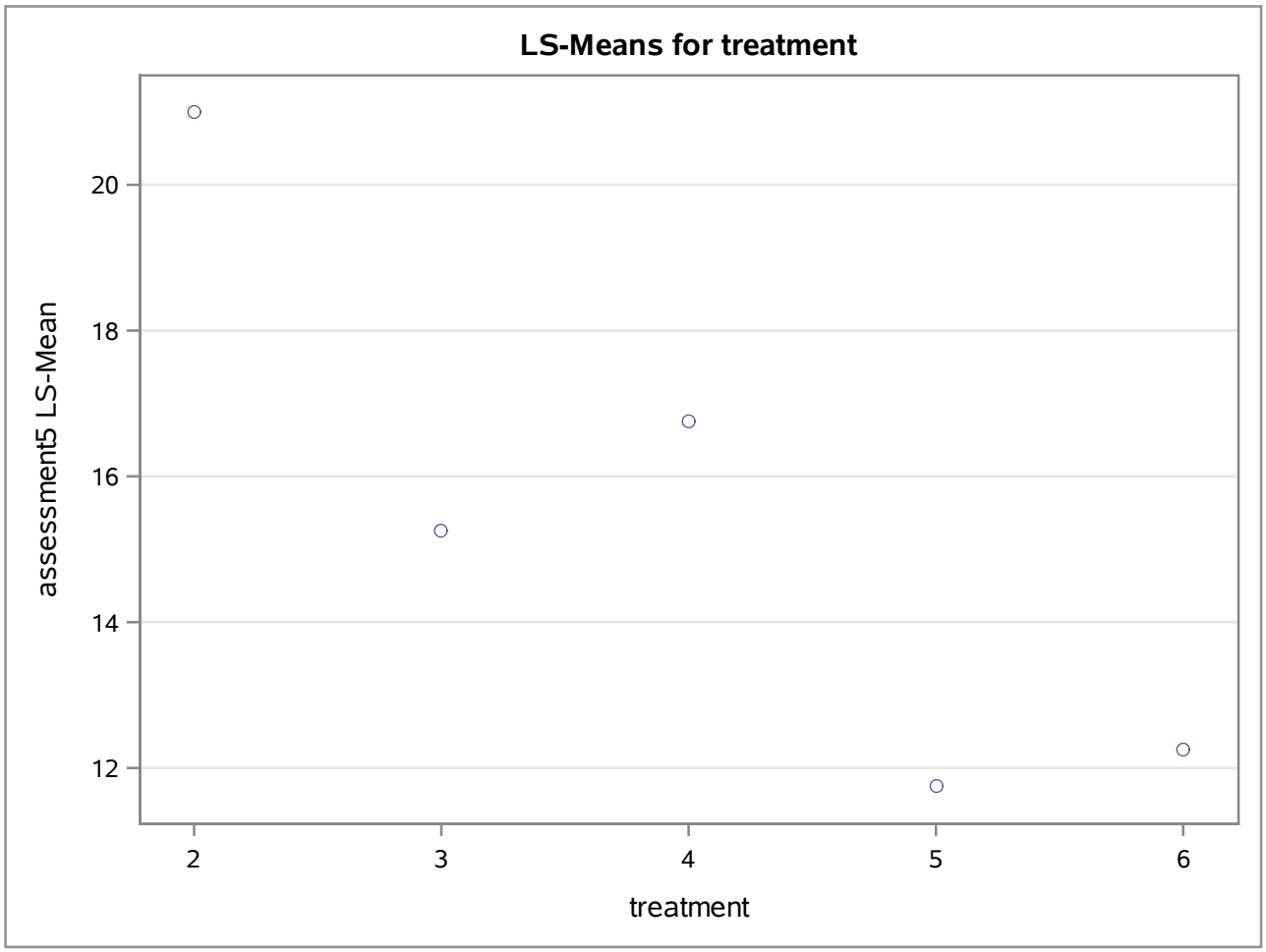
## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

| treatment | assessment5 LSMEAN | Standard Error | Pr > \|t\| | LSMEAN Number |
|---|---|---|---|---|
| 2 | 21.0000020 | 0.7719025 | <.0001 | 1 |
| 3 | 15.2500018 | 0.7719025 | <.0001 | 2 |
| 4 | 16.7500020 | 0.7719025 | <.0001 | 3 |
| 5 | 11.7500010 | 0.7719025 | <.0001 | 4 |
| 6 | 12.2500013 | 0.7719025 | <.0001 | 5 |

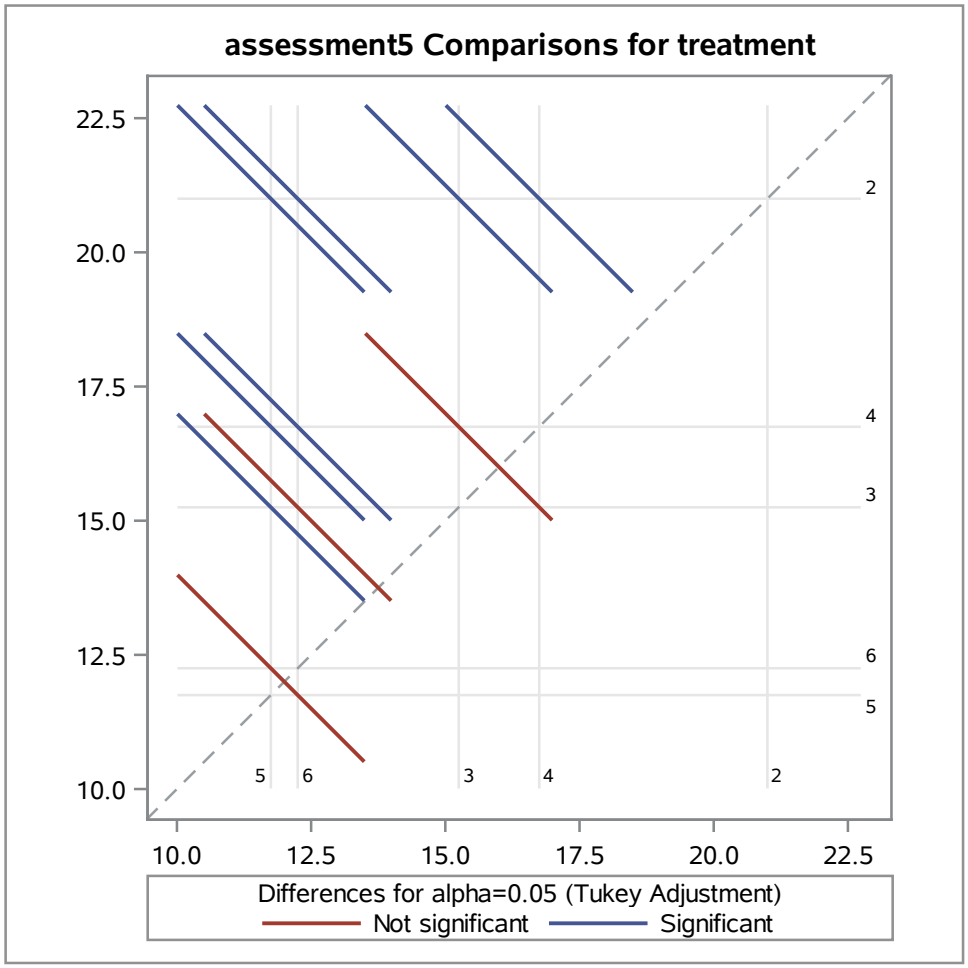
Least Squares Means for effect treatment
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: assessment5

