

**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 |

|                                    |     |
|------------------------------------|-----|
| <b>Number of Observations Read</b> | 144 |
| <b>Number of Observations Used</b> | 138 |

## The GLM Procedure

Dependent Variable: assessment

| Source          | DF  | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|-----|----------------|-------------|---------|--------|
| Model           | 52  | 93296.12735    | 1794.15630  | 1790.64 | <.0001 |
| Error           | 85  | 85.16669       | 1.00196     |         |        |
| Corrected Total | 137 | 93381.29405    |             |         |        |

| R-Square | Coeff Var | Root MSE | assessment Mean |
|----------|-----------|----------|-----------------|
| 0.999088 | 3.404023  | 1.000980 | 29.40580        |

| Source              | DF | Type I SS   | Mean Square | F Value | Pr > F |
|---------------------|----|-------------|-------------|---------|--------|
| replicate           | 3  | 37.55315    | 12.51772    | 12.49   | <.0001 |
| treatment           | 5  | 92597.80369 | 18519.56074 | 18483.3 | <.0001 |
| replicate*treatment | 14 | 141.93708   | 10.13836    | 10.12   | <.0001 |
| number              | 5  | 451.79720   | 90.35944    | 90.18   | <.0001 |
| treatment*number    | 25 | 67.03625    | 2.68145     | 2.68    | 0.0004 |

| Source              | DF | Type III SS | Mean Square | F Value | Pr > F |
|---------------------|----|-------------|-------------|---------|--------|
| replicate           | 3  | 32.72964    | 10.90988    | 10.89   | <.0001 |
| treatment           | 5  | 92597.80369 | 18519.56074 | 18483.3 | <.0001 |
| replicate*treatment | 14 | 141.93708   | 10.13836    | 10.12   | <.0001 |
| number              | 5  | 430.29834   | 86.05967    | 85.89   | <.0001 |
| treatment*number    | 25 | 67.03625    | 2.68145     | 2.68    | 0.0004 |

## The GLM Procedure

| Source              | Type III Expected Mean Square   |
|---------------------|---|
| replicate           | $\text{Var}(\text{Error}) + 6 \text{Var}(\text{replicate}*\text{treatment}) + 34 \text{Var}(\text{replicate})$                            |
| treatment           | $\text{Var}(\text{Error}) + 6 \text{Var}(\text{replicate}*\text{treatment}) + \text{Q}(\text{treatment}, \text{treatment}*\text{number})$ |
| replicate*treatment | $\text{Var}(\text{Error}) + 6 \text{Var}(\text{replicate}*\text{treatment})$  |
| number              | $\text{Var}(\text{Error}) + \text{Q}(\text{number}, \text{treatment}*\text{number})$  |
| treatment*number    | $\text{Var}(\text{Error}) + \text{Q}(\text{treatment}*\text{number})$   |

**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.

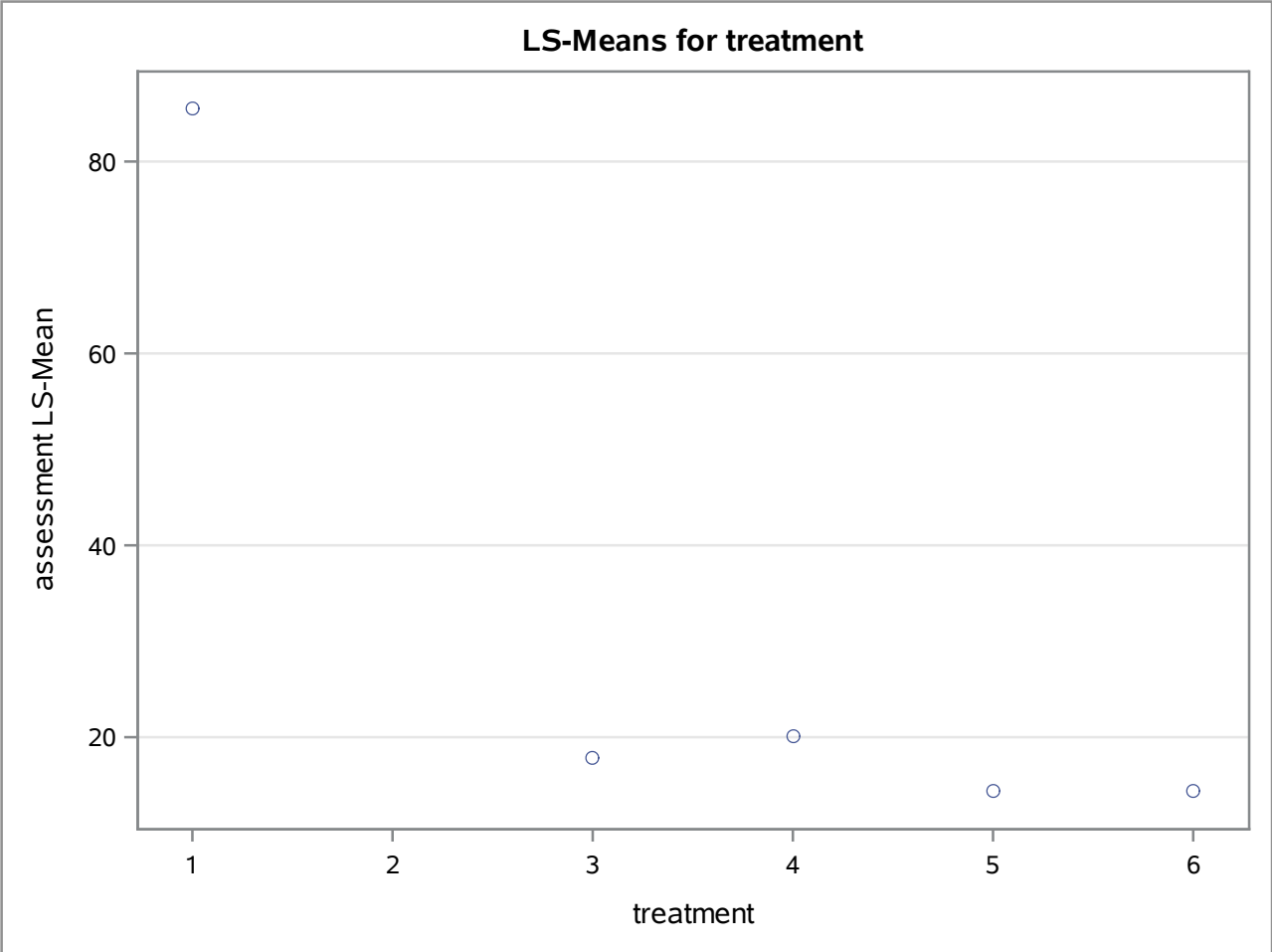
The GLM Procedure  
 Least Squares Means  
 Adjustment for Multiple Comparisons: Tukey-Kramer

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

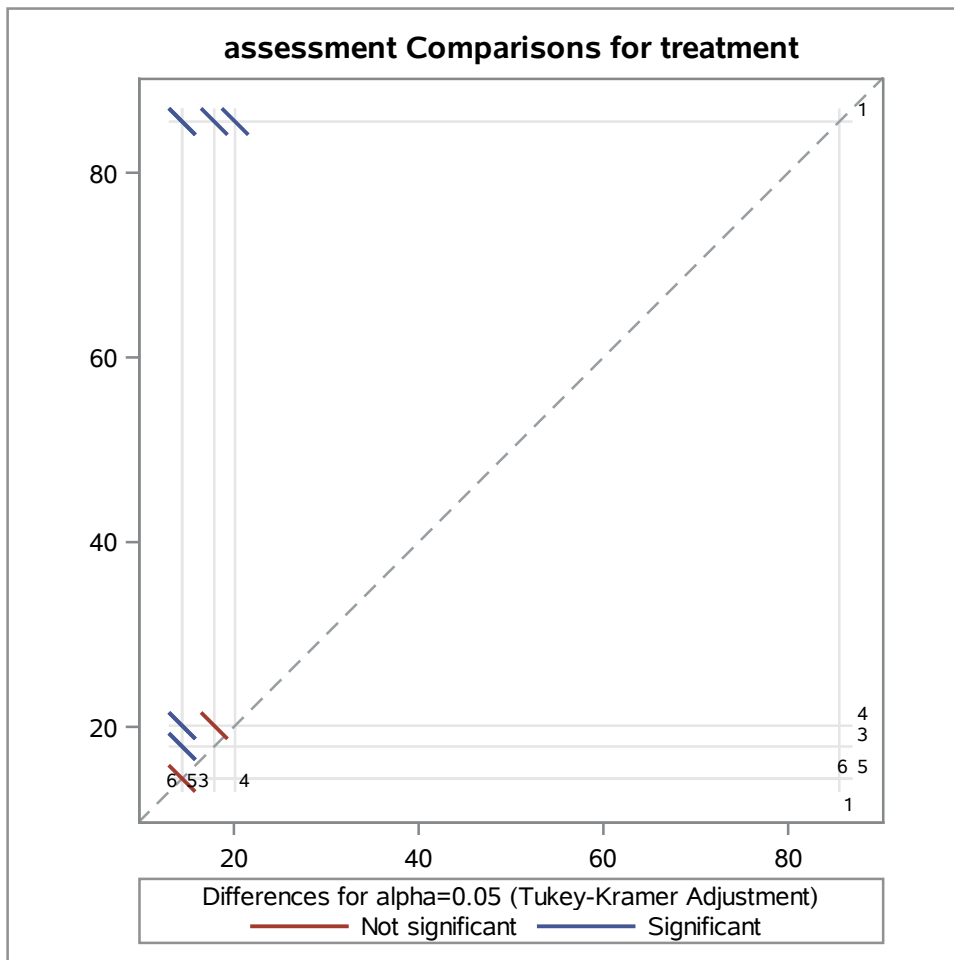
| treatment | assessment LSMEAN | Standard Error | Pr >  t | LSMEAN Number |
|-----------|-------------------|----------------|---------|---------------|
| 1         | 85.5416753        | 0.6499475      | <.0001  | 1             |
| 2         | Non-est           | .              | .       | 2             |
| 3         | 17.8750019        | 0.6499475      | <.0001  | 3             |
| 4         | 20.1250020        | 0.6499475      | <.0001  | 4             |
| 5         | 14.3750014        | 0.6499475      | <.0001  | 5             |
| 6         | 14.4166683        | 0.6499475      | <.0001  | 6             |

| Least Squares Means for effect treatment<br>Pr >  t  for H0: LSMean(i)=LSMean(j)<br>Dependent Variable: assessment |        |   |        |        |        |        |
|--|--------|---|--------|--------|--------|--------|
| ij   | 1      | 2 | 3      | 4      | 5      | 6      |
| 1  |        | . | <.0001 | <.0001 | <.0001 | <.0001 |
| 2  | .      |   | .      | .      | .      | .      |
| 3  | <.0001 | . |        | 0.1594 | 0.0139 | 0.0151 |
| 4  | <.0001 | . | 0.1594 |        | 0.0002 | 0.0002 |
| 5  | <.0001 | . | 0.0139 | 0.0002 |        | 1.0000 |
| 6  | <.0001 | . | 0.0151 | 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

| number | assessment<br>LSMEAN | LSMEAN<br>Number |
|--------|----------------------|------------------|
| 5      | Non-est              | 1                |
| 6      | Non-est              | 2                |
| 7      | Non-est              | 3                |
| 8      | Non-est              | 4                |
| 9      | Non-est              | 5                |
| 10     | Non-est              | 6                |

| Least Squares Means for effect number<br>Pr >  t  for H0: LSMean(i)=LSMean(j)<br>Dependent Variable: assessment |        |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|--------|
| ij  | 1      | 2      | 3      | 4      | 5      | 6      |
| 1   |        | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 2   | <.0001 |        | 0.1902 | 0.0001 | <.0001 | <.0001 |
| 3   | <.0001 | 0.1902 |        | 0.1568 | <.0001 | <.0001 |
| 4   | <.0001 | 0.0001 | 0.1568 |        | 0.0001 | <.0001 |
| 5   | <.0001 | <.0001 | <.0001 | 0.0001 |        | 0.0050 |
| 6   | <.0001 | <.0001 | <.0001 | <.0001 | 0.0050 |        |

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**

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

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

| treatment | number | assessment<br>LSMEAN | Standard<br>Error | Pr >  t | LSMEAN<br>Number |
|-----------|--------|----------------------|-------------------|---------|------------------|
| 1         | 5      | 81.5000080           | 0.5004900         | <.0001  | 1                |
| 1         | 6      | 83.2500083           | 0.5004900         | <.0001  | 2                |
| 1         | 7      | 85.0000085           | 0.5004900         | <.0001  | 3                |
| 1         | 8      | 85.7500088           | 0.5004900         | <.0001  | 4                |
| 1         | 9      | 88.2500090           | 0.5004900         | <.0001  | 5                |
| 1         | 10     | 89.5000090           | 0.5004900         | <.0001  | 6                |
| 2         | 5      | Non-est              | .                 | .       | 7                |
| 2         | 6      | Non-est              | .                 | .       | 8                |
| 2         | 7      | Non-est              | .                 | .       | 9                |
| 2         | 8      | Non-est              | .                 | .       | 10               |
| 2         | 9      | Non-est              | .                 | .       | 11               |
| 2         | 10     | Non-est              | .                 | .       | 12               |
| 3         | 5      | 15.2500017           | 0.5004900         | <.0001  | 13               |
| 3         | 6      | 16.7500017           | 0.5004900         | <.0001  | 14               |
| 3         | 7      | 17.2500017           | 0.5004900         | <.0001  | 15               |
| 3         | 8      | 18.0000020           | 0.5004900         | <.0001  | 16               |
| 3         | 9      | 19.2500020           | 0.5004900         | <.0001  | 17               |
| 3         | 10     | 20.7500020           | 0.5004900         | <.0001  | 18               |
| 4         | 5      | 16.7500020           | 0.5004900         | <.0001  | 19               |
| 4         | 6      | 18.2500020           | 0.5004900         | <.0001  | 20               |
| 4         | 7      | 19.2500020           | 0.5004900         | <.0001  | 21               |
| 4         | 8      | 21.0000020           | 0.5004900         | <.0001  | 22               |
| 4         | 9      | 22.7500022           | 0.5004900         | <.0001  | 23               |
| 4         | 10     | 22.7500020           | 0.5004900         | <.0001  | 24               |
| 5         | 5      | 11.7500010           | 0.5004900         | <.0001  | 25               |
| 5         | 6      | 13.0000010           | 0.5004900         | <.0001  | 26               |
| 5         | 7      | 13.7500010           | 0.5004900         | <.0001  | 27               |
| 5         | 8      | 14.0000015           | 0.5004900         | <.0001  | 28               |
| 5         | 9      | 16.0000017           | 0.5004900         | <.0001  | 29               |
| 5         | 10     | 17.7500020           | 0.5004900         | <.0001  | 30               |
| 6         | 5      | 12.2500012           | 0.5004900         | <.0001  | 31               |
| 6         | 6      | 14.0000015           | 0.5004900         | <.0001  | 32               |
| 6         | 7      | 14.5000018           | 0.5004900         | <.0001  | 33               |
| 6         | 8      | 15.0000018           | 0.5004900         | <.0001  | 34               |

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

| treatment | number | assessment<br>LSMEAN | Standard<br>Error | Pr >  t | LSMEAN<br>Number |
|-----------|--------|----------------------|-------------------|---------|------------------|
| 6         | 9      | 15.000018            | 0.5004900         | <.0001  | 35               |
| 6         | 10     | 15.750017            | 0.5004900         | <.0001  | 36               |

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

| Least Squares Means for effect treatment*number<br>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     | 14     |
| 1   |        | 0.8520 | 0.0019 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | <.0001 | <.0001 |
| 2   | 0.8520 |        | 0.8520 | 0.1666 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | <.0001 | <.0001 |
| 3   | 0.0019 | 0.8520 |        | 1.0000 | 0.0068 | <.0001 | .      | .      | .      | .      | .      | .      | <.0001 | <.0001 |
| 4   | <.0001 | 0.1666 | 1.0000 |        | 0.1666 | 0.0005 | .      | .      | .      | .      | .      | .      | <.0001 | <.0001 |
| 5   | <.0001 | <.0001 | 0.0068 | 0.1666 |        | 0.9981 | .      | .      | .      | .      | .      | .      | <.0001 | <.0001 |
| 6   | <.0001 | <.0001 | <.0001 | 0.0005 | 0.9981 |        | .      | .      | .      | .      | .      | .      | <.0001 | <.0001 |
| 7   | .      | .      | .      | .      | .      | .      |        | 1.0000 | 1.0000 | 1.0000 | 0.8649 | 0.0369 | .      | .      |
| 8   | .      | .      | .      | .      | .      | .      | 1.0000 |        | 1.0000 | 1.0000 | 1.0000 | 0.5936 | .      | .      |
| 9   | .      | .      | .      | .      | .      | .      | 1.0000 | 1.0000 |        | 1.0000 | 0.9995 | 0.3023 | .      | .      |
| 10  | .      | .      | .      | .      | .      | .      | 1.0000 | 1.0000 | 1.0000 |        | 1.0000 | 0.5936 | .      | .      |
| 11  | .      | .      | .      | .      | .      | .      | 0.8649 | 1.0000 | 0.9995 | 1.0000 |        | 0.9995 | .      | .      |
| 12  | .      | .      | .      | .      | .      | .      | 0.0369 | 0.5936 | 0.3023 | 0.5936 | 0.9995 |        | .      | .      |
| 13  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      |        | 0.9714 |
| 14  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.9714 |        |
| 15  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.6160 | 1.0000 |
| 16  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.0654 | 0.9981 |
| 17  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.0001 | 0.1666 |
| 18  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | <.0001 | 0.0001 |
| 19  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.9714 | 1.0000 |
| 20  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.0223 | 0.9714 |
| 21  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.0001 | 0.1666 |
| 22  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | <.0001 | <.0001 |
| 23  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | <.0001 | <.0001 |
| 24  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | <.0001 | <.0001 |
| 25  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.0019 | <.0001 |
| 26  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.3556 | 0.0005 |
| 27  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.9714 | 0.0223 |
| 28  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.9981 | 0.0654 |
| 29  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 1.0000 | 1.0000 |
| 30  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.1666 | 1.0000 |
| 31  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.0223 | <.0001 |
| 32  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 0.9981 | 0.0654 |
| 33  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | .      | .      | .      | .      | .      | .      | 1.0000 | 0.3556 |

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

| Least Squares Means for effect treatment*number<br>Pr >  t  for H0: LSMean(i)=LSMean(j) |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Dependent Variable: assessment  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| ij  | 15     | 16     | 17     | 18     | 19     | 20     | 21     | 22     | 23     | 24     | 25     | 26     | 27     | 28     |
| 1   | <.0001 | <.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 | <.0001 |
| 3   | <.0001 | <.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 | <.0001 |
| 5   | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 6   | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 7   | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      |
| 8   | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      |
| 9   | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      |
| 10  | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      |
| 11  | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      |
| 12  | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      | .      |
| 13  | 0.6160 | 0.0654 | 0.0001 | <.0001 | 0.9714 | 0.0223 | 0.0001 | <.0001 | <.0001 | <.0001 | 0.0019 | 0.3556 | 0.9714 | 0.9981 |
| 14  | 1.0000 | 0.9981 | 0.1666 | 0.0001 | 1.0000 | 0.9714 | 0.1666 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0005 | 0.0223 | 0.0654 |
| 15  |        | 1.0000 | 0.6160 | 0.0019 | 1.0000 | 1.0000 | 0.6160 | 0.0005 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0019 | 0.0068 |
| 16  | 1.0000 |        | 0.9981 | 0.0654 | 0.9981 | 1.0000 | 0.9981 | 0.0223 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0001 |
| 17  | 0.6160 | 0.9981 |        | 0.9714 | 0.1666 | 1.0000 | 1.0000 | 0.8520 | 0.0019 | 0.0019 | <.0001 | <.0001 | <.0001 | <.0001 |
| 18  | 0.0019 | 0.0654 | 0.9714 |        | 0.0001 | 0.1666 | 0.9714 | 1.0000 | 0.6160 | 0.6160 | <.0001 | <.0001 | <.0001 | <.0001 |
| 19  | 1.0000 | 0.9981 | 0.1666 | 0.0001 |        | 0.9714 | 0.1666 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0005 | 0.0223 | 0.0654 |
| 20  | 1.0000 | 1.0000 | 1.0000 | 0.1666 | 0.9714 |        | 1.0000 | 0.0654 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 21  | 0.6160 | 0.9981 | 1.0000 | 0.9714 | 0.1666 | 1.0000 |        | 0.8520 | 0.0019 | 0.0019 | <.0001 | <.0001 | <.0001 | <.0001 |
| 22  | 0.0005 | 0.0223 | 0.8520 | 1.0000 | <.0001 | 0.0654 | 0.8520 |        | 0.8520 | 0.8520 | <.0001 | <.0001 | <.0001 | <.0001 |
| 23  | <.0001 | <.0001 | 0.0019 | 0.6160 | <.0001 | <.0001 | 0.0019 | 0.8520 |        | 1.0000 | <.0001 | <.0001 | <.0001 | <.0001 |
| 24  | <.0001 | <.0001 | 0.0019 | 0.6160 | <.0001 | <.0001 | 0.0019 | 0.8520 | 1.0000 |        | <.0001 | <.0001 | <.0001 | <.0001 |
| 25  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |        | 0.9981 | 0.6160 | 0.3556 |
| 26  | <.0001 | <.0001 | <.0001 | <.0001 | 0.0005 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.9981 |        | 1.0000 |
| 27  | 0.0019 | <.0001 | <.0001 | <.0001 | 0.0223 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.6160 | 1.0000 |        |
| 28  | 0.0068 | 0.0001 | <.0001 | <.0001 | 0.0654 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.3556 | 1.0000 | 1.0000 |
| 29  | 0.9981 | 0.6160 | 0.0068 | <.0001 | 1.0000 | 0.3556 | 0.0068 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0223 | 0.3556 | 0.6160 |
| 30  | 1.0000 | 1.0000 | 0.9714 | 0.0223 | 1.0000 | 1.0000 | 0.9714 | 0.0068 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0001 | 0.0005 |
| 31  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 1.0000 | 1.0000 | 0.9714 |
| 32  | 0.0068 | 0.0001 | <.0001 | <.0001 | 0.0654 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.3556 | 1.0000 | 1.0000 |
| 33  | 0.0654 | 0.0019 | <.0001 | <.0001 | 0.3556 | 0.0005 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0654 | 0.9714 | 1.0000 |

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

| Least Squares Means for effect treatment*number<br>Pr >  t  for H0: LSMean(i)=LSMean(j)<br>Dependent Variable: assessment |        |        |        |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|--------|--------|--------|
| i/j   | 29     | 30     | 31     | 32     | 33     | 34     | 35     | 36     |
| 1   | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 2   | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 3   | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 4   | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 5   | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 6   | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 7   | .      | .      | .      | .      | .      | .      | .      | .      |
| 8   | .      | .      | .      | .      | .      | .      | .      | .      |
| 9   | .      | .      | .      | .      | .      | .      | .      | .      |
| 10  | .      | .      | .      | .      | .      | .      | .      | .      |
| 11  | .      | .      | .      | .      | .      | .      | .      | .      |
| 12  | .      | .      | .      | .      | .      | .      | .      | .      |
| 13  | 1.0000 | 0.1666 | 0.0223 | 0.9981 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 14  | 1.0000 | 1.0000 | <.0001 | 0.0654 | 0.3556 | 0.8520 | 0.8520 | 1.0000 |
| 15  | 0.9981 | 1.0000 | <.0001 | 0.0068 | 0.0654 | 0.3556 | 0.3556 | 0.9714 |
| 16  | 0.6160 | 1.0000 | <.0001 | 0.0001 | 0.0019 | 0.0223 | 0.0223 | 0.3556 |
| 17  | 0.0068 | 0.9714 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0019 |
| 18  | <.0001 | 0.0223 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 19  | 1.0000 | 1.0000 | <.0001 | 0.0654 | 0.3556 | 0.8520 | 0.8520 | 1.0000 |
| 20  | 0.3556 | 1.0000 | <.0001 | <.0001 | 0.0005 | 0.0068 | 0.0068 | 0.1666 |
| 21  | 0.0068 | 0.9714 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0019 |
| 22  | <.0001 | 0.0068 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 23  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 24  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 25  | <.0001 | <.0001 | 1.0000 | 0.3556 | 0.0654 | 0.0068 | 0.0068 | 0.0001 |
| 26  | 0.0223 | <.0001 | 1.0000 | 1.0000 | 0.9714 | 0.6160 | 0.6160 | 0.0654 |
| 27  | 0.3556 | 0.0001 | 0.9714 | 1.0000 | 1.0000 | 0.9981 | 0.9981 | 0.6160 |
| 28  | 0.6160 | 0.0005 | 0.8520 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.8520 |
| 29  |        | 0.8520 | 0.0005 | 0.6160 | 0.9714 | 1.0000 | 1.0000 | 1.0000 |
| 30  | 0.8520 |        | <.0001 | 0.0005 | 0.0068 | 0.0654 | 0.0654 | 0.6160 |
| 31  | 0.0005 | <.0001 |        | 0.8520 | 0.3556 | 0.0654 | 0.0654 | 0.0019 |
| 32  | 0.6160 | 0.0005 | 0.8520 |        | 1.0000 | 1.0000 | 1.0000 | 0.8520 |
| 33  | 0.9714 | 0.0068 | 0.3556 | 1.0000 |        | 1.0000 | 1.0000 | 0.9981 |

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

| Least Squares Means for effect treatment*number<br>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     | 14     |
| 34  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | . | . | . | .  | .  | .  | 1.0000 | 0.8520 |
| 35  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | . | . | . | .  | .  | .  | 1.0000 | 0.8520 |
| 36  | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | . | . | . | .  | .  | .  | 1.0000 | 1.0000 |

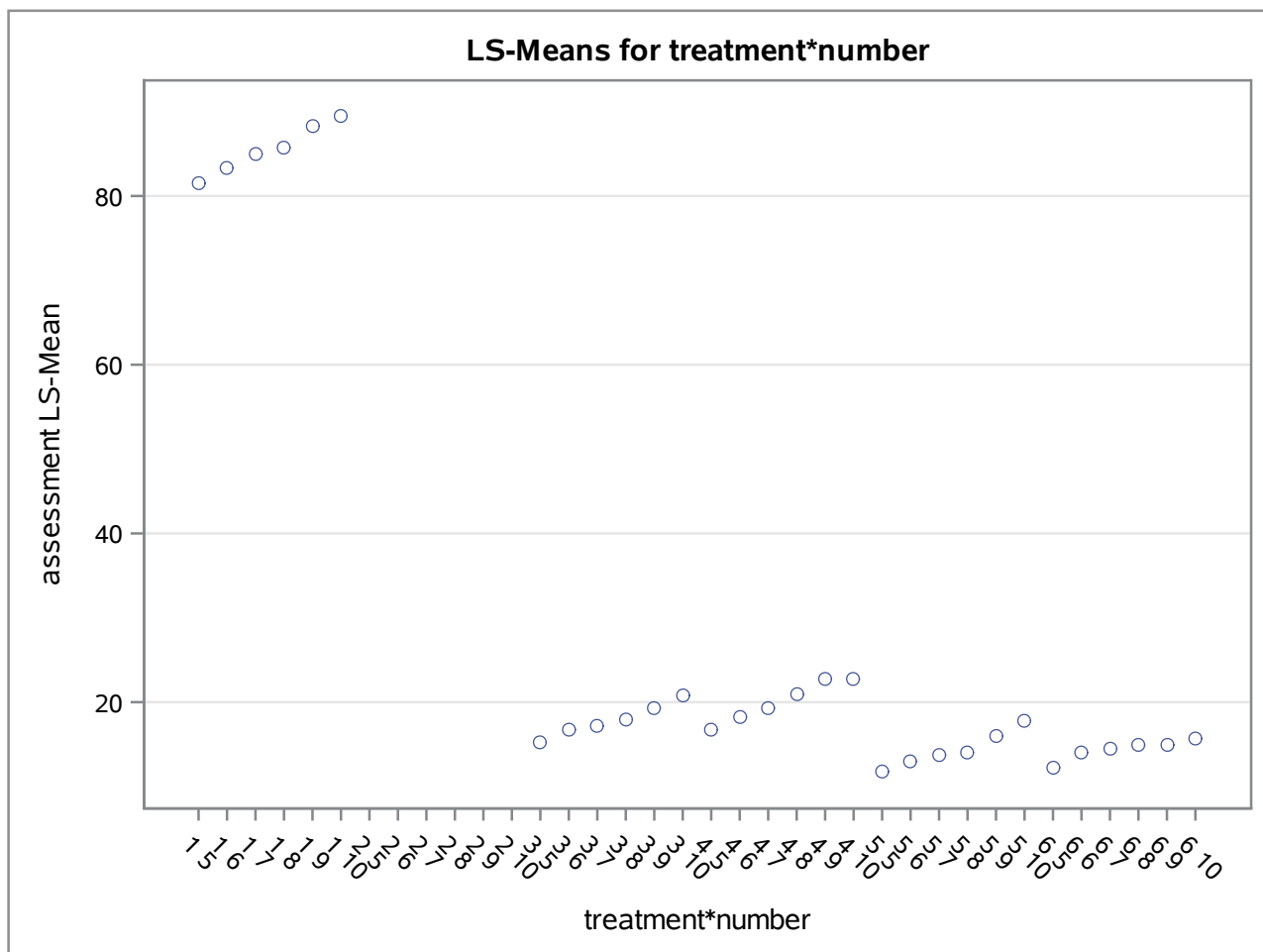


The GLM Procedure  
 Least Squares Means  
 Adjustment for Multiple Comparisons: Tukey-Kramer

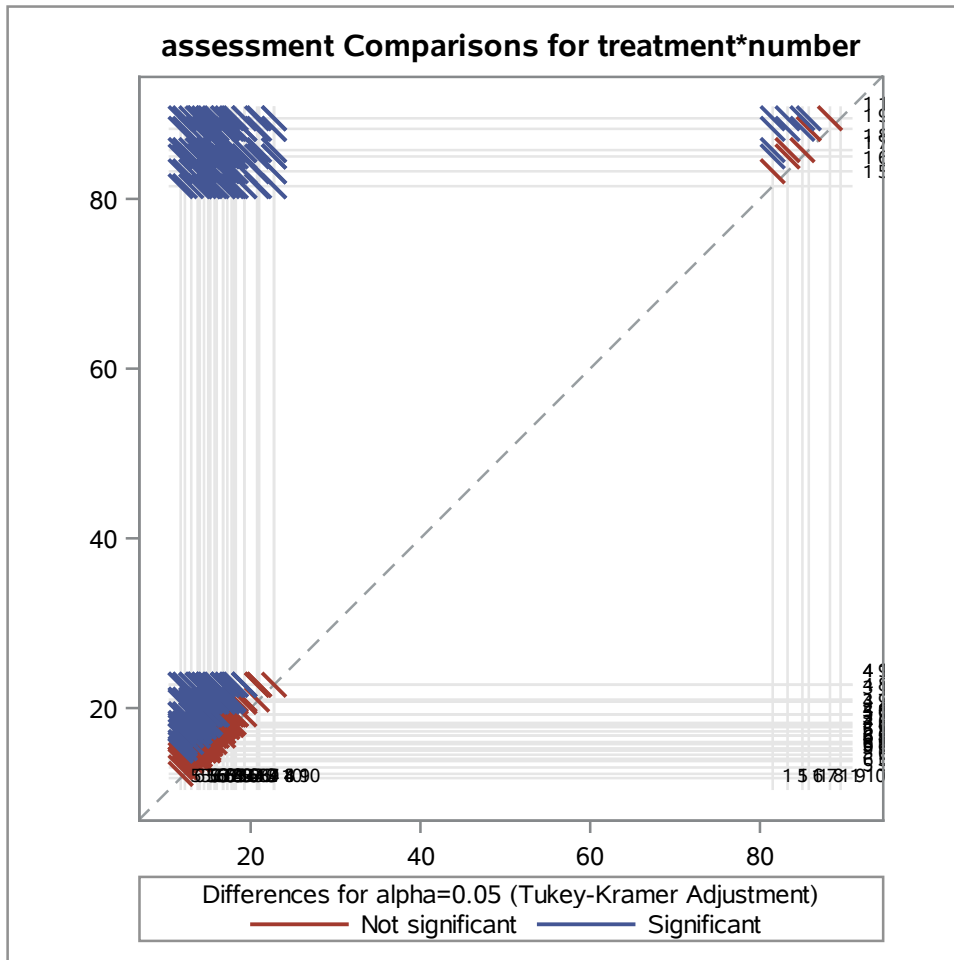
| Least Squares Means for effect treatment*number<br>Pr >  t  for H0: LSMean(i)=LSMean(j) |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Dependent Variable: assessment  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| ij  | 15     | 16     | 17     | 18     | 19     | 20     | 21     | 22     | 23     | 24     | 25     | 26     | 27     | 28     |
| 34  | 0.3556 | 0.0223 | <.0001 | <.0001 | 0.8520 | 0.0068 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0068 | 0.6160 | 0.9981 | 1.0000 |
| 35  | 0.3556 | 0.0223 | <.0001 | <.0001 | 0.8520 | 0.0068 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0068 | 0.6160 | 0.9981 | 1.0000 |
| 36  | 0.9714 | 0.3556 | 0.0019 | <.0001 | 1.0000 | 0.1666 | 0.0019 | <.0001 | <.0001 | <.0001 | 0.0001 | 0.0654 | 0.6160 | 0.8520 |