| i/j | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | | 0.0015 | 0.0149 | <.0001 | <.0001 |
| 2 | 0.0015 | | 0.6540 | 0.0484 | 0.1041 |
| 3 | 0.0149 | 0.6540 | | 0.0047 | 0.0101 |
| 4 | <.0001 | 0.0484 | 0.0047 | | 0.9898 |
| 5 | <.0001 | 0.1041 | 0.0101 | 0.9898 | |



**The GLM Procedure**
**Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey**




| Tukey Comparison Lines for Least Squares Means of treatment | | | | |
|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | |
| | | assessment5 LSMEAN | treatment | LSMEAN Number |
| | A | 21.00 | **2** | 1 |
| | | | | |
| | B | 16.75 | **4** | 3 |
| | B | | | |
| C | B | 15.25 | **3** | 2 |
| C | | | | |
| C | D | 12.25 | **6** | 5 |
| | D | | | |
| | D | 11.75 | **5** | 4 |

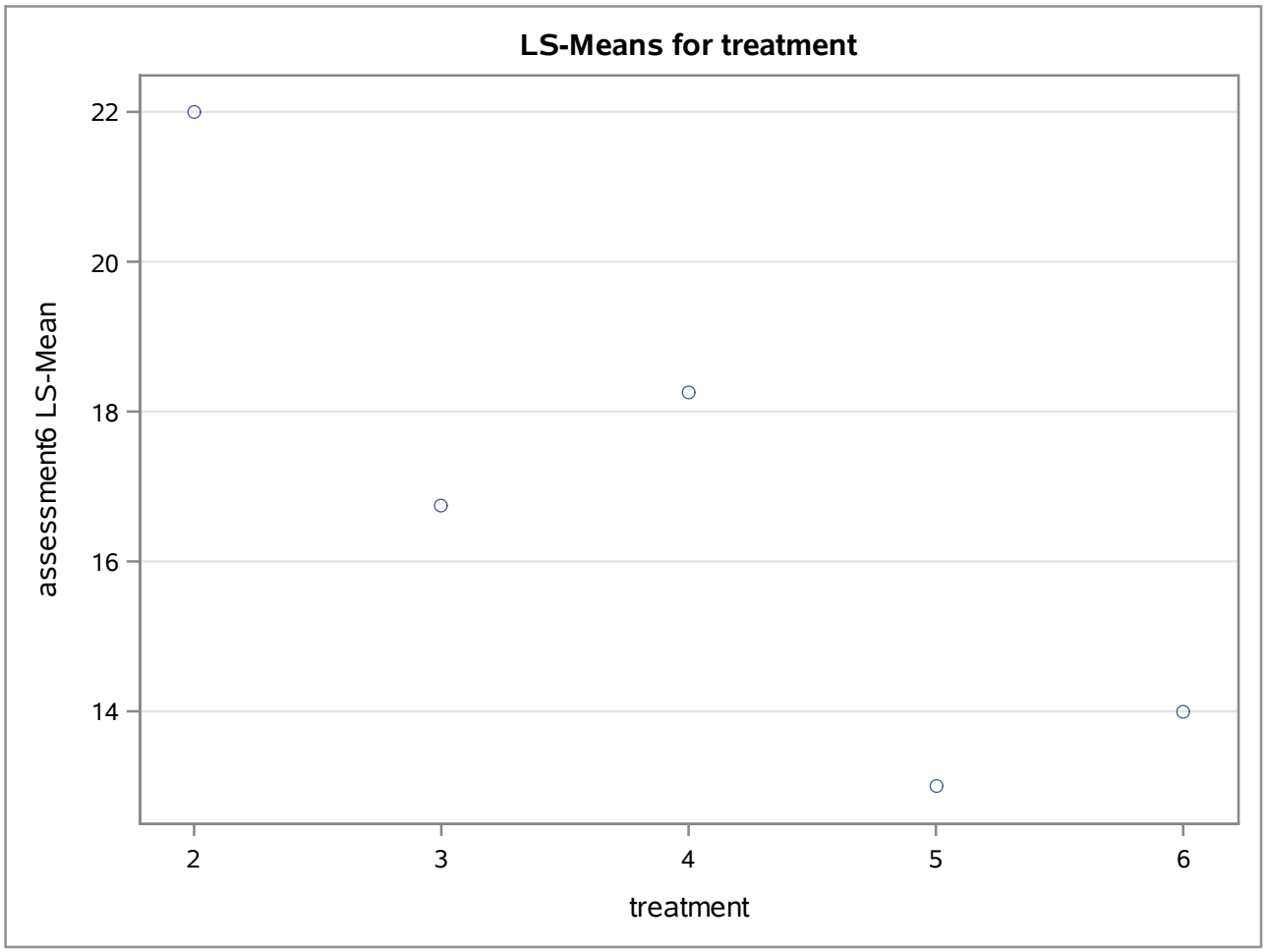
## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

| treatment | assessment6 LSMEAN | Standard Error | Pr > \|t\| | LSMEAN Number |
|---|---|---|---|---|
| 2 | 22.0000020 | 0.6754630 | <.0001 | 1 |
| 3 | 16.7500018 | 0.6754630 | <.0001 | 2 |
| 4 | 18.2500020 | 0.6754630 | <.0001 | 3 |
| 5 | 13.0000010 | 0.6754630 | <.0001 | 4 |
| 6 | 14.0000015 | 0.6754630 | <.0001 | 5 |