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

| Least Squares Means for effect treatment*number<br>Pr >  t  for H0: LSMean(i)=LSMean(j)<br>Dependent Variable: assessment |        |        |        |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|--------|--------|--------|
| ij  | 29     | 30     | 31     | 32     | 33     | 34     | 35     | 36     |
| 34  | 1.0000 | 0.0654 | 0.0654 | 1.0000 | 1.0000 |        | 1.0000 | 1.0000 |
| 35  | 1.0000 | 0.0654 | 0.0654 | 1.0000 | 1.0000 | 1.0000 |        | 1.0000 |
| 36  | 1.0000 | 0.6160 | 0.0019 | 0.8520 | 0.9981 | 1.0000 | 1.0000 |        |



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



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

## The GLM Procedure

Dependent Variable: assessment

| Tests of Hypotheses Using the Type III MS for replicate*treatment<br>as an Error Term |    |             |             |         |        |
|---|----|-------------|-------------|---------|--------|
| Source  | DF | Type III SS | Mean Square | F Value | Pr > F |
| treatment   | 5  | 92597.80369 | 18519.56074 | 1826.68 | <.0001 |
| replicate   | 3  | 32.72964    | 10.90988    | 1.08    | 0.3910 |

### Split Plot - Linear Model

| Obs | _NAME_     | treatment | LSMEAN  | STDERR  | NUMBER | COV1    | COV2 | COV3    | COV4    | COV5    | COV6    |
|-----|------------|-----------|---------|---------|--------|---------|------|---------|---------|---------|---------|
| 1   | assessment | 1         | 85.5417 | 0.64995 | 1      | 0.42243 | .    | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 2   | assessment | 2         | .       | .       | 2      | .       | .    | .       | .       | .       | .       |
| 3   | assessment | 3         | 17.8750 | 0.64995 | 3      | 0.00000 | .    | 0.42243 | 0.00000 | 0.00000 | 0.00000 |
| 4   | assessment | 4         | 20.1250 | 0.64995 | 4      | 0.00000 | .    | 0.00000 | 0.42243 | 0.00000 | 0.00000 |
| 5   | assessment | 5         | 14.3750 | 0.64995 | 5      | 0.00000 | .    | 0.00000 | 0.00000 | 0.42243 | 0.00000 |
| 6   | assessment | 6         | 14.4167 | 0.64995 | 6      | 0.00000 | .    | 0.00000 | 0.00000 | 0.00000 | 0.42243 |

| Obs | _NAME_     | number | LSMEAN | STDERR | NUMBER2 | COV1 | COV2 | COV3 | COV4 | COV5 | COV6 |
|-----|------------|--------|--------|--------|---------|------|------|------|------|------|------|
| 1   | assessment | 5      | .      | .      | 1       | .    | .    | .    | .    | .    | .    |
| 2   | assessment | 6      | .      | .      | 2       | .    | .    | .    | .    | .    | .    |
| 3   | assessment | 7      | .      | .      | 3       | .    | .    | .    | .    | .    | .    |
| 4   | assessment | 8      | .      | .      | 4       | .    | .    | .    | .    | .    | .    |
| 5   | assessment | 9      | .      | .      | 5       | .    | .    | .    | .    | .    | .    |
| 6   | assessment | 10     | .      | .      | 6       | .    | .    | .    | .    | .    | .    |

# Split Plot - Linear Model

| Obs | _NAME_     | treatment | number | LSMEAN  | STDERR  | NUMBER2 | COV1    | COV2    | COV3    | COV4    | COV5    |
|-----|------------|-----------|--------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1   | assessment | 1         | 5      | 81.5000 | 0.50049 | 1       | 0.25049 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 2   | assessment | 1         | 6      | 83.2500 | 0.50049 | 2       | 0.00000 | 0.25049 | 0.00000 | 0.00000 | 0.00000 |
| 3   | assessment | 1         | 7      | 85.0000 | 0.50049 | 3       | 0.00000 | 0.00000 | 0.25049 | 0.00000 | 0.00000 |
| 4   | assessment | 1         | 8      | 85.7500 | 0.50049 | 4       | 0.00000 | 0.00000 | 0.00000 | 0.25049 | 0.00000 |
| 5   | assessment | 1         | 9      | 88.2500 | 0.50049 | 5       | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25049 |
| 6   | assessment | 1         | 10     | 89.5000 | 0.50049 | 6       | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 7   | assessment | 2         | 5      | .       | .       | 7       | .       | .       | .       | .       | .       |
| 8   | assessment | 2         | 6      | .       | .       | 8       | .       | .       | .       | .       | .       |

| Obs | COV6    | COV7 | COV8 | COV9 | COV10 | COV11 | COV12 | COV13   | COV14   | COV15   | COV16   | COV17   | COV18   |
|-----|---------|------|------|------|-------|-------|-------|---------|---------|---------|---------|---------|---------|
| 1   | 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 |
| 3   | 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 |
| 5   | 0.00000 | .    | .    | .    | .     | .     | .     | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 6   | 0.25049 | .    | .    | .    | .     | .     | .     | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 7   | .       | .    | .    | .    | .     | .     | .     | .       | .       | .       | .       | .       | .       |
| 8   | .       | .    | .    | .    | .     | .     | .     | .       | .       | .       | .       | .       | .       |

| Obs | COV19   | COV20   | COV21   | COV22   | COV23   | COV24   | COV25   | COV26   | COV27   | COV28   | COV29   | COV30   |
|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 7   | .       | .       | .       | .       | .       | .       | .       | .       | .       | .       | .       | .       |
| 8   | .       | .       | .       | .       | .       | .       | .       | .       | .       | .       | .       | .       |

| Obs | COV31   | COV32   | COV33   | COV34   | COV35   | COV36   |
|-----|---------|---------|---------|---------|---------|---------|
| 1   | 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 |
| 3   | 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 |
| 5   | 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 |
| 7   | .       | .       | .       | .       | .       | .       |
| 8   | .       | .       | .       | .       | .       | .       |







# Split Plot - Linear Model

| Obs | _NAME_     | treatment | number | LSMEAN  | STDERR  | NUMBER2 | COV1    | COV2    | COV3    | COV4    | COV5    |
|-----|------------|-----------|--------|---------|---------|---------|---------|---------|---------|---------|---------|
| 25  | assessment | 5         | 5      | 11.7500 | 0.50049 | 25      | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 26  | assessment | 5         | 6      | 13.0000 | 0.50049 | 26      | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 27  | assessment | 5         | 7      | 13.7500 | 0.50049 | 27      | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 28  | assessment | 5         | 8      | 14.0000 | 0.50049 | 28      | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 29  | assessment | 5         | 9      | 16.0000 | 0.50049 | 29      | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 30  | assessment | 5         | 10     | 17.7500 | 0.50049 | 30      | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 31  | assessment | 6         | 5      | 12.2500 | 0.50049 | 31      | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 32  | assessment | 6         | 6      | 14.0000 | 0.50049 | 32      | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| Obs | COV6    | COV7 | COV8 | COV9 | COV10 | COV11 | COV12 | COV13   | COV14   | COV15   | COV16   | COV17   | COV18   |
|-----|---------|------|------|------|-------|-------|-------|---------|---------|---------|---------|---------|---------|
| 25  | 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 |
| 27  | 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 |
| 29  | 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 |
| 31  | 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 |

| Obs | COV19   | COV20   | COV21   | COV22   | COV23   | COV24   | COV25   | COV26   | COV27   | COV28   | COV29   | COV30   |
|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 25  | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.25049 | 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 | 0.25049 | 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 | 0.25049 | 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 | 0.25049 | 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 | 0.25049 | 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 | 0.25049 |
| 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 |
| 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 |

| Obs | COV31   | COV32   | COV33   | COV34   | COV35   | COV36   |
|-----|---------|---------|---------|---------|---------|---------|
| 25  | 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 |
| 27  | 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 |
| 29  | 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 |
| 31  | 0.25049 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 32  | 0.00000 | 0.25049 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |



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          | 49  |
| Columns in Z          | 28  |
| Subjects              | 1   |
| Max Obs per Subject   | 138 |

| Number of Observations          |     |
|---------------------------------|-----|
| Number of Observations Read     | 144 |
| Number of Observations Used     | 138 |
| Number of Observations Not Used | 6   |

| Iteration History |             |                 |            |
|-------------------|-------------|-----------------|------------|
| Iteration         | Evaluations | -2 Res Log Like | Criterion  |
| 0                 | 1           | 433.02088952    |            |
| 1                 | 2           | 377.40542276    | 0.00000000 |

Convergence criteria met.

The Mixed Procedure

| Covariance Parameter Estimates |          |
|--------------------------------|----------|
| Cov Parm                       | Estimate |
| replicate                      | 0.02642  |
| replicate*treatment            | 1.5190   |
| Residual                       | 1.0020   |

| Fit Statistics           |       |
|--------------------------|-------|
| -2 Res Log Likelihood    | 377.4 |
| AIC (Smaller is Better)  | 383.4 |
| AICC (Smaller is Better) | 383.7 |
| BIC (Smaller is Better)  | 381.6 |

| Solution for Random Effects |           |           |          |              |    |         |         |
|-----------------------------|-----------|-----------|----------|--------------|----|---------|---------|
| Effect                      | replicate | treatment | Estimate | Std Err Pred | DF | t Value | Pr >  t |
| replicate                   | 1         |           | -0.03390 | 0.1580       | 85 | -0.21   | 0.8307  |
| replicate                   | 2         |           | 0.04790  | 0.1573       | 85 | 0.30    | 0.7615  |
| replicate                   | 3         |           | 0.03119  | 0.1573       | 85 | 0.20    | 0.8433  |
| replicate                   | 4         |           | -0.04519 | 0.1573       | 85 | -0.29   | 0.7746  |
| replicate*treatment         | 1         | 1         | -0.7578  | 0.7124       | 85 | -1.06   | 0.2905  |
| replicate*treatment         | 1         | 2         | 0        | 1.2325       | 85 | 0.00    | 1.0000  |
| replicate*treatment         | 1         | 3         | 1.4946   | 0.7124       | 85 | 2.10    | 0.0389  |
| replicate*treatment         | 1         | 4         | -0.6827  | 0.7124       | 85 | -0.96   | 0.3406  |
| replicate*treatment         | 1         | 5         | 0.1432   | 0.7124       | 85 | 0.20    | 0.8412  |
| replicate*treatment         | 1         | 6         | -2.1468  | 0.7124       | 85 | -3.01   | 0.0034  |
| replicate*treatment         | 2         | 1         | 0.5199   | 0.7123       | 85 | 0.73    | 0.4674  |
| replicate*treatment         | 2         | 2         | 0.7178   | 0.7872       | 85 | 0.91    | 0.3644  |
| replicate*treatment         | 2         | 3         | 0.6701   | 0.7123       | 85 | 0.94    | 0.3495  |
| replicate*treatment         | 2         | 4         | -0.00562 | 0.7123       | 85 | -0.01   | 0.9937  |
| replicate*treatment         | 2         | 5         | 0.3698   | 0.7123       | 85 | 0.52    | 0.6050  |
| replicate*treatment         | 2         | 6         | 0.4824   | 0.7123       | 85 | 0.68    | 0.5001  |
| replicate*treatment         | 3         | 1         | 1.7363   | 0.7123       | 85 | 2.44    | 0.0169  |
| replicate*treatment         | 3         | 2         | -0.6186  | 0.7872       | 85 | -0.79   | 0.4342  |
| replicate*treatment         | 3         | 3         | -0.3660  | 0.7123       | 85 | -0.51   | 0.6087  |
| replicate*treatment         | 3         | 4         | 0.1596   | 0.7123       | 85 | 0.22    | 0.8232  |
| replicate*treatment         | 3         | 5         | 0.6852   | 0.7123       | 85 | 0.96    | 0.3388  |
| replicate*treatment         | 3         | 6         | 0.1971   | 0.7123       | 85 | 0.28    | 0.7826  |

## The Mixed Procedure

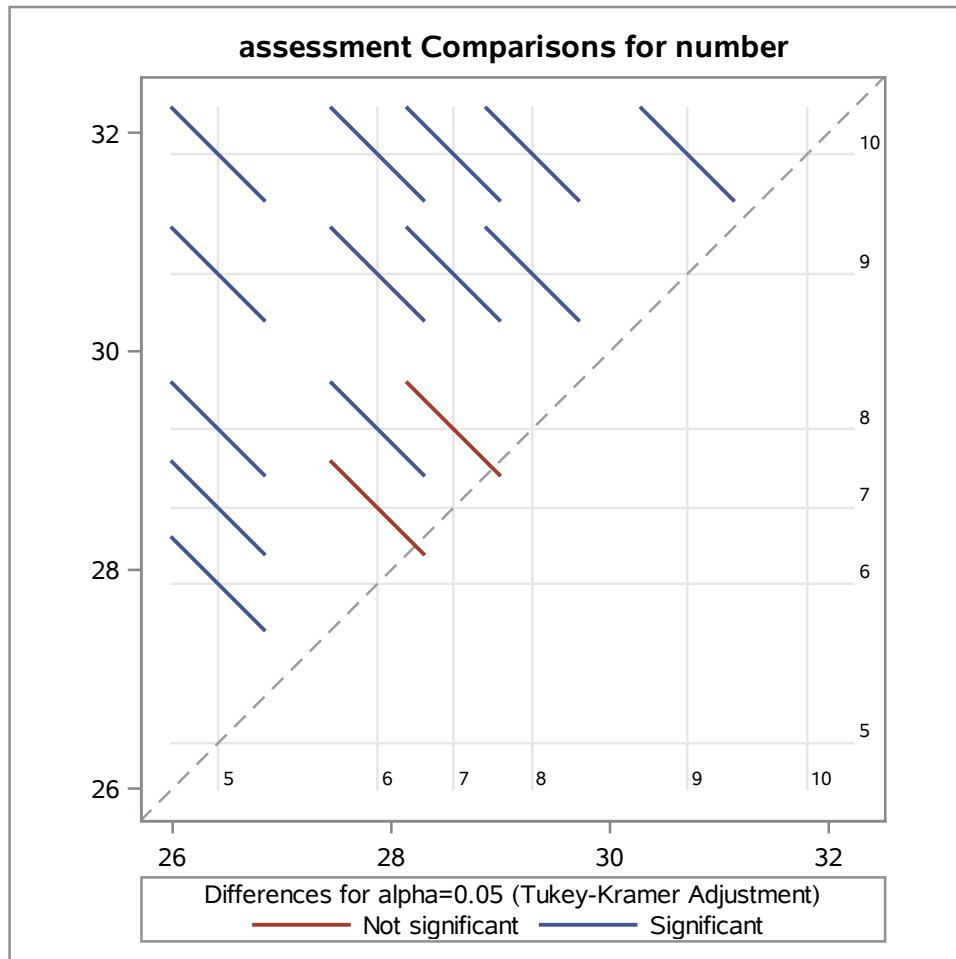
| Solution for Random Effects |           |           |          |                 |    |         |         |
|-----------------------------|-----------|-----------|----------|-----------------|----|---------|---------|
| Effect                      | replicate | treatment | Estimate | Std Err<br>Pred | DF | t Value | Pr >  t |
| replicate*treatment         | 4         | 1         | -1.4984  | 0.7123          | 85 | -2.10   | 0.0384  |
| replicate*treatment         | 4         | 2         | -0.09926 | 0.7872          | 85 | -0.13   | 0.9000  |
| replicate*treatment         | 4         | 3         | -1.7987  | 0.7123          | 85 | -2.53   | 0.0134  |
| replicate*treatment         | 4         | 4         | 0.5287   | 0.7123          | 85 | 0.74    | 0.4599  |
| replicate*treatment         | 4         | 5         | -1.1981  | 0.7123          | 85 | -1.68   | 0.0962  |
| replicate*treatment         | 4         | 6         | 1.4672   | 0.7123          | 85 | 2.06    | 0.0425  |

| Type 3 Tests of Fixed Effects |           |           |         |        |
|-------------------------------|-----------|-----------|---------|--------|
| Effect                        | Num<br>DF | Den<br>DF | F Value | Pr > F |
| number                        | 5         | 85        | 85.89   | <.0001 |
| treatment                     | 5         | 14        | 1830.83 | <.0001 |
| treatment*number              | 25        | 85        | 2.68    | 0.0004 |



The PLM Procedure

| Differences of number Least Squares Means<br>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       | -1.4583  | 0.2969         | 85 | -4.91   | <.0001  | <.0001 | 0.05  | -2.0486 | -0.8681 | -2.3239   | -0.5927   |
| 5  | 7       | -2.1528  | 0.2969         | 85 | -7.25   | <.0001  | <.0001 | 0.05  | -2.7430 | -1.5625 | -3.0184   | -1.2872   |
| 5  | 8       | -2.8750  | 0.2969         | 85 | -9.68   | <.0001  | <.0001 | 0.05  | -3.4653 | -2.2847 | -3.7406   | -2.0094   |
| 5  | 9       | -4.2917  | 0.2969         | 85 | -14.46  | <.0001  | <.0001 | 0.05  | -4.8819 | -3.7014 | -5.1573   | -3.4261   |
| 5  | 10      | -5.3889  | 0.2969         | 85 | -18.15  | <.0001  | <.0001 | 0.05  | -5.9792 | -4.7986 | -6.2545   | -4.5233   |
| 6  | 7       | -0.6944  | 0.2969         | 85 | -2.34   | 0.0217  | 0.1902 | 0.05  | -1.2847 | -0.1042 | -1.5601   | 0.1712    |
| 6  | 8       | -1.4167  | 0.2969         | 85 | -4.77   | <.0001  | 0.0001 | 0.05  | -2.0069 | -0.8264 | -2.2823   | -0.5511   |
| 6  | 9       | -2.8333  | 0.2969         | 85 | -9.54   | <.0001  | <.0001 | 0.05  | -3.4236 | -2.2431 | -3.6989   | -1.9677   |
| 6  | 10      | -3.9306  | 0.2969         | 85 | -13.24  | <.0001  | <.0001 | 0.05  | -4.5208 | -3.3403 | -4.7962   | -3.0649   |
| 7  | 8       | -0.7222  | 0.2969         | 85 | -2.43   | 0.0171  | 0.1568 | 0.05  | -1.3125 | -0.1320 | -1.5878   | 0.1434    |
| 7  | 9       | -2.1389  | 0.2969         | 85 | -7.20   | <.0001  | <.0001 | 0.05  | -2.7292 | -1.5486 | -3.0045   | -1.2733   |
| 7  | 10      | -3.2361  | 0.2969         | 85 | -10.90  | <.0001  | <.0001 | 0.05  | -3.8264 | -2.6458 | -4.1017   | -2.3705   |
| 8  | 9       | -1.4167  | 0.2969         | 85 | -4.77   | <.0001  | 0.0001 | 0.05  | -2.0069 | -0.8264 | -2.2823   | -0.5511   |
| 8  | 10      | -2.5139  | 0.2969         | 85 | -8.47   | <.0001  | <.0001 | 0.05  | -3.1042 | -1.9236 | -3.3795   | -1.6483   |
| 9  | 10      | -1.0972  | 0.2969         | 85 | -3.70   | 0.0004  | 0.0050 | 0.05  | -1.6875 | -0.5070 | -1.9628   | -0.2316   |





The PLM Procedure

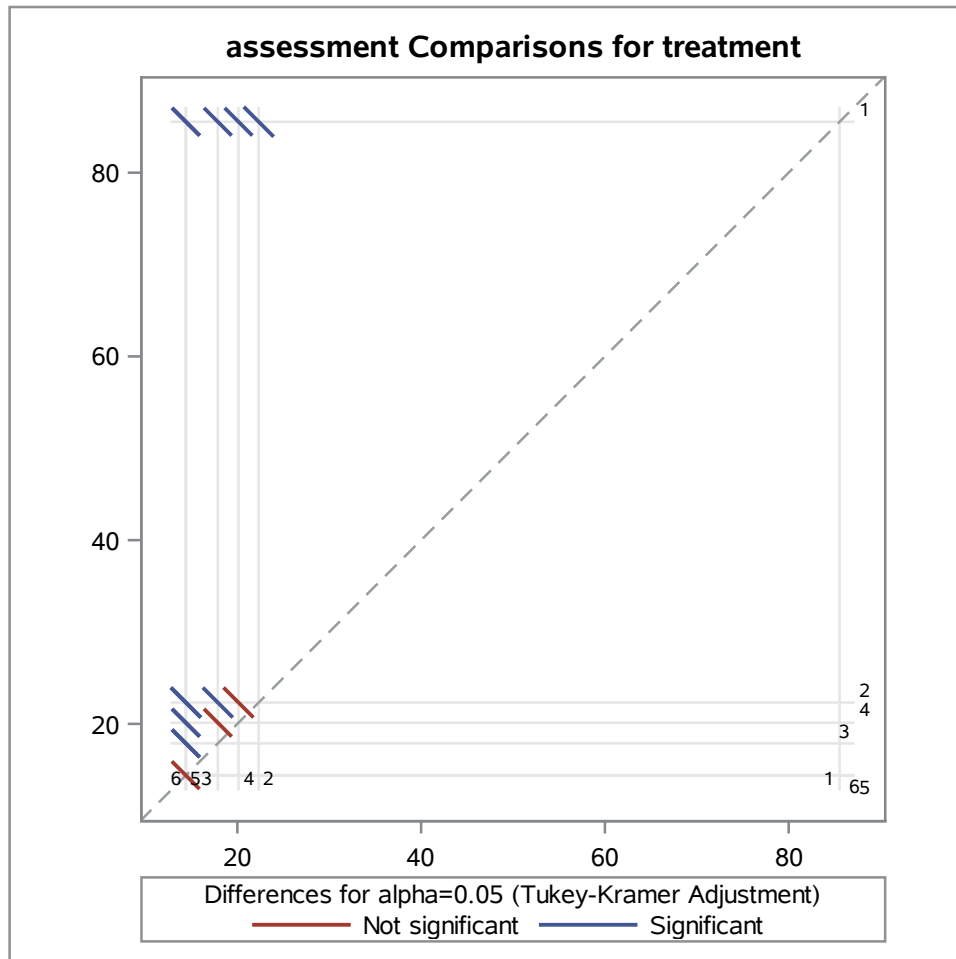
| Tukey-Kramer Grouping for number Least Squares Means (Alpha=0.05) |          |   |   |
|---|----------|---|---|
| LS-means with the same letter are not significantly different.    |          |   |   |
| number  | Estimate |   |   |
| 10  | 31.8037  |   | A |
|   |          |   |   |
| 9   | 30.7065  |   | B |
|   |          |   |   |
| 8   | 29.2898  |   | C |
|   |          |   | C |
| 7   | 28.5676  | D | C |
|   |          | D |   |
| 6   | 27.8731  | D |   |
|   |          |   |   |
| 5   | 26.4148  |   | E |

| treatment Least Squares Means |          |                |    |         |         |       |         |         |          |          |          |          |          |
|-------------------------------|----------|----------------|----|---------|---------|-------|---------|---------|----------|----------|----------|----------|----------|
| treatment                     | Estimate | Standard Error | DF | t Value | Pr >  t | Alpha | Lower   | Upper   | Cov1     | Cov2     | Cov3     | Cov4     | Cov5     |
| 1                             | 85.5417  | 0.6543         | 14 | 130.74  | <.0001  | 0.05  | 84.1384 | 86.9450 | 0.4281   | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 2                             | 22.3220  | 0.7554         | 14 | 29.55   | <.0001  | 0.05  | 20.7018 | 23.9422 | 0.006604 | 0.5706   | 0.006604 | 0.006604 | 0.006604 |
| 3                             | 17.8750  | 0.6543         | 14 | 27.32   | <.0001  | 0.05  | 16.4717 | 19.2783 | 0.006604 | 0.006604 | 0.4281   | 0.006604 | 0.006604 |
| 4                             | 20.1250  | 0.6543         | 14 | 30.76   | <.0001  | 0.05  | 18.7217 | 21.5283 | 0.006604 | 0.006604 | 0.006604 | 0.4281   | 0.006604 |
| 5                             | 14.3750  | 0.6543         | 14 | 21.97   | <.0001  | 0.05  | 12.9717 | 15.7783 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.4281   |
| 6                             | 14.4167  | 0.6543         | 14 | 22.03   | <.0001  | 0.05  | 13.0134 | 15.8200 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |

| treatment Least Squares Means |          |         |         |         |         |         |         |
|-------------------------------|----------|---------|---------|---------|---------|---------|---------|
| treatment                     | Cov6     | Corr1   | Corr2   | Corr3   | Corr4   | Corr5   | Corr6   |
| 1                             | 0.006604 | 1.0000  | 0.01336 | 0.01543 | 0.01543 | 0.01543 | 0.01543 |
| 2                             | 0.006604 | 0.01336 | 1.0000  | 0.01336 | 0.01336 | 0.01336 | 0.01336 |
| 3                             | 0.006604 | 0.01543 | 0.01336 | 1.0000  | 0.01543 | 0.01543 | 0.01543 |
| 4                             | 0.006604 | 0.01543 | 0.01336 | 0.01543 | 1.0000  | 0.01543 | 0.01543 |
| 5                             | 0.006604 | 0.01543 | 0.01336 | 0.01543 | 0.01543 | 1.0000  | 0.01543 |
| 6                             | 0.4281   | 0.01543 | 0.01336 | 0.01543 | 0.01543 | 0.01543 | 1.0000  |

The PLM Procedure

| Differences of treatment Least Squares Means<br>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          | 63.2196  | 0.9927         | 14 | 63.68   | <.0001  | <.0001 | 0.05  | 61.0904 | 65.3489 | 59.9635   | 66.4757   |
| 1   | 3          | 67.6667  | 0.9181         | 14 | 73.70   | <.0001  | <.0001 | 0.05  | 65.6974 | 69.6359 | 64.6552   | 70.6781   |
| 1   | 4          | 65.4167  | 0.9181         | 14 | 71.25   | <.0001  | <.0001 | 0.05  | 63.4474 | 67.3859 | 62.4052   | 68.4281   |
| 1   | 5          | 71.1667  | 0.9181         | 14 | 77.51   | <.0001  | <.0001 | 0.05  | 69.1975 | 73.1359 | 68.1552   | 74.1781   |
| 1   | 6          | 71.1250  | 0.9181         | 14 | 77.47   | <.0001  | <.0001 | 0.05  | 69.1558 | 73.0942 | 68.1136   | 74.1364   |
| 2   | 3          | 4.4470   | 0.9927         | 14 | 4.48    | 0.0005  | 0.0055 | 0.05  | 2.3178  | 6.5762  | 1.1909    | 7.7031    |
| 2   | 4          | 2.1970   | 0.9927         | 14 | 2.21    | 0.0440  | 0.2911 | 0.05  | 0.06782 | 4.3262  | -1.0591   | 5.4531    |
| 2   | 5          | 7.9470   | 0.9927         | 14 | 8.01    | <.0001  | <.0001 | 0.05  | 5.8178  | 10.0762 | 4.6909    | 11.2031   |
| 2   | 6          | 7.9054   | 0.9927         | 14 | 7.96    | <.0001  | <.0001 | 0.05  | 5.7762  | 10.0346 | 4.6493    | 11.1615   |
| 3   | 4          | -2.2500  | 0.9181         | 14 | -2.45   | 0.0280  | 0.2042 | 0.05  | -4.2192 | -0.2808 | -5.2614   | 0.7614    |
| 3   | 5          | 3.5000   | 0.9181         | 14 | 3.81    | 0.0019  | 0.0189 | 0.05  | 1.5308  | 5.4692  | 0.4886    | 6.5114    |
| 3   | 6          | 3.4583   | 0.9181         | 14 | 3.77    | 0.0021  | 0.0206 | 0.05  | 1.4891  | 5.4276  | 0.4469    | 6.4698    |
| 4   | 5          | 5.7500   | 0.9181         | 14 | 6.26    | <.0001  | 0.0002 | 0.05  | 3.7808  | 7.7192  | 2.7386    | 8.7614    |
| 4   | 6          | 5.7083   | 0.9181         | 14 | 6.22    | <.0001  | 0.0003 | 0.05  | 3.7391  | 7.6776  | 2.6969    | 8.7198    |
| 5   | 6          | -0.04167 | 0.9181         | 14 | -0.05   | 0.9644  | 1.0000 | 0.05  | -2.0109 | 1.9276  | -3.0531   | 2.9698    |



The PLM Procedure

| Tukey-Kramer Grouping for treatment Least Squares Means (Alpha=0.05) |          |   |   |
|--|----------|---|---|
| LS-means with the same letter are not significantly different.       |          |   |   |
| treatment  | Estimate |   |   |
| 1  | 85.5417  |   | A |
|  |          |   |   |
| 2  | 22.3220  |   | B |
|  |          |   | B |
| 4  | 20.1250  | C | B |
|  |          | C |   |
| 3  | 17.8750  | C |   |
|  |          |   |   |
| 6  | 14.4167  |   | D |
|  |          |   | D |
| 5  | 14.3750  |   | D |