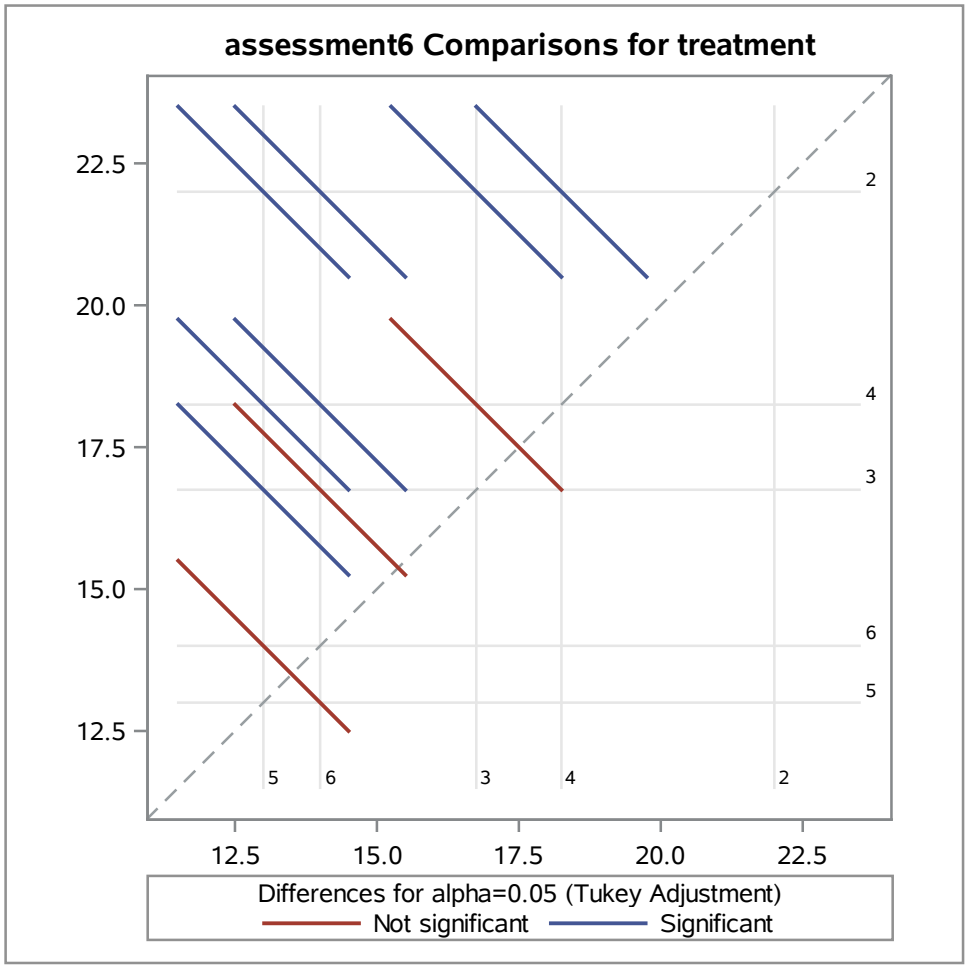
**Least Squares Means for effect treatment**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

**Dependent Variable: assessment6**

| i/j | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | | 0.0011 | 0.0141 | <.0001 | <.0001 |
| 2 | 0.0011 | | 0.5410 | 0.0141 | 0.0840 |
| 3 | 0.0141 | 0.5410 | | 0.0011 | 0.0058 |
| 4 | <.0001 | 0.0141 | 0.0011 | | 0.8291 |
| 5 | <.0001 | 0.0840 | 0.0058 | 0.8291 | |



**The GLM Procedure**
**Least Squares Means**
**Adjustment for Multiple Comparisons: Tukey**




| Tukey Comparison Lines for Least Squares Means of treatment | | | | |
|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | |
| | | assessment6 LSMEAN | treatment | LSMEAN Number |
| | A | 22.00 | **2** | 1 |
| | | | | |
| | B | 18.25 | **4** | 3 |
| | B | | | |
| C | B | 16.75 | **3** | 2 |
| C | | | | |
| C | D | 14.00 | **6** | 5 |
| | D | | | |
| | D | 13.00 | **5** | 4 |

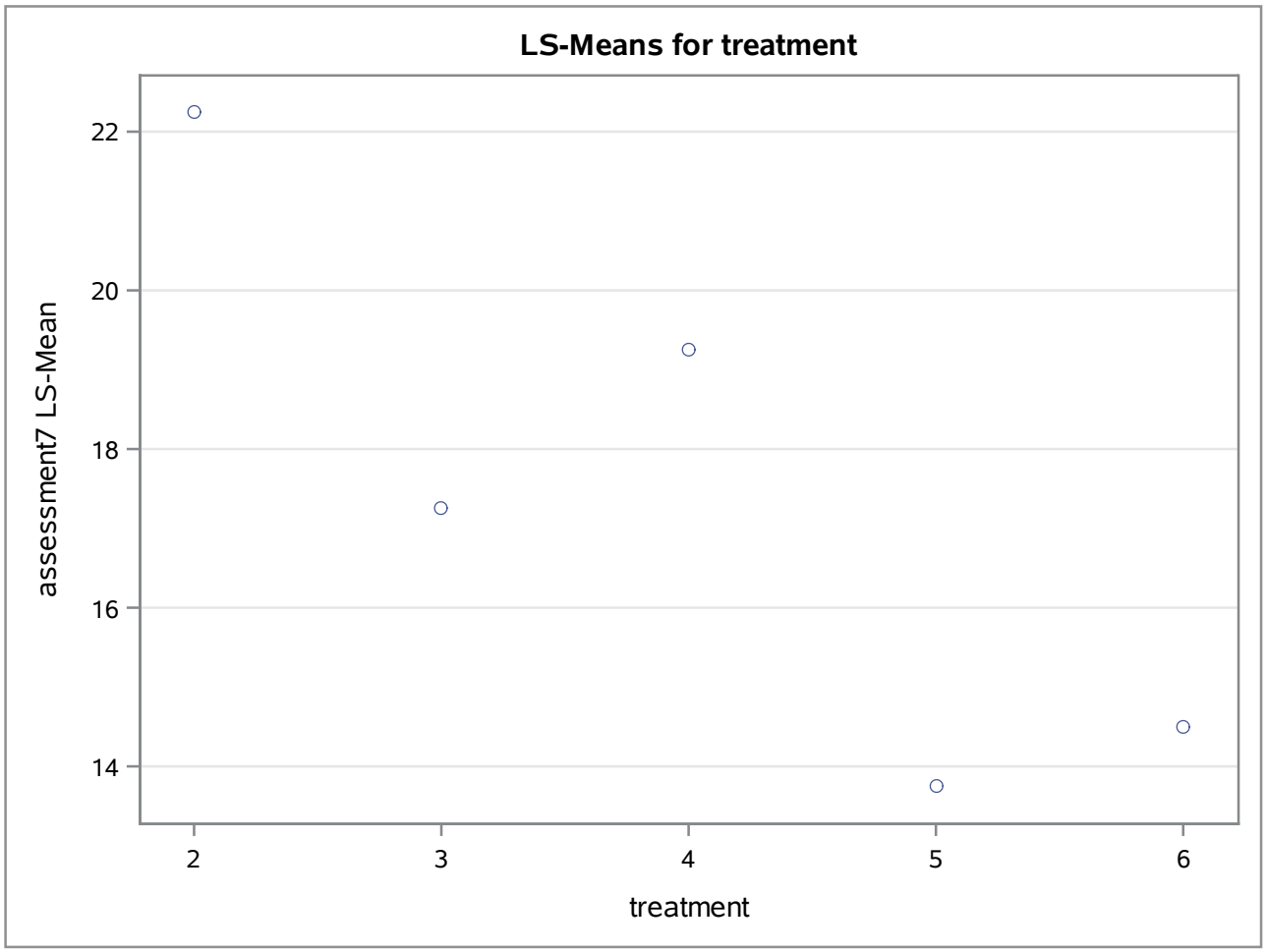
## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