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     |
| 1                                    | 5      | 81.5000  | 0.7980         | 85 | 102.13  | <.0001  | 0.05  | 79.9133 | 83.0867 | 0.6368   | 0.3864   | 0.3864   | 0.3864   |
| 1                                    | 6      | 83.2500  | 0.7980         | 85 | 104.32  | <.0001  | 0.05  | 81.6633 | 84.8367 | 0.3864   | 0.6368   | 0.3864   | 0.3864   |
| 1                                    | 7      | 85.0000  | 0.7980         | 85 | 106.51  | <.0001  | 0.05  | 83.4133 | 86.5867 | 0.3864   | 0.3864   | 0.6368   | 0.3864   |
| 1                                    | 8      | 85.7500  | 0.7980         | 85 | 107.45  | <.0001  | 0.05  | 84.1633 | 87.3367 | 0.3864   | 0.3864   | 0.3864   | 0.6368   |
| 1                                    | 9      | 88.2500  | 0.7980         | 85 | 110.59  | <.0001  | 0.05  | 86.6633 | 89.8367 | 0.3864   | 0.3864   | 0.3864   | 0.3864   |
| 1                                    | 10     | 89.5000  | 0.7980         | 85 | 112.15  | <.0001  | 0.05  | 87.9133 | 91.0867 | 0.3864   | 0.3864   | 0.3864   | 0.3864   |
| 2                                    | 5      | 20.9887  | 0.9214         | 85 | 22.78   | <.0001  | 0.05  | 19.1567 | 22.8207 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 2                                    | 6      | 21.9887  | 0.9214         | 85 | 23.86   | <.0001  | 0.05  | 20.1567 | 23.8207 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 2                                    | 7      | 21.6554  | 0.9214         | 85 | 23.50   | <.0001  | 0.05  | 19.8234 | 23.4873 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 2                                    | 8      | 21.9887  | 0.9214         | 85 | 23.86   | <.0001  | 0.05  | 20.1567 | 23.8207 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 2                                    | 9      | 22.9887  | 0.9214         | 85 | 24.95   | <.0001  | 0.05  | 21.1567 | 24.8207 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 2                                    | 10     | 24.3220  | 0.9214         | 85 | 26.40   | <.0001  | 0.05  | 22.4901 | 26.1540 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 3                                    | 5      | 15.2500  | 0.7980         | 85 | 19.11   | <.0001  | 0.05  | 13.6633 | 16.8367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 3                                    | 6      | 16.7500  | 0.7980         | 85 | 20.99   | <.0001  | 0.05  | 15.1633 | 18.3367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 3                                    | 7      | 17.2500  | 0.7980         | 85 | 21.62   | <.0001  | 0.05  | 15.6633 | 18.8367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 3                                    | 8      | 18.0000  | 0.7980         | 85 | 22.56   | <.0001  | 0.05  | 16.4133 | 19.5867 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 3                                    | 9      | 19.2500  | 0.7980         | 85 | 24.12   | <.0001  | 0.05  | 17.6633 | 20.8367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 3                                    | 10     | 20.7500  | 0.7980         | 85 | 26.00   | <.0001  | 0.05  | 19.1633 | 22.3367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 4                                    | 5      | 16.7500  | 0.7980         | 85 | 20.99   | <.0001  | 0.05  | 15.1633 | 18.3367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 4                                    | 6      | 18.2500  | 0.7980         | 85 | 22.87   | <.0001  | 0.05  | 16.6633 | 19.8367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 4                                    | 7      | 19.2500  | 0.7980         | 85 | 24.12   | <.0001  | 0.05  | 17.6633 | 20.8367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 4                                    | 8      | 21.0000  | 0.7980         | 85 | 26.32   | <.0001  | 0.05  | 19.4133 | 22.5867 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 4                                    | 9      | 22.7500  | 0.7980         | 85 | 28.51   | <.0001  | 0.05  | 21.1633 | 24.3367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 4                                    | 10     | 22.7500  | 0.7980         | 85 | 28.51   | <.0001  | 0.05  | 21.1633 | 24.3367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 5                                    | 5      | 11.7500  | 0.7980         | 85 | 14.72   | <.0001  | 0.05  | 10.1633 | 13.3367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 5                                    | 6      | 13.0000  | 0.7980         | 85 | 16.29   | <.0001  | 0.05  | 11.4133 | 14.5867 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 5                                    | 7      | 13.7500  | 0.7980         | 85 | 17.23   | <.0001  | 0.05  | 12.1633 | 15.3367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 5                                    | 8      | 14.0000  | 0.7980         | 85 | 17.54   | <.0001  | 0.05  | 12.4133 | 15.5867 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 5                                    | 9      | 16.0000  | 0.7980         | 85 | 20.05   | <.0001  | 0.05  | 14.4133 | 17.5867 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 5                                    | 10     | 17.7500  | 0.7980         | 85 | 22.24   | <.0001  | 0.05  | 16.1633 | 19.3367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 6                                    | 5      | 12.2500  | 0.7980         | 85 | 15.35   | <.0001  | 0.05  | 10.6633 | 13.8367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 6                                    | 6      | 14.0000  | 0.7980         | 85 | 17.54   | <.0001  | 0.05  | 12.4133 | 15.5867 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 6                                    | 7      | 14.5000  | 0.7980         | 85 | 18.17   | <.0001  | 0.05  | 12.9133 | 16.0867 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 6                                    | 8      | 15.0000  | 0.7980         | 85 | 18.80   | <.0001  | 0.05  | 13.4133 | 16.5867 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |





The PLM Procedure

| treatment*number Least Squares Means |        |          |          |          |          |          |          |          |          |          |          |          |
|--------------------------------------|--------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| treatment                            | number | Cov27    | Cov28    | Cov29    | Cov30    | Cov31    | Cov32    | Cov33    | Cov34    | Cov35    | Cov36    | Corr1    |
| 1                                    | 5      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 1.0000   |
| 1                                    | 6      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.6067   |
| 1                                    | 7      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.6067   |
| 1                                    | 8      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.6067   |
| 1                                    | 9      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.6067   |
| 1                                    | 10     | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.6067   |
| 2                                    | 5      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.008982 |
| 2                                    | 6      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.008982 |
| 2                                    | 7      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.008982 |
| 2                                    | 8      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.008982 |
| 2                                    | 9      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.008982 |
| 2                                    | 10     | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.008982 |
| 3                                    | 5      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 3                                    | 6      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 3                                    | 7      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 3                                    | 8      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 3                                    | 9      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 3                                    | 10     | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 4                                    | 5      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 4                                    | 6      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 4                                    | 7      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 4                                    | 8      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 4                                    | 9      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 4                                    | 10     | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 5                                    | 5      | 0.3864   | 0.3864   | 0.3864   | 0.3864   | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 5                                    | 6      | 0.3864   | 0.3864   | 0.3864   | 0.3864   | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 5                                    | 7      | 0.6368   | 0.3864   | 0.3864   | 0.3864   | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 5                                    | 8      | 0.3864   | 0.6368   | 0.3864   | 0.3864   | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 5                                    | 9      | 0.3864   | 0.3864   | 0.6368   | 0.3864   | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 5                                    | 10     | 0.3864   | 0.3864   | 0.3864   | 0.6368   | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.01037  |
| 6                                    | 5      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.6368   | 0.3864   | 0.3864   | 0.3864   | 0.3864   | 0.3864   | 0.01037  |
| 6                                    | 6      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.3864   | 0.6368   | 0.3864   | 0.3864   | 0.3864   | 0.3864   | 0.01037  |
| 6                                    | 7      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.3864   | 0.3864   | 0.6368   | 0.3864   | 0.3864   | 0.3864   | 0.01037  |
| 6                                    | 8      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.3864   | 0.3864   | 0.3864   | 0.6368   | 0.3864   | 0.3864   | 0.01037  |







The PLM Procedure

| treatment*number Least Squares Means |        |          |          |          |          |          |          |          |          |          |          |          |
|--------------------------------------|--------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| treatment                            | number | Corr24   | Corr25   | Corr26   | Corr27   | Corr28   | Corr29   | Corr30   | Corr31   | Corr32   | Corr33   | Corr34   |
| 1                                    | 5      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 1                                    | 6      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 1                                    | 7      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 1                                    | 8      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 1                                    | 9      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 1                                    | 10     | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 2                                    | 5      | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 |
| 2                                    | 6      | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 |
| 2                                    | 7      | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 |
| 2                                    | 8      | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 |
| 2                                    | 9      | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 |
| 2                                    | 10     | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 |
| 3                                    | 5      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 3                                    | 6      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 3                                    | 7      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 3                                    | 8      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 3                                    | 9      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 3                                    | 10     | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 4                                    | 5      | 0.6067   | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 4                                    | 6      | 0.6067   | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 4                                    | 7      | 0.6067   | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 4                                    | 8      | 0.6067   | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 4                                    | 9      | 0.6067   | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 4                                    | 10     | 1.0000   | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 5                                    | 5      | 0.01037  | 1.0000   | 0.6067   | 0.6067   | 0.6067   | 0.6067   | 0.6067   | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 5                                    | 6      | 0.01037  | 0.6067   | 1.0000   | 0.6067   | 0.6067   | 0.6067   | 0.6067   | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 5                                    | 7      | 0.01037  | 0.6067   | 0.6067   | 1.0000   | 0.6067   | 0.6067   | 0.6067   | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 5                                    | 8      | 0.01037  | 0.6067   | 0.6067   | 0.6067   | 1.0000   | 0.6067   | 0.6067   | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 5                                    | 9      | 0.01037  | 0.6067   | 0.6067   | 0.6067   | 0.6067   | 1.0000   | 0.6067   | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 5                                    | 10     | 0.01037  | 0.6067   | 0.6067   | 0.6067   | 0.6067   | 0.6067   | 1.0000   | 0.01037  | 0.01037  | 0.01037  | 0.01037  |
| 6                                    | 5      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 1.0000   | 0.6067   | 0.6067   | 0.6067   |
| 6                                    | 6      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.6067   | 1.0000   | 0.6067   | 0.6067   |
| 6                                    | 7      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.6067   | 0.6067   | 1.0000   | 0.6067   |
| 6                                    | 8      | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.01037  | 0.6067   | 0.6067   | 0.6067   | 1.0000   |

## The PLM Procedure

| treatment*number Least Squares Means |        |          |          |
|--------------------------------------|--------|----------|----------|
| treatment                            | number | Corr35   | Corr36   |
| 1                                    | 5      | 0.01037  | 0.01037  |
| 1                                    | 6      | 0.01037  | 0.01037  |
| 1                                    | 7      | 0.01037  | 0.01037  |
| 1                                    | 8      | 0.01037  | 0.01037  |
| 1                                    | 9      | 0.01037  | 0.01037  |
| 1                                    | 10     | 0.01037  | 0.01037  |
| 2                                    | 5      | 0.008982 | 0.008982 |
| 2                                    | 6      | 0.008982 | 0.008982 |
| 2                                    | 7      | 0.008982 | 0.008982 |
| 2                                    | 8      | 0.008982 | 0.008982 |
| 2                                    | 9      | 0.008982 | 0.008982 |
| 2                                    | 10     | 0.008982 | 0.008982 |
| 3                                    | 5      | 0.01037  | 0.01037  |
| 3                                    | 6      | 0.01037  | 0.01037  |
| 3                                    | 7      | 0.01037  | 0.01037  |
| 3                                    | 8      | 0.01037  | 0.01037  |
| 3                                    | 9      | 0.01037  | 0.01037  |
| 3                                    | 10     | 0.01037  | 0.01037  |
| 4                                    | 5      | 0.01037  | 0.01037  |
| 4                                    | 6      | 0.01037  | 0.01037  |
| 4                                    | 7      | 0.01037  | 0.01037  |
| 4                                    | 8      | 0.01037  | 0.01037  |
| 4                                    | 9      | 0.01037  | 0.01037  |
| 4                                    | 10     | 0.01037  | 0.01037  |
| 5                                    | 5      | 0.01037  | 0.01037  |
| 5                                    | 6      | 0.01037  | 0.01037  |
| 5                                    | 7      | 0.01037  | 0.01037  |
| 5                                    | 8      | 0.01037  | 0.01037  |
| 5                                    | 9      | 0.01037  | 0.01037  |
| 5                                    | 10     | 0.01037  | 0.01037  |
| 6                                    | 5      | 0.6067   | 0.6067   |
| 6                                    | 6      | 0.6067   | 0.6067   |
| 6                                    | 7      | 0.6067   | 0.6067   |
| 6                                    | 8      | 0.6067   | 0.6067   |

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     |
| 6                                    | 9      | 15.0000  | 0.7980         | 85 | 18.80   | <.0001  | 0.05  | 13.4133 | 16.5867 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |
| 6                                    | 10     | 15.7500  | 0.7980         | 85 | 19.74   | <.0001  | 0.05  | 14.1633 | 17.3367 | 0.006604 | 0.006604 | 0.006604 | 0.006604 |





## The PLM Procedure

| treatment*number Least Squares Means |        |          |          |          |          |        |        |        |        |        |        |         |
|--------------------------------------|--------|----------|----------|----------|----------|--------|--------|--------|--------|--------|--------|---------|
| treatment                            | number | Cov27    | Cov28    | Cov29    | Cov30    | Cov31  | Cov32  | Cov33  | Cov34  | Cov35  | Cov36  | Corr1   |
| 6                                    | 9      | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.3864 | 0.3864 | 0.3864 | 0.3864 | 0.6368 | 0.3864 | 0.01037 |
| 6                                    | 10     | 0.006604 | 0.006604 | 0.006604 | 0.006604 | 0.3864 | 0.3864 | 0.3864 | 0.3864 | 0.3864 | 0.6368 | 0.01037 |

## The PLM Procedure

| treatment*number Least Squares Means |        |         |         |         |         |         |          |          |          |          |          |          |
|--------------------------------------|--------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|
| treatment                            | number | Corr2   | Corr3   | Corr4   | Corr5   | Corr6   | Corr7    | Corr8    | Corr9    | Corr10   | Corr11   | Corr12   |
| 6                                    | 9      | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 |
| 6                                    | 10     | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 | 0.008982 |





## The PLM Procedure

| treatment*number Least Squares Means |        |         |         |         |         |         |         |         |        |        |        |        |
|--------------------------------------|--------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| treatment                            | number | Corr24  | Corr25  | Corr26  | Corr27  | Corr28  | Corr29  | Corr30  | Corr31 | Corr32 | Corr33 | Corr34 |
| 6                                    | 9      | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.6067 | 0.6067 | 0.6067 | 0.6067 |
| 6                                    | 10     | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.01037 | 0.6067 | 0.6067 | 0.6067 | 0.6067 |

**The PLM Procedure**

| treatment*number Least Squares Means |        |        |        |
|--------------------------------------|--------|--------|--------|
| treatment                            | number | Corr35 | Corr36 |
| 6                                    | 9      | 1.0000 | 0.6067 |
| 6                                    | 10     | 0.6067 | 1.0000 |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 6       | -1.7500  | 0.7078         | 85 | -2.47   | 0.0154  | 0.8520 | 0.05  | -3.1573 | -0.3427 |
| 1  | 5      | 1          | 7       | -3.5000  | 0.7078         | 85 | -4.94   | <.0001  | 0.0019 | 0.05  | -4.9073 | -2.0927 |
| 1  | 5      | 1          | 8       | -4.2500  | 0.7078         | 85 | -6.00   | <.0001  | <.0001 | 0.05  | -5.6573 | -2.8427 |
| 1  | 5      | 1          | 9       | -6.7500  | 0.7078         | 85 | -9.54   | <.0001  | <.0001 | 0.05  | -8.1573 | -5.3427 |
| 1  | 5      | 1          | 10      | -8.0000  | 0.7078         | 85 | -11.30  | <.0001  | <.0001 | 0.05  | -9.4073 | -6.5927 |
| 1  | 5      | 2          | 5       | 60.5113  | 1.2135         | 85 | 49.86   | <.0001  | <.0001 | 0.05  | 58.0985 | 62.9241 |
| 1  | 5      | 2          | 6       | 59.5113  | 1.2135         | 85 | 49.04   | <.0001  | <.0001 | 0.05  | 57.0985 | 61.9241 |
| 1  | 5      | 2          | 7       | 59.8446  | 1.2135         | 85 | 49.32   | <.0001  | <.0001 | 0.05  | 57.4319 | 62.2574 |
| 1  | 5      | 2          | 8       | 59.5113  | 1.2135         | 85 | 49.04   | <.0001  | <.0001 | 0.05  | 57.0985 | 61.9241 |
| 1  | 5      | 2          | 9       | 58.5113  | 1.2135         | 85 | 48.22   | <.0001  | <.0001 | 0.05  | 56.0985 | 60.9241 |
| 1  | 5      | 2          | 10      | 57.1780  | 1.2135         | 85 | 47.12   | <.0001  | <.0001 | 0.05  | 54.7652 | 59.5907 |
| 1  | 5      | 3          | 5       | 66.2500  | 1.1227         | 85 | 59.01   | <.0001  | <.0001 | 0.05  | 64.0178 | 68.4823 |
| 1  | 5      | 3          | 6       | 64.7500  | 1.1227         | 85 | 57.67   | <.0001  | <.0001 | 0.05  | 62.5178 | 66.9823 |
| 1  | 5      | 3          | 7       | 64.2500  | 1.1227         | 85 | 57.23   | <.0001  | <.0001 | 0.05  | 62.0178 | 66.4823 |
| 1  | 5      | 3          | 8       | 63.5000  | 1.1227         | 85 | 56.56   | <.0001  | <.0001 | 0.05  | 61.2678 | 65.7322 |
| 1  | 5      | 3          | 9       | 62.2500  | 1.1227         | 85 | 55.45   | <.0001  | <.0001 | 0.05  | 60.0178 | 64.4822 |
| 1  | 5      | 3          | 10      | 60.7500  | 1.1227         | 85 | 54.11   | <.0001  | <.0001 | 0.05  | 58.5178 | 62.9822 |
| 1  | 5      | 4          | 5       | 64.7500  | 1.1227         | 85 | 57.67   | <.0001  | <.0001 | 0.05  | 62.5178 | 66.9822 |
| 1  | 5      | 4          | 6       | 63.2500  | 1.1227         | 85 | 56.34   | <.0001  | <.0001 | 0.05  | 61.0178 | 65.4822 |
| 1  | 5      | 4          | 7       | 62.2500  | 1.1227         | 85 | 55.45   | <.0001  | <.0001 | 0.05  | 60.0178 | 64.4822 |
| 1  | 5      | 4          | 8       | 60.5000  | 1.1227         | 85 | 53.89   | <.0001  | <.0001 | 0.05  | 58.2678 | 62.7322 |
| 1  | 5      | 4          | 9       | 58.7500  | 1.1227         | 85 | 52.33   | <.0001  | <.0001 | 0.05  | 56.5178 | 60.9822 |
| 1  | 5      | 4          | 10      | 58.7500  | 1.1227         | 85 | 52.33   | <.0001  | <.0001 | 0.05  | 56.5178 | 60.9822 |
| 1  | 5      | 5          | 5       | 69.7500  | 1.1227         | 85 | 62.13   | <.0001  | <.0001 | 0.05  | 67.5178 | 71.9823 |
| 1  | 5      | 5          | 6       | 68.5000  | 1.1227         | 85 | 61.01   | <.0001  | <.0001 | 0.05  | 66.2678 | 70.7323 |
| 1  | 5      | 5          | 7       | 67.7500  | 1.1227         | 85 | 60.35   | <.0001  | <.0001 | 0.05  | 65.5178 | 69.9823 |
| 1  | 5      | 5          | 8       | 67.5000  | 1.1227         | 85 | 60.12   | <.0001  | <.0001 | 0.05  | 65.2678 | 69.7323 |
| 1  | 5      | 5          | 9       | 65.5000  | 1.1227         | 85 | 58.34   | <.0001  | <.0001 | 0.05  | 63.2678 | 67.7323 |
| 1  | 5      | 5          | 10      | 63.7500  | 1.1227         | 85 | 56.78   | <.0001  | <.0001 | 0.05  | 61.5178 | 65.9822 |
| 1  | 5      | 6          | 5       | 69.2500  | 1.1227         | 85 | 61.68   | <.0001  | <.0001 | 0.05  | 67.0178 | 71.4823 |
| 1  | 5      | 6          | 6       | 67.5000  | 1.1227         | 85 | 60.12   | <.0001  | <.0001 | 0.05  | 65.2678 | 69.7323 |
| 1  | 5      | 6          | 7       | 67.0000  | 1.1227         | 85 | 59.68   | <.0001  | <.0001 | 0.05  | 64.7678 | 69.2323 |
| 1  | 5      | 6          | 8       | 66.5000  | 1.1227         | 85 | 59.23   | <.0001  | <.0001 | 0.05  | 64.2678 | 68.7323 |
| 1  | 5      | 6          | 9       | 66.5000  | 1.1227         | 85 | 59.23   | <.0001  | <.0001 | 0.05  | 64.2678 | 68.7323 |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |           |           |
|--|--------|------------|---------|-----------|-----------|
| treatment  | number | _treatment | _number | Adj Lower | Adj Upper |
| 1  | 5      | 1          | 6       | -4.5654   | 1.0654    |
| 1  | 5      | 1          | 7       | -6.3154   | -0.6846   |
| 1  | 5      | 1          | 8       | -7.0654   | -1.4346   |
| 1  | 5      | 1          | 9       | -9.5654   | -3.9346   |
| 1  | 5      | 1          | 10      | -10.8154  | -5.1846   |
| 1  | 5      | 2          | 5       | 55.6843   | 65.3383   |
| 1  | 5      | 2          | 6       | 54.6843   | 64.3383   |
| 1  | 5      | 2          | 7       | 55.0177   | 64.6716   |
| 1  | 5      | 2          | 8       | 54.6843   | 64.3383   |
| 1  | 5      | 2          | 9       | 53.6843   | 63.3383   |
| 1  | 5      | 2          | 10      | 52.3510   | 62.0049   |
| 1  | 5      | 3          | 5       | 61.7842   | 70.7158   |
| 1  | 5      | 3          | 6       | 60.2842   | 69.2158   |
| 1  | 5      | 3          | 7       | 59.7842   | 68.7158   |
| 1  | 5      | 3          | 8       | 59.0342   | 67.9658   |
| 1  | 5      | 3          | 9       | 57.7842   | 66.7158   |
| 1  | 5      | 3          | 10      | 56.2842   | 65.2158   |
| 1  | 5      | 4          | 5       | 60.2842   | 69.2158   |
| 1  | 5      | 4          | 6       | 58.7842   | 67.7158   |
| 1  | 5      | 4          | 7       | 57.7842   | 66.7158   |
| 1  | 5      | 4          | 8       | 56.0342   | 64.9658   |
| 1  | 5      | 4          | 9       | 54.2842   | 63.2158   |
| 1  | 5      | 4          | 10      | 54.2842   | 63.2158   |
| 1  | 5      | 5          | 5       | 65.2842   | 74.2158   |
| 1  | 5      | 5          | 6       | 64.0342   | 72.9658   |
| 1  | 5      | 5          | 7       | 63.2842   | 72.2158   |
| 1  | 5      | 5          | 8       | 63.0342   | 71.9658   |
| 1  | 5      | 5          | 9       | 61.0342   | 69.9658   |
| 1  | 5      | 5          | 10      | 59.2842   | 68.2158   |
| 1  | 5      | 6          | 5       | 64.7842   | 73.7158   |
| 1  | 5      | 6          | 6       | 63.0342   | 71.9658   |
| 1  | 5      | 6          | 7       | 62.5342   | 71.4658   |
| 1  | 5      | 6          | 8       | 62.0342   | 70.9658   |
| 1  | 5      | 6          | 9       | 62.0342   | 70.9658   |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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      | 6          | 10      | 65.7500  | 1.1227         | 85 | 58.56   | <.0001  | <.0001 | 0.05  | 63.5178 | 67.9823 |
| 1  | 6      | 1          | 7       | -1.7500  | 0.7078         | 85 | -2.47   | 0.0154  | 0.8520 | 0.05  | -3.1573 | -0.3427 |
| 1  | 6      | 1          | 8       | -2.5000  | 0.7078         | 85 | -3.53   | 0.0007  | 0.1666 | 0.05  | -3.9073 | -1.0927 |
| 1  | 6      | 1          | 9       | -5.0000  | 0.7078         | 85 | -7.06   | <.0001  | <.0001 | 0.05  | -6.4073 | -3.5927 |
| 1  | 6      | 1          | 10      | -6.2500  | 0.7078         | 85 | -8.83   | <.0001  | <.0001 | 0.05  | -7.6573 | -4.8427 |
| 1  | 6      | 2          | 5       | 62.2613  | 1.2135         | 85 | 51.31   | <.0001  | <.0001 | 0.05  | 59.8485 | 64.6741 |
| 1  | 6      | 2          | 6       | 61.2613  | 1.2135         | 85 | 50.48   | <.0001  | <.0001 | 0.05  | 58.8485 | 63.6741 |
| 1  | 6      | 2          | 7       | 61.5946  | 1.2135         | 85 | 50.76   | <.0001  | <.0001 | 0.05  | 59.1819 | 64.0074 |
| 1  | 6      | 2          | 8       | 61.2613  | 1.2135         | 85 | 50.48   | <.0001  | <.0001 | 0.05  | 58.8485 | 63.6741 |
| 1  | 6      | 2          | 9       | 60.2613  | 1.2135         | 85 | 49.66   | <.0001  | <.0001 | 0.05  | 57.8485 | 62.6741 |
| 1  | 6      | 2          | 10      | 58.9280  | 1.2135         | 85 | 48.56   | <.0001  | <.0001 | 0.05  | 56.5152 | 61.3407 |
| 1  | 6      | 3          | 5       | 68.0000  | 1.1227         | 85 | 60.57   | <.0001  | <.0001 | 0.05  | 65.7678 | 70.2323 |
| 1  | 6      | 3          | 6       | 66.5000  | 1.1227         | 85 | 59.23   | <.0001  | <.0001 | 0.05  | 64.2678 | 68.7323 |
| 1  | 6      | 3          | 7       | 66.0000  | 1.1227         | 85 | 58.79   | <.0001  | <.0001 | 0.05  | 63.7678 | 68.2323 |
| 1  | 6      | 3          | 8       | 65.2500  | 1.1227         | 85 | 58.12   | <.0001  | <.0001 | 0.05  | 63.0178 | 67.4823 |
| 1  | 6      | 3          | 9       | 64.0000  | 1.1227         | 85 | 57.01   | <.0001  | <.0001 | 0.05  | 61.7678 | 66.2323 |
| 1  | 6      | 3          | 10      | 62.5000  | 1.1227         | 85 | 55.67   | <.0001  | <.0001 | 0.05  | 60.2678 | 64.7323 |
| 1  | 6      | 4          | 5       | 66.5000  | 1.1227         | 85 | 59.23   | <.0001  | <.0001 | 0.05  | 64.2678 | 68.7323 |
| 1  | 6      | 4          | 6       | 65.0000  | 1.1227         | 85 | 57.90   | <.0001  | <.0001 | 0.05  | 62.7678 | 67.2323 |
| 1  | 6      | 4          | 7       | 64.0000  | 1.1227         | 85 | 57.01   | <.0001  | <.0001 | 0.05  | 61.7678 | 66.2323 |
| 1  | 6      | 4          | 8       | 62.2500  | 1.1227         | 85 | 55.45   | <.0001  | <.0001 | 0.05  | 60.0178 | 64.4823 |
| 1  | 6      | 4          | 9       | 60.5000  | 1.1227         | 85 | 53.89   | <.0001  | <.0001 | 0.05  | 58.2678 | 62.7322 |
| 1  | 6      | 4          | 10      | 60.5000  | 1.1227         | 85 | 53.89   | <.0001  | <.0001 | 0.05  | 58.2678 | 62.7323 |
| 1  | 6      | 5          | 5       | 71.5000  | 1.1227         | 85 | 63.69   | <.0001  | <.0001 | 0.05  | 69.2678 | 73.7323 |
| 1  | 6      | 5          | 6       | 70.2500  | 1.1227         | 85 | 62.57   | <.0001  | <.0001 | 0.05  | 68.0178 | 72.4823 |
| 1  | 6      | 5          | 7       | 69.5000  | 1.1227         | 85 | 61.90   | <.0001  | <.0001 | 0.05  | 67.2678 | 71.7323 |
| 1  | 6      | 5          | 8       | 69.2500  | 1.1227         | 85 | 61.68   | <.0001  | <.0001 | 0.05  | 67.0178 | 71.4823 |
| 1  | 6      | 5          | 9       | 67.2500  | 1.1227         | 85 | 59.90   | <.0001  | <.0001 | 0.05  | 65.0178 | 69.4823 |
| 1  | 6      | 5          | 10      | 65.5000  | 1.1227         | 85 | 58.34   | <.0001  | <.0001 | 0.05  | 63.2678 | 67.7323 |
| 1  | 6      | 6          | 5       | 71.0000  | 1.1227         | 85 | 63.24   | <.0001  | <.0001 | 0.05  | 68.7678 | 73.2323 |
| 1  | 6      | 6          | 6       | 69.2500  | 1.1227         | 85 | 61.68   | <.0001  | <.0001 | 0.05  | 67.0178 | 71.4823 |
| 1  | 6      | 6          | 7       | 68.7500  | 1.1227         | 85 | 61.24   | <.0001  | <.0001 | 0.05  | 66.5178 | 70.9823 |
| 1  | 6      | 6          | 8       | 68.2500  | 1.1227         | 85 | 60.79   | <.0001  | <.0001 | 0.05  | 66.0178 | 70.4823 |
| 1  | 6      | 6          | 9       | 68.2500  | 1.1227         | 85 | 60.79   | <.0001  | <.0001 | 0.05  | 66.0178 | 70.4823 |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |           |           |
|--|--------|------------|---------|-----------|-----------|
| treatment  | number | _treatment | _number | Adj Lower | Adj Upper |
| 1  | 5      | 6          | 10      | 61.2842   | 70.2158   |
| 1  | 6      | 1          | 7       | -4.5654   | 1.0654    |
| 1  | 6      | 1          | 8       | -5.3154   | 0.3154    |
| 1  | 6      | 1          | 9       | -7.8154   | -2.1846   |
| 1  | 6      | 1          | 10      | -9.0654   | -3.4346   |
| 1  | 6      | 2          | 5       | 57.4343   | 67.0883   |
| 1  | 6      | 2          | 6       | 56.4343   | 66.0883   |
| 1  | 6      | 2          | 7       | 56.7677   | 66.4216   |
| 1  | 6      | 2          | 8       | 56.4343   | 66.0883   |
| 1  | 6      | 2          | 9       | 55.4343   | 65.0883   |
| 1  | 6      | 2          | 10      | 54.1010   | 63.7549   |
| 1  | 6      | 3          | 5       | 63.5342   | 72.4658   |
| 1  | 6      | 3          | 6       | 62.0342   | 70.9658   |
| 1  | 6      | 3          | 7       | 61.5342   | 70.4658   |
| 1  | 6      | 3          | 8       | 60.7842   | 69.7158   |
| 1  | 6      | 3          | 9       | 59.5342   | 68.4658   |
| 1  | 6      | 3          | 10      | 58.0342   | 66.9658   |
| 1  | 6      | 4          | 5       | 62.0342   | 70.9658   |
| 1  | 6      | 4          | 6       | 60.5342   | 69.4658   |
| 1  | 6      | 4          | 7       | 59.5342   | 68.4658   |
| 1  | 6      | 4          | 8       | 57.7842   | 66.7158   |
| 1  | 6      | 4          | 9       | 56.0342   | 64.9658   |
| 1  | 6      | 4          | 10      | 56.0342   | 64.9658   |
| 1  | 6      | 5          | 5       | 67.0342   | 75.9658   |
| 1  | 6      | 5          | 6       | 65.7842   | 74.7158   |
| 1  | 6      | 5          | 7       | 65.0342   | 73.9658   |
| 1  | 6      | 5          | 8       | 64.7842   | 73.7158   |
| 1  | 6      | 5          | 9       | 62.7842   | 71.7158   |
| 1  | 6      | 5          | 10      | 61.0342   | 69.9658   |
| 1  | 6      | 6          | 5       | 66.5342   | 75.4658   |
| 1  | 6      | 6          | 6       | 64.7842   | 73.7158   |
| 1  | 6      | 6          | 7       | 64.2842   | 73.2158   |
| 1  | 6      | 6          | 8       | 63.7842   | 72.7158   |
| 1  | 6      | 6          | 9       | 63.7842   | 72.7158   |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |          |                |    |         |         |        |       |         |         |
|--|--------|------------|---------|----------|----------------|----|---------|---------|--------|-------|---------|---------|
| treatment  | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr >  t | Adj P  | Alpha | Lower   | Upper   |
| 1  | 6      | 6          | 10      | 67.5000  | 1.1227         | 85 | 60.12   | <.0001  | <.0001 | 0.05  | 65.2678 | 69.7323 |
| 1  | 7      | 1          | 8       | -0.7500  | 0.7078         | 85 | -1.06   | 0.2923  | 1.0000 | 0.05  | -2.1573 | 0.6573  |
| 1  | 7      | 1          | 9       | -3.2500  | 0.7078         | 85 | -4.59   | <.0001  | 0.0068 | 0.05  | -4.6573 | -1.8427 |
| 1  | 7      | 1          | 10      | -4.5000  | 0.7078         | 85 | -6.36   | <.0001  | <.0001 | 0.05  | -5.9073 | -3.0927 |
| 1  | 7      | 2          | 5       | 64.0113  | 1.2135         | 85 | 52.75   | <.0001  | <.0001 | 0.05  | 61.5985 | 66.4241 |
| 1  | 7      | 2          | 6       | 63.0113  | 1.2135         | 85 | 51.93   | <.0001  | <.0001 | 0.05  | 60.5985 | 65.4241 |
| 1  | 7      | 2          | 7       | 63.3446  | 1.2135         | 85 | 52.20   | <.0001  | <.0001 | 0.05  | 60.9319 | 65.7574 |
| 1  | 7      | 2          | 8       | 63.0113  | 1.2135         | 85 | 51.93   | <.0001  | <.0001 | 0.05  | 60.5985 | 65.4241 |
| 1  | 7      | 2          | 9       | 62.0113  | 1.2135         | 85 | 51.10   | <.0001  | <.0001 | 0.05  | 59.5985 | 64.4241 |
| 1  | 7      | 2          | 10      | 60.6780  | 1.2135         | 85 | 50.00   | <.0001  | <.0001 | 0.05  | 58.2652 | 63.0907 |
| 1  | 7      | 3          | 5       | 69.7500  | 1.1227         | 85 | 62.13   | <.0001  | <.0001 | 0.05  | 67.5178 | 71.9823 |
| 1  | 7      | 3          | 6       | 68.2500  | 1.1227         | 85 | 60.79   | <.0001  | <.0001 | 0.05  | 66.0178 | 70.4823 |
| 1  | 7      | 3          | 7       | 67.7500  | 1.1227         | 85 | 60.35   | <.0001  | <.0001 | 0.05  | 65.5178 | 69.9823 |
| 1  | 7      | 3          | 8       | 67.0000  | 1.1227         | 85 | 59.68   | <.0001  | <.0001 | 0.05  | 64.7678 | 69.2323 |
| 1  | 7      | 3          | 9       | 65.7500  | 1.1227         | 85 | 58.56   | <.0001  | <.0001 | 0.05  | 63.5178 | 67.9823 |
| 1  | 7      | 3          | 10      | 64.2500  | 1.1227         | 85 | 57.23   | <.0001  | <.0001 | 0.05  | 62.0178 | 66.4823 |
| 1  | 7      | 4          | 5       | 68.2500  | 1.1227         | 85 | 60.79   | <.0001  | <.0001 | 0.05  | 66.0178 | 70.4823 |
| 1  | 7      | 4          | 6       | 66.7500  | 1.1227         | 85 | 59.45   | <.0001  | <.0001 | 0.05  | 64.5178 | 68.9823 |
| 1  | 7      | 4          | 7       | 65.7500  | 1.1227         | 85 | 58.56   | <.0001  | <.0001 | 0.05  | 63.5178 | 67.9823 |
| 1  | 7      | 4          | 8       | 64.0000  | 1.1227         | 85 | 57.01   | <.0001  | <.0001 | 0.05  | 61.7678 | 66.2323 |
| 1  | 7      | 4          | 9       | 62.2500  | 1.1227         | 85 | 55.45   | <.0001  | <.0001 | 0.05  | 60.0178 | 64.4823 |
| 1  | 7      | 4          | 10      | 62.2500  | 1.1227         | 85 | 55.45   | <.0001  | <.0001 | 0.05  | 60.0178 | 64.4823 |
| 1  | 7      | 5          | 5       | 73.2500  | 1.1227         | 85 | 65.24   | <.0001  | <.0001 | 0.05  | 71.0178 | 75.4823 |
| 1  | 7      | 5          | 6       | 72.0000  | 1.1227         | 85 | 64.13   | <.0001  | <.0001 | 0.05  | 69.7678 | 74.2323 |
| 1  | 7      | 5          | 7       | 71.2500  | 1.1227         | 85 | 63.46   | <.0001  | <.0001 | 0.05  | 69.0178 | 73.4823 |
| 1  | 7      | 5          | 8       | 71.0000  | 1.1227         | 85 | 63.24   | <.0001  | <.0001 | 0.05  | 68.7678 | 73.2323 |
| 1  | 7      | 5          | 9       | 69.0000  | 1.1227         | 85 | 61.46   | <.0001  | <.0001 | 0.05  | 66.7678 | 71.2323 |
| 1  | 7      | 5          | 10      | 67.2500  | 1.1227         | 85 | 59.90   | <.0001  | <.0001 | 0.05  | 65.0178 | 69.4823 |
| 1  | 7      | 6          | 5       | 72.7500  | 1.1227         | 85 | 64.80   | <.0001  | <.0001 | 0.05  | 70.5178 | 74.9823 |
| 1  | 7      | 6          | 6       | 71.0000  | 1.1227         | 85 | 63.24   | <.0001  | <.0001 | 0.05  | 68.7678 | 73.2323 |
| 1  | 7      | 6          | 7       | 70.5000  | 1.1227         | 85 | 62.79   | <.0001  | <.0001 | 0.05  | 68.2678 | 72.7323 |
| 1  | 7      | 6          | 8       | 70.0000  | 1.1227         | 85 | 62.35   | <.0001  | <.0001 | 0.05  | 67.7678 | 72.2323 |
| 1  | 7      | 6          | 9       | 70.0000  | 1.1227         | 85 | 62.35   | <.0001  | <.0001 | 0.05  | 67.7678 | 72.2323 |
| 1  | 7      | 6          | 10      | 69.2500  | 1.1227         | 85 | 61.68   | <.0001  | <.0001 | 0.05  | 67.0178 | 71.4823 |