| treatment | assessment7 LSMEAN | Standard Error | Pr > \|t\| | LSMEAN Number |
|---|---|---|---|---|
| 2 | 22.2500020 | 0.7958225 | <.0001 | 1 |
| 3 | 17.2500018 | 0.7958225 | <.0001 | 2 |
| 4 | 19.2500020 | 0.7958225 | <.0001 | 3 |
| 5 | 13.7500010 | 0.7958225 | <.0001 | 4 |
| 6 | 14.5000018 | 0.7958225 | <.0001 | 5 |

**Least Squares Means for effect treatment**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

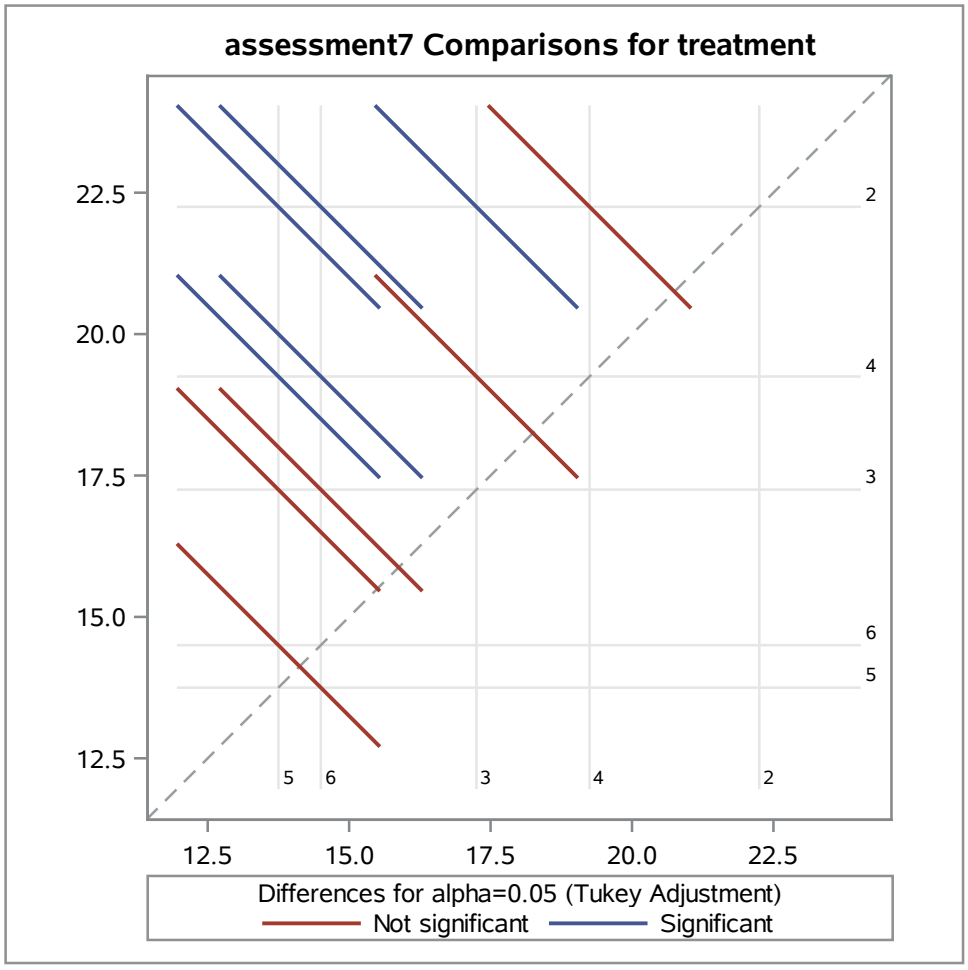
**Dependent Variable: assessment7**

| i/j | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | | 0.0059 | 0.1190 | <.0001 | 0.0001 |
| 2 | 0.0059 | | 0.4283 | 0.0570 | 0.1691 |
| 3 | 0.1190 | 0.4283 | | 0.0028 | 0.0085 |
| 4 | <.0001 | 0.0570 | 0.0028 | | 0.9600 |
| 5 | 0.0001 | 0.1691 | 0.0085 | 0.9600 | |



# Split Plot - Multivariate Repeated

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey




| Tukey Comparison Lines for Least Squares Means of treatment | | | | |
|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | |
| | | assessment7 LSMEAN | treatment | LSMEAN Number |
| | A | 22.25 | **2** | 1 |
| | A | | | |
| B | A | 19.25 | **4** | 3 |
| B | | | | |
| B | C | 17.25 | **3** | 2 |
| | C | | | |
| | C | 14.50 | **6** | 5 |
| | C | | | |
| | C | 13.75 | **5** | 4 |