The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |           |           |
|--|--------|------------|---------|-----------|-----------|
| treatment  | number | _treatment | _number | Adj Lower | Adj Upper |
| 1  | 6      | 6          | 10      | 63.0342   | 71.9658   |
| 1  | 7      | 1          | 8       | -3.5654   | 2.0654    |
| 1  | 7      | 1          | 9       | -6.0654   | -0.4346   |
| 1  | 7      | 1          | 10      | -7.3154   | -1.6846   |
| 1  | 7      | 2          | 5       | 59.1843   | 68.8383   |
| 1  | 7      | 2          | 6       | 58.1843   | 67.8383   |
| 1  | 7      | 2          | 7       | 58.5177   | 68.1716   |
| 1  | 7      | 2          | 8       | 58.1843   | 67.8383   |
| 1  | 7      | 2          | 9       | 57.1843   | 66.8383   |
| 1  | 7      | 2          | 10      | 55.8510   | 65.5049   |
| 1  | 7      | 3          | 5       | 65.2842   | 74.2158   |
| 1  | 7      | 3          | 6       | 63.7842   | 72.7158   |
| 1  | 7      | 3          | 7       | 63.2842   | 72.2158   |
| 1  | 7      | 3          | 8       | 62.5342   | 71.4658   |
| 1  | 7      | 3          | 9       | 61.2842   | 70.2158   |
| 1  | 7      | 3          | 10      | 59.7842   | 68.7158   |
| 1  | 7      | 4          | 5       | 63.7842   | 72.7158   |
| 1  | 7      | 4          | 6       | 62.2842   | 71.2158   |
| 1  | 7      | 4          | 7       | 61.2842   | 70.2158   |
| 1  | 7      | 4          | 8       | 59.5342   | 68.4658   |
| 1  | 7      | 4          | 9       | 57.7842   | 66.7158   |
| 1  | 7      | 4          | 10      | 57.7842   | 66.7158   |
| 1  | 7      | 5          | 5       | 68.7842   | 77.7158   |
| 1  | 7      | 5          | 6       | 67.5342   | 76.4658   |
| 1  | 7      | 5          | 7       | 66.7842   | 75.7158   |
| 1  | 7      | 5          | 8       | 66.5342   | 75.4658   |
| 1  | 7      | 5          | 9       | 64.5342   | 73.4658   |
| 1  | 7      | 5          | 10      | 62.7842   | 71.7158   |
| 1  | 7      | 6          | 5       | 68.2842   | 77.2158   |
| 1  | 7      | 6          | 6       | 66.5342   | 75.4658   |
| 1  | 7      | 6          | 7       | 66.0342   | 74.9658   |
| 1  | 7      | 6          | 8       | 65.5342   | 74.4658   |
| 1  | 7      | 6          | 9       | 65.5342   | 74.4658   |
| 1  | 7      | 6          | 10      | 64.7842   | 73.7158   |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 9       | -2.5000  | 0.7078         | 85 | -3.53   | 0.0007  | 0.1666 | 0.05  | -3.9073 | -1.0927 |
| 1  | 8      | 1          | 10      | -3.7500  | 0.7078         | 85 | -5.30   | <.0001  | 0.0005 | 0.05  | -5.1573 | -2.3427 |
| 1  | 8      | 2          | 5       | 64.7613  | 1.2135         | 85 | 53.37   | <.0001  | <.0001 | 0.05  | 62.3485 | 67.1741 |
| 1  | 8      | 2          | 6       | 63.7613  | 1.2135         | 85 | 52.54   | <.0001  | <.0001 | 0.05  | 61.3485 | 66.1741 |
| 1  | 8      | 2          | 7       | 64.0946  | 1.2135         | 85 | 52.82   | <.0001  | <.0001 | 0.05  | 61.6819 | 66.5074 |
| 1  | 8      | 2          | 8       | 63.7613  | 1.2135         | 85 | 52.54   | <.0001  | <.0001 | 0.05  | 61.3485 | 66.1741 |
| 1  | 8      | 2          | 9       | 62.7613  | 1.2135         | 85 | 51.72   | <.0001  | <.0001 | 0.05  | 60.3485 | 65.1741 |
| 1  | 8      | 2          | 10      | 61.4280  | 1.2135         | 85 | 50.62   | <.0001  | <.0001 | 0.05  | 59.0152 | 63.8407 |
| 1  | 8      | 3          | 5       | 70.5000  | 1.1227         | 85 | 62.79   | <.0001  | <.0001 | 0.05  | 68.2678 | 72.7323 |
| 1  | 8      | 3          | 6       | 69.0000  | 1.1227         | 85 | 61.46   | <.0001  | <.0001 | 0.05  | 66.7678 | 71.2323 |
| 1  | 8      | 3          | 7       | 68.5000  | 1.1227         | 85 | 61.01   | <.0001  | <.0001 | 0.05  | 66.2678 | 70.7323 |
| 1  | 8      | 3          | 8       | 67.7500  | 1.1227         | 85 | 60.35   | <.0001  | <.0001 | 0.05  | 65.5178 | 69.9823 |
| 1  | 8      | 3          | 9       | 66.5000  | 1.1227         | 85 | 59.23   | <.0001  | <.0001 | 0.05  | 64.2678 | 68.7323 |
| 1  | 8      | 3          | 10      | 65.0000  | 1.1227         | 85 | 57.90   | <.0001  | <.0001 | 0.05  | 62.7678 | 67.2323 |
| 1  | 8      | 4          | 5       | 69.0000  | 1.1227         | 85 | 61.46   | <.0001  | <.0001 | 0.05  | 66.7678 | 71.2323 |
| 1  | 8      | 4          | 6       | 67.5000  | 1.1227         | 85 | 60.12   | <.0001  | <.0001 | 0.05  | 65.2678 | 69.7323 |
| 1  | 8      | 4          | 7       | 66.5000  | 1.1227         | 85 | 59.23   | <.0001  | <.0001 | 0.05  | 64.2678 | 68.7323 |
| 1  | 8      | 4          | 8       | 64.7500  | 1.1227         | 85 | 57.67   | <.0001  | <.0001 | 0.05  | 62.5178 | 66.9823 |
| 1  | 8      | 4          | 9       | 63.0000  | 1.1227         | 85 | 56.11   | <.0001  | <.0001 | 0.05  | 60.7678 | 65.2323 |
| 1  | 8      | 4          | 10      | 63.0000  | 1.1227         | 85 | 56.11   | <.0001  | <.0001 | 0.05  | 60.7678 | 65.2323 |
| 1  | 8      | 5          | 5       | 74.0000  | 1.1227         | 85 | 65.91   | <.0001  | <.0001 | 0.05  | 71.7678 | 76.2323 |
| 1  | 8      | 5          | 6       | 72.7500  | 1.1227         | 85 | 64.80   | <.0001  | <.0001 | 0.05  | 70.5178 | 74.9823 |
| 1  | 8      | 5          | 7       | 72.0000  | 1.1227         | 85 | 64.13   | <.0001  | <.0001 | 0.05  | 69.7678 | 74.2323 |
| 1  | 8      | 5          | 8       | 71.7500  | 1.1227         | 85 | 63.91   | <.0001  | <.0001 | 0.05  | 69.5178 | 73.9823 |
| 1  | 8      | 5          | 9       | 69.7500  | 1.1227         | 85 | 62.13   | <.0001  | <.0001 | 0.05  | 67.5178 | 71.9823 |
| 1  | 8      | 5          | 10      | 68.0000  | 1.1227         | 85 | 60.57   | <.0001  | <.0001 | 0.05  | 65.7678 | 70.2323 |
| 1  | 8      | 6          | 5       | 73.5000  | 1.1227         | 85 | 65.47   | <.0001  | <.0001 | 0.05  | 71.2678 | 75.7323 |
| 1  | 8      | 6          | 6       | 71.7500  | 1.1227         | 85 | 63.91   | <.0001  | <.0001 | 0.05  | 69.5178 | 73.9823 |
| 1  | 8      | 6          | 7       | 71.2500  | 1.1227         | 85 | 63.46   | <.0001  | <.0001 | 0.05  | 69.0178 | 73.4823 |
| 1  | 8      | 6          | 8       | 70.7500  | 1.1227         | 85 | 63.02   | <.0001  | <.0001 | 0.05  | 68.5178 | 72.9823 |
| 1  | 8      | 6          | 9       | 70.7500  | 1.1227         | 85 | 63.02   | <.0001  | <.0001 | 0.05  | 68.5178 | 72.9823 |
| 1  | 8      | 6          | 10      | 70.0000  | 1.1227         | 85 | 62.35   | <.0001  | <.0001 | 0.05  | 67.7678 | 72.2323 |
| 1  | 9      | 1          | 10      | -1.2500  | 0.7078         | 85 | -1.77   | 0.0810  | 0.9981 | 0.05  | -2.6573 | 0.1573  |
| 1  | 9      | 2          | 5       | 67.2613  | 1.2135         | 85 | 55.43   | <.0001  | <.0001 | 0.05  | 64.8485 | 69.6741 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 1  | 8      | 1          | 9       | -5.3154      | 0.3154       |
| 1  | 8      | 1          | 10      | -6.5654      | -0.9346      |
| 1  | 8      | 2          | 5       | 59.9343      | 69.5883      |
| 1  | 8      | 2          | 6       | 58.9343      | 68.5883      |
| 1  | 8      | 2          | 7       | 59.2677      | 68.9216      |
| 1  | 8      | 2          | 8       | 58.9343      | 68.5883      |
| 1  | 8      | 2          | 9       | 57.9343      | 67.5883      |
| 1  | 8      | 2          | 10      | 56.6010      | 66.2549      |
| 1  | 8      | 3          | 5       | 66.0342      | 74.9658      |
| 1  | 8      | 3          | 6       | 64.5342      | 73.4658      |
| 1  | 8      | 3          | 7       | 64.0342      | 72.9658      |
| 1  | 8      | 3          | 8       | 63.2842      | 72.2158      |
| 1  | 8      | 3          | 9       | 62.0342      | 70.9658      |
| 1  | 8      | 3          | 10      | 60.5342      | 69.4658      |
| 1  | 8      | 4          | 5       | 64.5342      | 73.4658      |
| 1  | 8      | 4          | 6       | 63.0342      | 71.9658      |
| 1  | 8      | 4          | 7       | 62.0342      | 70.9658      |
| 1  | 8      | 4          | 8       | 60.2842      | 69.2158      |
| 1  | 8      | 4          | 9       | 58.5342      | 67.4658      |
| 1  | 8      | 4          | 10      | 58.5342      | 67.4658      |
| 1  | 8      | 5          | 5       | 69.5342      | 78.4658      |
| 1  | 8      | 5          | 6       | 68.2842      | 77.2158      |
| 1  | 8      | 5          | 7       | 67.5342      | 76.4658      |
| 1  | 8      | 5          | 8       | 67.2842      | 76.2158      |
| 1  | 8      | 5          | 9       | 65.2842      | 74.2158      |
| 1  | 8      | 5          | 10      | 63.5342      | 72.4658      |
| 1  | 8      | 6          | 5       | 69.0342      | 77.9658      |
| 1  | 8      | 6          | 6       | 67.2842      | 76.2158      |
| 1  | 8      | 6          | 7       | 66.7842      | 75.7158      |
| 1  | 8      | 6          | 8       | 66.2842      | 75.2158      |
| 1  | 8      | 6          | 9       | 66.2842      | 75.2158      |
| 1  | 8      | 6          | 10      | 65.5342      | 74.4658      |
| 1  | 9      | 1          | 10      | -4.0654      | 1.5654       |
| 1  | 9      | 2          | 5       | 62.4343      | 72.0883      |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 6       | 66.2613  | 1.2135         | 85 | 54.60   | <.0001  | <.0001 | 0.05  | 63.8485 | 68.6741 |
| 1  | 9      | 2          | 7       | 66.5946  | 1.2135         | 85 | 54.88   | <.0001  | <.0001 | 0.05  | 64.1819 | 69.0074 |
| 1  | 9      | 2          | 8       | 66.2613  | 1.2135         | 85 | 54.60   | <.0001  | <.0001 | 0.05  | 63.8485 | 68.6741 |
| 1  | 9      | 2          | 9       | 65.2613  | 1.2135         | 85 | 53.78   | <.0001  | <.0001 | 0.05  | 62.8485 | 67.6741 |
| 1  | 9      | 2          | 10      | 63.9280  | 1.2135         | 85 | 52.68   | <.0001  | <.0001 | 0.05  | 61.5152 | 66.3407 |
| 1  | 9      | 3          | 5       | 73.0000  | 1.1227         | 85 | 65.02   | <.0001  | <.0001 | 0.05  | 70.7678 | 75.2323 |
| 1  | 9      | 3          | 6       | 71.5000  | 1.1227         | 85 | 63.69   | <.0001  | <.0001 | 0.05  | 69.2678 | 73.7323 |
| 1  | 9      | 3          | 7       | 71.0000  | 1.1227         | 85 | 63.24   | <.0001  | <.0001 | 0.05  | 68.7678 | 73.2323 |