# Split Plot - Multivariate Repeated

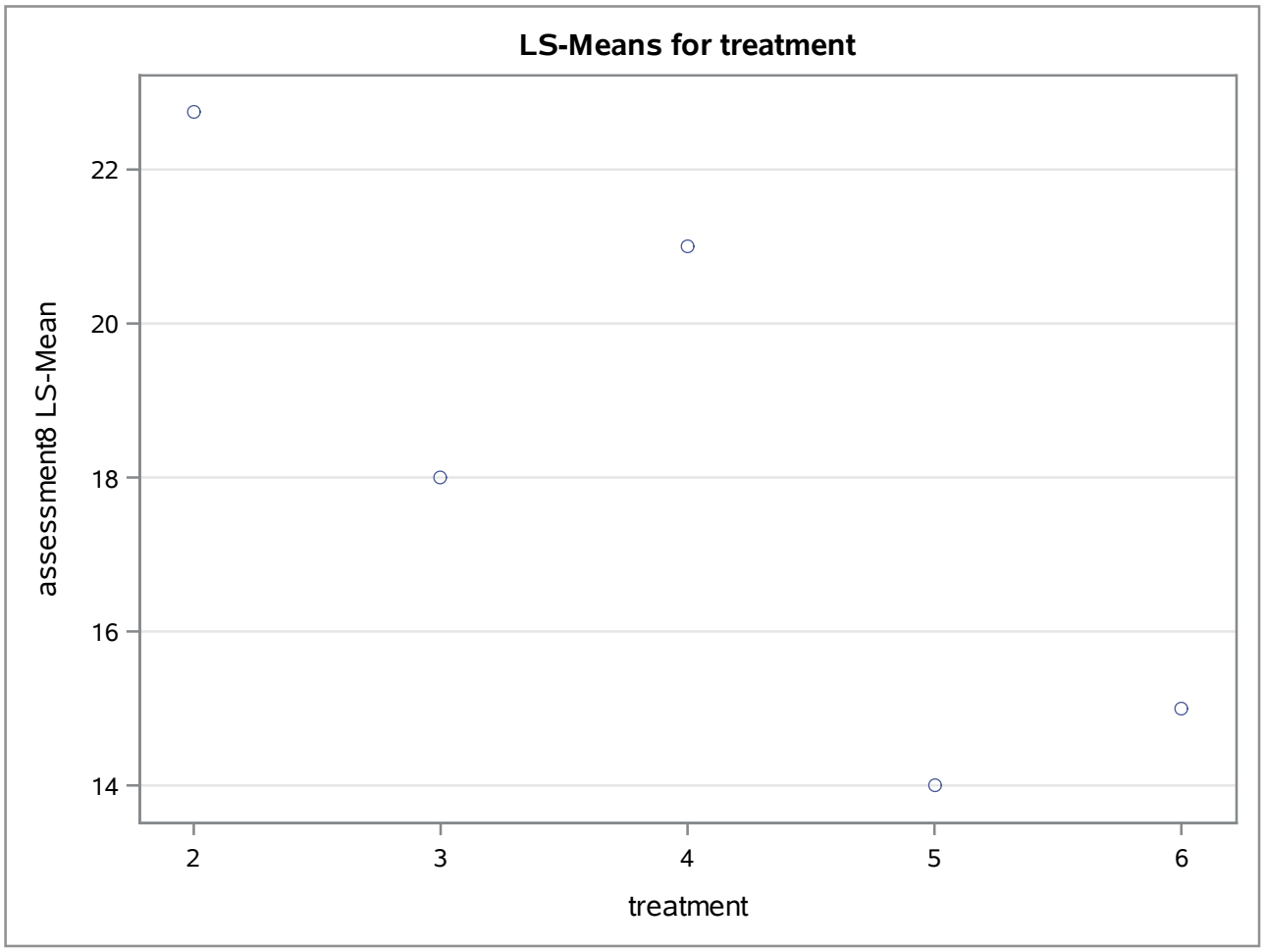
## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

| treatment | assessment8 LSMEAN | Standard Error | Pr > \|t\| | LSMEAN Number |
|---|---|---|---|---|
| 2 | 22.7500023 | 0.8920951 | <.0001 | 1 |
| 3 | 18.0000020 | 0.8920951 | <.0001 | 2 |
| 4 | 21.0000020 | 0.8920951 | <.0001 | 3 |
| 5 | 14.0000015 | 0.8920951 | <.0001 | 4 |
| 6 | 15.0000018 | 0.8920951 | <.0001 | 5 |

**Least Squares Means for effect treatment**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

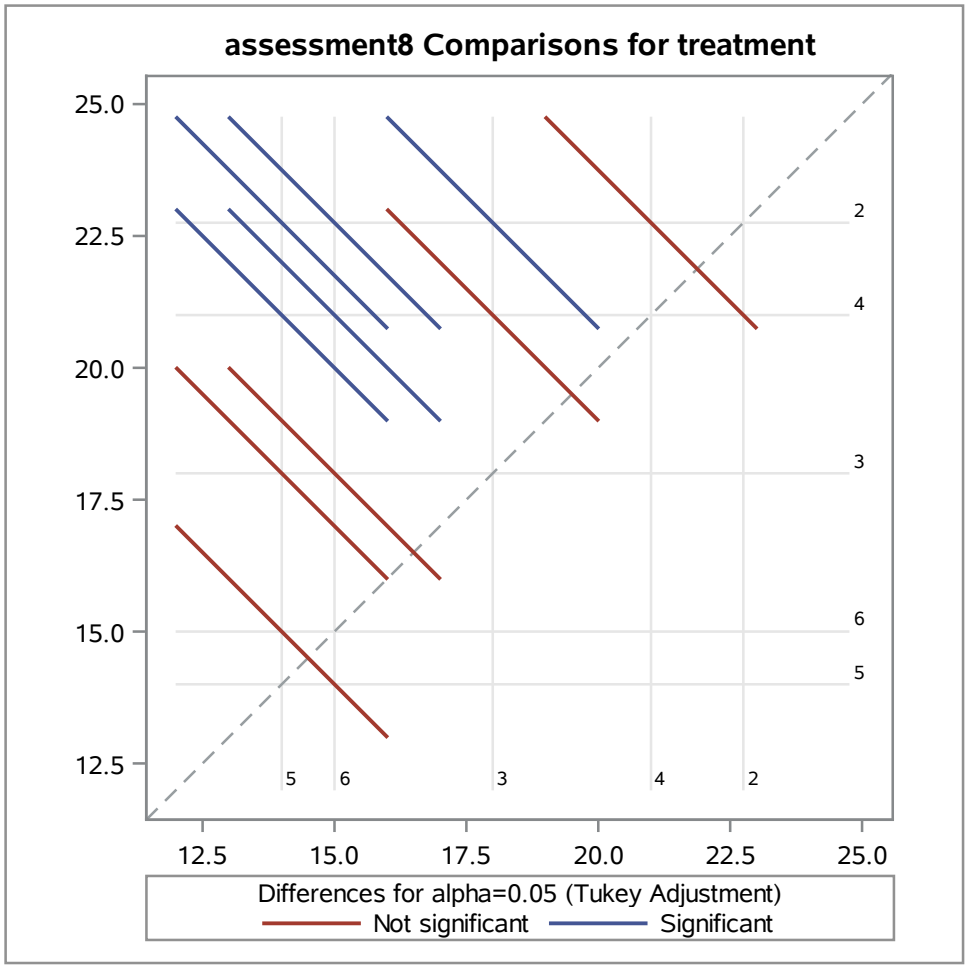
**Dependent Variable: assessment8**

| i/j | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | | 0.0186 | 0.6465 | 0.0001 | 0.0004 |
| 2 | 0.0186 | | 0.1870 | 0.0515 | 0.1870 |
| 3 | 0.6465 | 0.1870 | | 0.0010 | 0.0035 |
| 4 | 0.0001 | 0.0515 | 0.0010 | | 0.9279 |
| 5 | 0.0004 | 0.1870 | 0.0035 | 0.9279 | |



# Split Plot - Multivariate Repeated

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey




| Tukey Comparison Lines for Least Squares Means of treatment | | | | |
|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | |
| | | assessment8 LSMEAN | treatment | LSMEAN Number |
| | A | 22.75 | **2** | 1 |
| | A | | | |
| B | A | 21.00 | **4** | 3 |
| B | | | | |
| B | C | 18.00 | **3** | 2 |
| | C | | | |
| | C | 15.00 | **6** | 5 |
| | C | | | |
| | C | 14.00 | **5** | 4 |

# Split Plot - Multivariate Repeated

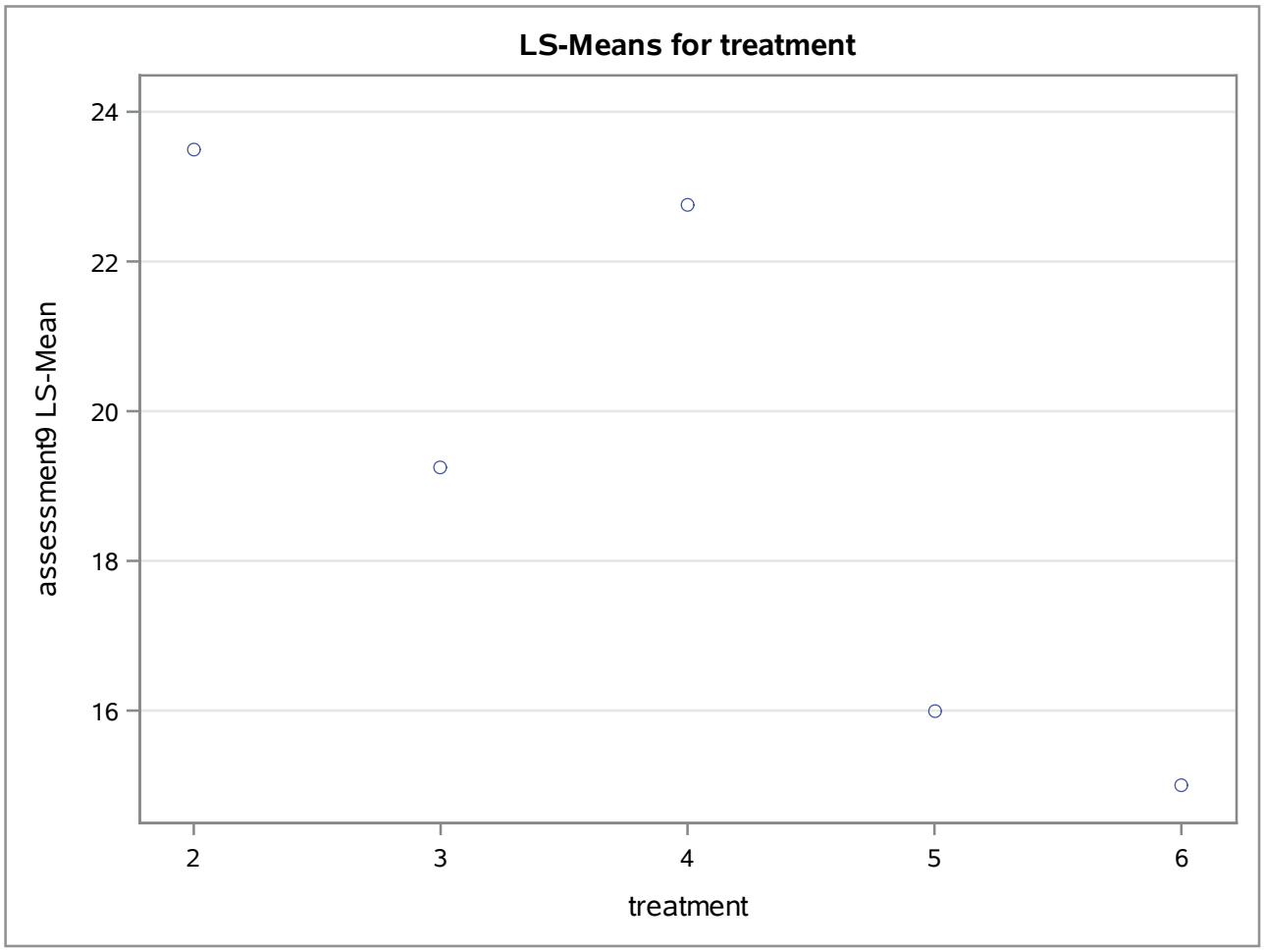
## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

| treatment | assessment9 LSMEAN | Standard Error | Pr > \|t\| | LSMEAN Number |
|---|---|---|---|---|
| 2 | 23.5000023 | 0.9863656 | <.0001 | 1 |
| 3 | 19.2500020 | 0.9863656 | <.0001 | 2 |
| 4 | 22.7500023 | 0.9863656 | <.0001 | 3 |
| 5 | 16.0000018 | 0.9863656 | <.0001 | 4 |
| 6 | 15.0000018 | 0.9863656 | <.0001 | 5 |

**Least Squares Means for effect treatment**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

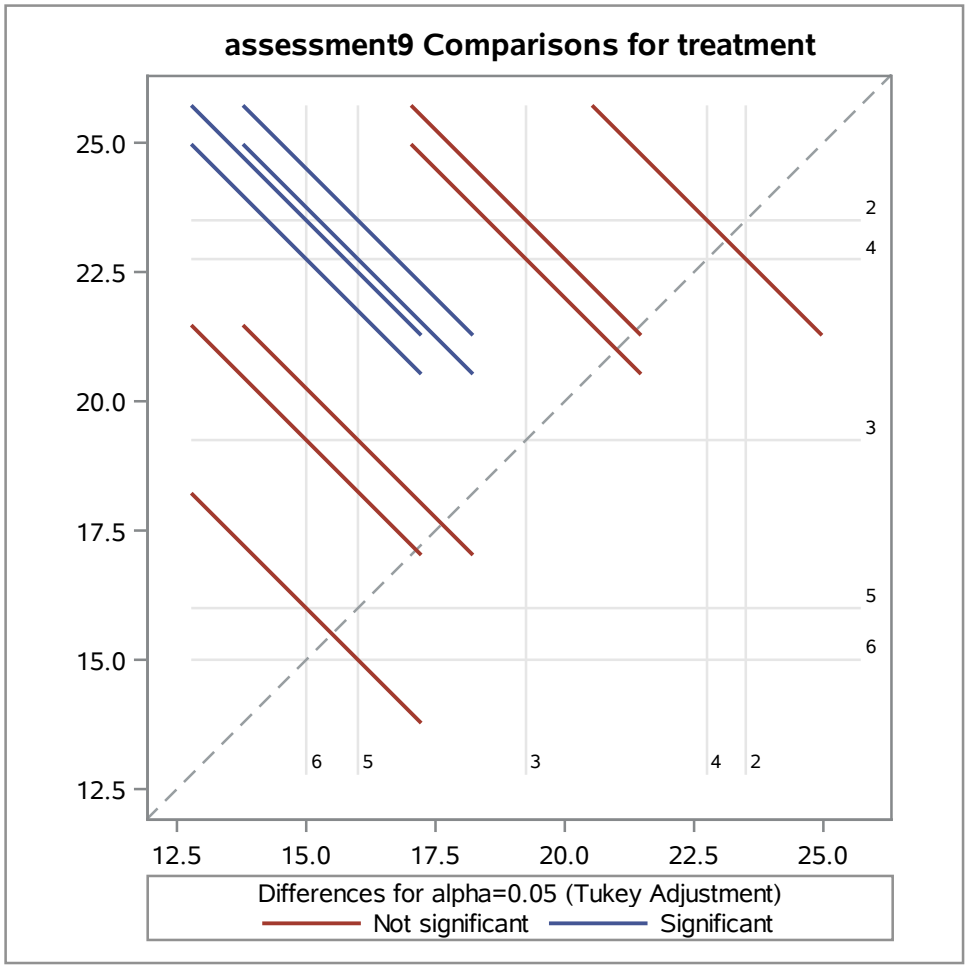
**Dependent Variable: assessment9**

| i/j | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | | 0.0634 | 0.9815 | 0.0013 | 0.0004 |
| 2 | 0.0634 | | 0.1527 | 0.2011 | 0.0634 |
| 3 | 0.9815 | 0.1527 | | 0.0030 | 0.0010 |
| 4 | 0.0013 | 0.2011 | 0.0030 | | 0.9485 |
| 5 | 0.0004 | 0.0634 | 0.0010 | 0.9485 | |



# Split Plot - Multivariate Repeated

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey




| Tukey Comparison Lines for Least Squares Means of treatment | | | | |
|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | |
| | | assessment9 LSMEAN | treatment | LSMEAN Number |
| | A | 23.50 | **2** | 1 |
| | A | | | |
| | A | 22.75 | **4** | 3 |
| | A | | | |
| B | A | 19.25 | **3** | 2 |
| B | | | | |
| B | | 16.00 | **5** | 4 |
| B | | | | |
| B | | 15.00 | **6** | 5 |

# Split Plot - Multivariate Repeated

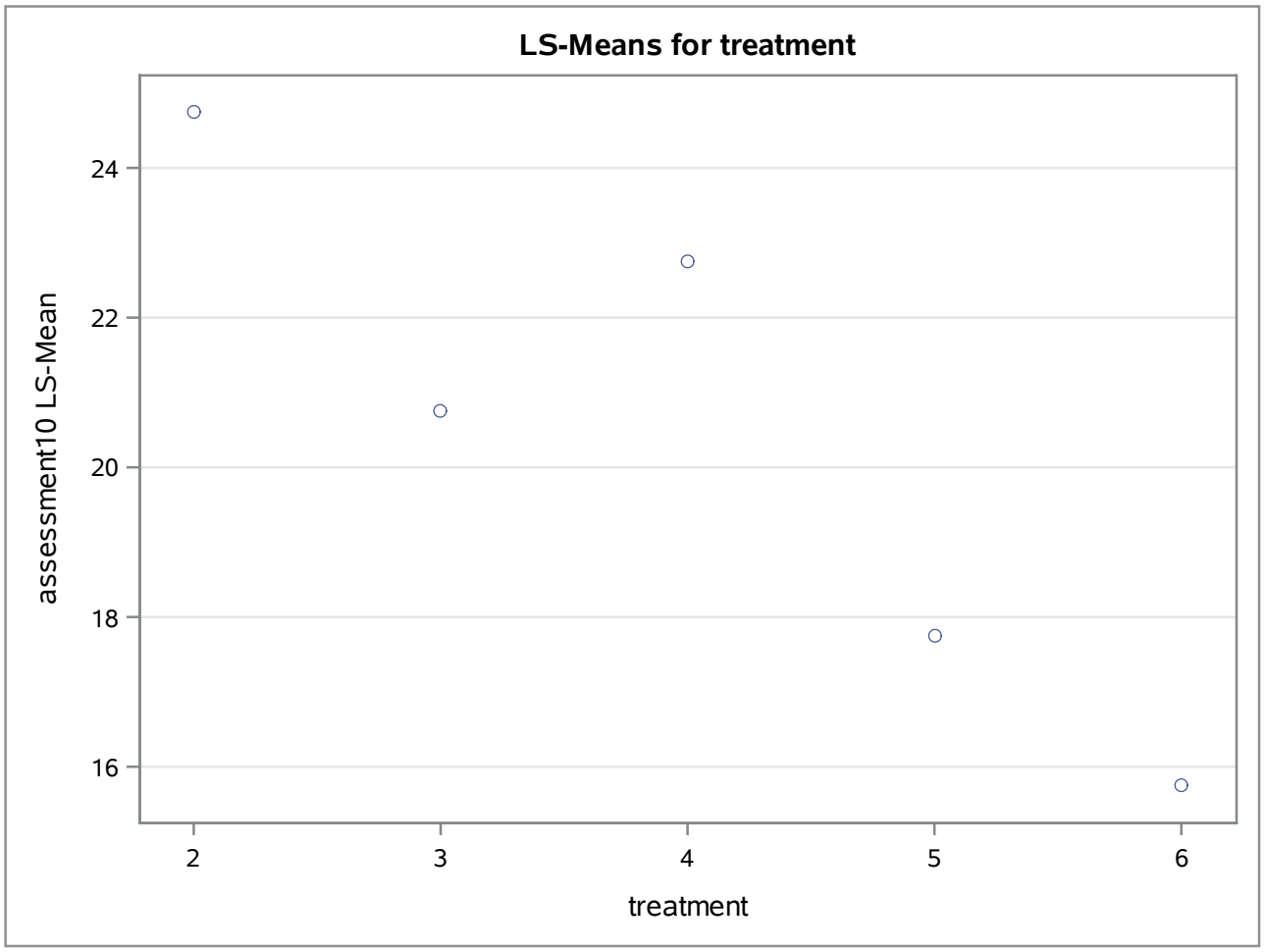
## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey

| treatment | assessment10 LSMEAN | Standard Error | Pr > \|t\| | LSMEAN Number |
|---|---|---|---|---|
| 2 | 24.7500025 | 0.7691988 | <.0001 | 1 |
| 3 | 20.7500020 | 0.7691988 | <.0001 | 2 |
| 4 | 22.7500020 | 0.7691988 | <.0001 | 3 |
| 5 | 17.7500020 | 0.7691988 | <.0001 | 4 |
| 6 | 15.7500018 | 0.7691988 | <.0001 | 5 |

**Least Squares Means for effect treatment**
**Pr > |t| for H0: LSMean(i)=LSMean(j)**

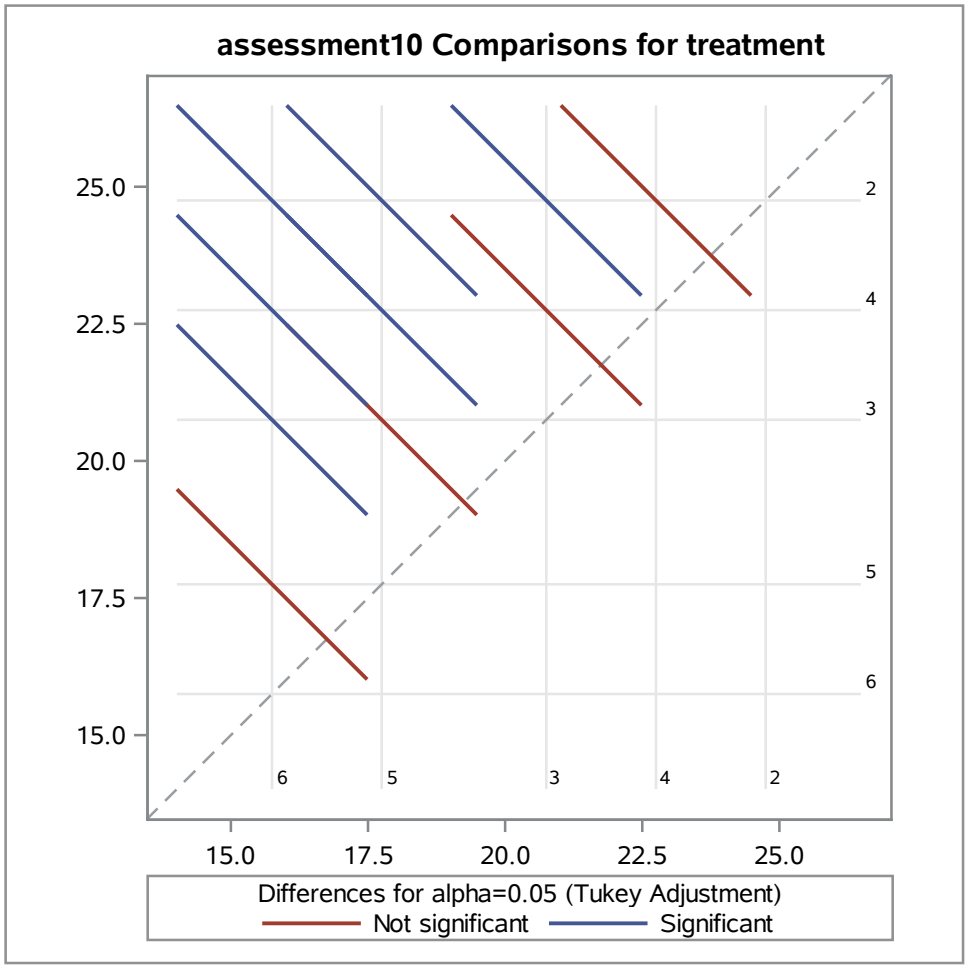
**Dependent Variable: assessment10**

| i/j | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | | 0.0216 | 0.3972 | 0.0003 | <.0001 |
| 2 | 0.0216 | | 0.3972 | 0.1025 | 0.0045 |
| 3 | 0.3972 | 0.3972 | | 0.0045 | 0.0003 |
| 4 | 0.0003 | 0.1025 | 0.0045 | | 0.3972 |
| 5 | <.0001 | 0.0045 | 0.0003 | 0.3972 | |



# Split Plot - Multivariate Repeated

## The GLM Procedure
## Least Squares Means
## Adjustment for Multiple Comparisons: Tukey




| Tukey Comparison Lines for Least Squares Means of treatment | | | | |
|---|---|---|---|---|
| LS-means with the same letter are not significantly different. | | | | |
| | | assessment10 LSMEAN | treatment | LSMEAN Number |
| | A | 24.75 | **2** | 1 |
| | A | | | |
| B | A | 22.75 | **4** | 3 |
| B | | | | |
| B | C | 20.75 | **3** | 2 |
| | C | | | |
| D | C | 17.75 | **5** | 4 |
| D | | | | |
| D | | 15.75 | **6** | 5 |