| 1  | 9      | 3          | 8       | 70.2500  | 1.1227         | 85 | 62.57   | <.0001  | <.0001 | 0.05  | 68.0178 | 72.4823 |
| 1  | 9      | 3          | 9       | 69.0000  | 1.1227         | 85 | 61.46   | <.0001  | <.0001 | 0.05  | 66.7678 | 71.2323 |
| 1  | 9      | 3          | 10      | 67.5000  | 1.1227         | 85 | 60.12   | <.0001  | <.0001 | 0.05  | 65.2678 | 69.7323 |
| 1  | 9      | 4          | 5       | 71.5000  | 1.1227         | 85 | 63.69   | <.0001  | <.0001 | 0.05  | 69.2678 | 73.7323 |
| 1  | 9      | 4          | 6       | 70.0000  | 1.1227         | 85 | 62.35   | <.0001  | <.0001 | 0.05  | 67.7678 | 72.2323 |
| 1  | 9      | 4          | 7       | 69.0000  | 1.1227         | 85 | 61.46   | <.0001  | <.0001 | 0.05  | 66.7678 | 71.2323 |
| 1  | 9      | 4          | 8       | 67.2500  | 1.1227         | 85 | 59.90   | <.0001  | <.0001 | 0.05  | 65.0178 | 69.4823 |
| 1  | 9      | 4          | 9       | 65.5000  | 1.1227         | 85 | 58.34   | <.0001  | <.0001 | 0.05  | 63.2678 | 67.7323 |
| 1  | 9      | 4          | 10      | 65.5000  | 1.1227         | 85 | 58.34   | <.0001  | <.0001 | 0.05  | 63.2678 | 67.7323 |
| 1  | 9      | 5          | 5       | 76.5000  | 1.1227         | 85 | 68.14   | <.0001  | <.0001 | 0.05  | 74.2678 | 78.7323 |
| 1  | 9      | 5          | 6       | 75.2500  | 1.1227         | 85 | 67.03   | <.0001  | <.0001 | 0.05  | 73.0178 | 77.4823 |
| 1  | 9      | 5          | 7       | 74.5000  | 1.1227         | 85 | 66.36   | <.0001  | <.0001 | 0.05  | 72.2678 | 76.7323 |
| 1  | 9      | 5          | 8       | 74.2500  | 1.1227         | 85 | 66.13   | <.0001  | <.0001 | 0.05  | 72.0178 | 76.4823 |
| 1  | 9      | 5          | 9       | 72.2500  | 1.1227         | 85 | 64.35   | <.0001  | <.0001 | 0.05  | 70.0178 | 74.4823 |
| 1  | 9      | 5          | 10      | 70.5000  | 1.1227         | 85 | 62.79   | <.0001  | <.0001 | 0.05  | 68.2678 | 72.7323 |
| 1  | 9      | 6          | 5       | 76.0000  | 1.1227         | 85 | 67.69   | <.0001  | <.0001 | 0.05  | 73.7678 | 78.2323 |
| 1  | 9      | 6          | 6       | 74.2500  | 1.1227         | 85 | 66.13   | <.0001  | <.0001 | 0.05  | 72.0178 | 76.4823 |
| 1  | 9      | 6          | 7       | 73.7500  | 1.1227         | 85 | 65.69   | <.0001  | <.0001 | 0.05  | 71.5178 | 75.9823 |
| 1  | 9      | 6          | 8       | 73.2500  | 1.1227         | 85 | 65.24   | <.0001  | <.0001 | 0.05  | 71.0178 | 75.4823 |
| 1  | 9      | 6          | 9       | 73.2500  | 1.1227         | 85 | 65.24   | <.0001  | <.0001 | 0.05  | 71.0178 | 75.4823 |
| 1  | 9      | 6          | 10      | 72.5000  | 1.1227         | 85 | 64.58   | <.0001  | <.0001 | 0.05  | 70.2678 | 74.7323 |
| 1  | 10     | 2          | 5       | 68.5113  | 1.2135         | 85 | 56.46   | <.0001  | <.0001 | 0.05  | 66.0985 | 70.9241 |
| 1  | 10     | 2          | 6       | 67.5113  | 1.2135         | 85 | 55.63   | <.0001  | <.0001 | 0.05  | 65.0985 | 69.9241 |
| 1  | 10     | 2          | 7       | 67.8446  | 1.2135         | 85 | 55.91   | <.0001  | <.0001 | 0.05  | 65.4319 | 70.2574 |
| 1  | 10     | 2          | 8       | 67.5113  | 1.2135         | 85 | 55.63   | <.0001  | <.0001 | 0.05  | 65.0985 | 69.9241 |
| 1  | 10     | 2          | 9       | 66.5113  | 1.2135         | 85 | 54.81   | <.0001  | <.0001 | 0.05  | 64.0985 | 68.9241 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 1  | 9      | 2          | 6       | 61.4343      | 71.0883      |
| 1  | 9      | 2          | 7       | 61.7677      | 71.4216      |
| 1  | 9      | 2          | 8       | 61.4343      | 71.0883      |
| 1  | 9      | 2          | 9       | 60.4343      | 70.0883      |
| 1  | 9      | 2          | 10      | 59.1010      | 68.7549      |
| 1  | 9      | 3          | 5       | 68.5342      | 77.4658      |
| 1  | 9      | 3          | 6       | 67.0342      | 75.9658      |
| 1  | 9      | 3          | 7       | 66.5342      | 75.4658      |
| 1  | 9      | 3          | 8       | 65.7842      | 74.7158      |
| 1  | 9      | 3          | 9       | 64.5342      | 73.4658      |
| 1  | 9      | 3          | 10      | 63.0342      | 71.9658      |
| 1  | 9      | 4          | 5       | 67.0342      | 75.9658      |
| 1  | 9      | 4          | 6       | 65.5342      | 74.4658      |
| 1  | 9      | 4          | 7       | 64.5342      | 73.4658      |
| 1  | 9      | 4          | 8       | 62.7842      | 71.7158      |
| 1  | 9      | 4          | 9       | 61.0342      | 69.9658      |
| 1  | 9      | 4          | 10      | 61.0342      | 69.9658      |
| 1  | 9      | 5          | 5       | 72.0342      | 80.9658      |
| 1  | 9      | 5          | 6       | 70.7842      | 79.7158      |
| 1  | 9      | 5          | 7       | 70.0342      | 78.9658      |
| 1  | 9      | 5          | 8       | 69.7842      | 78.7158      |
| 1  | 9      | 5          | 9       | 67.7842      | 76.7158      |
| 1  | 9      | 5          | 10      | 66.0342      | 74.9658      |
| 1  | 9      | 6          | 5       | 71.5342      | 80.4658      |
| 1  | 9      | 6          | 6       | 69.7842      | 78.7158      |
| 1  | 9      | 6          | 7       | 69.2842      | 78.2158      |
| 1  | 9      | 6          | 8       | 68.7842      | 77.7158      |
| 1  | 9      | 6          | 9       | 68.7842      | 77.7158      |
| 1  | 9      | 6          | 10      | 68.0342      | 76.9658      |
| 1  | 10     | 2          | 5       | 63.6843      | 73.3383      |
| 1  | 10     | 2          | 6       | 62.6843      | 72.3383      |
| 1  | 10     | 2          | 7       | 63.0177      | 72.6716      |
| 1  | 10     | 2          | 8       | 62.6843      | 72.3383      |
| 1  | 10     | 2          | 9       | 61.6843      | 71.3383      |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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     | 2          | 10      | 65.1780  | 1.2135         | 85 | 53.71   | <.0001  | <.0001 | 0.05  | 62.7652 | 67.5907 |
| 1  | 10     | 3          | 5       | 74.2500  | 1.1227         | 85 | 66.13   | <.0001  | <.0001 | 0.05  | 72.0178 | 76.4823 |
| 1  | 10     | 3          | 6       | 72.7500  | 1.1227         | 85 | 64.80   | <.0001  | <.0001 | 0.05  | 70.5178 | 74.9823 |
| 1  | 10     | 3          | 7       | 72.2500  | 1.1227         | 85 | 64.35   | <.0001  | <.0001 | 0.05  | 70.0178 | 74.4823 |
| 1  | 10     | 3          | 8       | 71.5000  | 1.1227         | 85 | 63.69   | <.0001  | <.0001 | 0.05  | 69.2678 | 73.7323 |
| 1  | 10     | 3          | 9       | 70.2500  | 1.1227         | 85 | 62.57   | <.0001  | <.0001 | 0.05  | 68.0178 | 72.4823 |
| 1  | 10     | 3          | 10      | 68.7500  | 1.1227         | 85 | 61.24   | <.0001  | <.0001 | 0.05  | 66.5178 | 70.9823 |
| 1  | 10     | 4          | 5       | 72.7500  | 1.1227         | 85 | 64.80   | <.0001  | <.0001 | 0.05  | 70.5178 | 74.9823 |
| 1  | 10     | 4          | 6       | 71.2500  | 1.1227         | 85 | 63.46   | <.0001  | <.0001 | 0.05  | 69.0178 | 73.4823 |
| 1  | 10     | 4          | 7       | 70.2500  | 1.1227         | 85 | 62.57   | <.0001  | <.0001 | 0.05  | 68.0178 | 72.4823 |
| 1  | 10     | 4          | 8       | 68.5000  | 1.1227         | 85 | 61.01   | <.0001  | <.0001 | 0.05  | 66.2678 | 70.7323 |
| 1  | 10     | 4          | 9       | 66.7500  | 1.1227         | 85 | 59.45   | <.0001  | <.0001 | 0.05  | 64.5178 | 68.9823 |
| 1  | 10     | 4          | 10      | 66.7500  | 1.1227         | 85 | 59.45   | <.0001  | <.0001 | 0.05  | 64.5178 | 68.9823 |
| 1  | 10     | 5          | 5       | 77.7500  | 1.1227         | 85 | 69.25   | <.0001  | <.0001 | 0.05  | 75.5178 | 79.9823 |
| 1  | 10     | 5          | 6       | 76.5000  | 1.1227         | 85 | 68.14   | <.0001  | <.0001 | 0.05  | 74.2678 | 78.7323 |
| 1  | 10     | 5          | 7       | 75.7500  | 1.1227         | 85 | 67.47   | <.0001  | <.0001 | 0.05  | 73.5178 | 77.9823 |
| 1  | 10     | 5          | 8       | 75.5000  | 1.1227         | 85 | 67.25   | <.0001  | <.0001 | 0.05  | 73.2678 | 77.7323 |
| 1  | 10     | 5          | 9       | 73.5000  | 1.1227         | 85 | 65.47   | <.0001  | <.0001 | 0.05  | 71.2678 | 75.7323 |
| 1  | 10     | 5          | 10      | 71.7500  | 1.1227         | 85 | 63.91   | <.0001  | <.0001 | 0.05  | 69.5178 | 73.9823 |
| 1  | 10     | 6          | 5       | 77.2500  | 1.1227         | 85 | 68.81   | <.0001  | <.0001 | 0.05  | 75.0178 | 79.4823 |
| 1  | 10     | 6          | 6       | 75.5000  | 1.1227         | 85 | 67.25   | <.0001  | <.0001 | 0.05  | 73.2678 | 77.7323 |
| 1  | 10     | 6          | 7       | 75.0000  | 1.1227         | 85 | 66.80   | <.0001  | <.0001 | 0.05  | 72.7678 | 77.2323 |
| 1  | 10     | 6          | 8       | 74.5000  | 1.1227         | 85 | 66.36   | <.0001  | <.0001 | 0.05  | 72.2678 | 76.7323 |
| 1  | 10     | 6          | 9       | 74.5000  | 1.1227         | 85 | 66.36   | <.0001  | <.0001 | 0.05  | 72.2678 | 76.7323 |
| 1  | 10     | 6          | 10      | 73.7500  | 1.1227         | 85 | 65.69   | <.0001  | <.0001 | 0.05  | 71.5178 | 75.9823 |
| 2  | 5      | 2          | 6       | -1.0000  | 0.8173         | 85 | -1.22   | 0.2245  | 1.0000 | 0.05  | -2.6250 | 0.6250  |
| 2  | 5      | 2          | 7       | -0.6667  | 0.8173         | 85 | -0.82   | 0.4170  | 1.0000 | 0.05  | -2.2917 | 0.9583  |
| 2  | 5      | 2          | 8       | -1.0000  | 0.8173         | 85 | -1.22   | 0.2245  | 1.0000 | 0.05  | -2.6250 | 0.6250  |
| 2  | 5      | 2          | 9       | -2.0000  | 0.8173         | 85 | -2.45   | 0.0165  | 0.8649 | 0.05  | -3.6250 | -0.3750 |
| 2  | 5      | 2          | 10      | -3.3333  | 0.8173         | 85 | -4.08   | 0.0001  | 0.0369 | 0.05  | -4.9583 | -1.7083 |
| 2  | 5      | 3          | 5       | 5.7387   | 1.2135         | 85 | 4.73    | <.0001  | 0.0041 | 0.05  | 3.3259  | 8.1515  |
| 2  | 5      | 3          | 6       | 4.2387   | 1.2135         | 85 | 3.49    | 0.0008  | 0.1828 | 0.05  | 1.8259  | 6.6515  |
| 2  | 5      | 3          | 7       | 3.7387   | 1.2135         | 85 | 3.08    | 0.0028  | 0.4234 | 0.05  | 1.3259  | 6.1515  |
| 2  | 5      | 3          | 8       | 2.9887   | 1.2135         | 85 | 2.46    | 0.0158  | 0.8569 | 0.05  | 0.5759  | 5.4015  |

## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 1  | 10     | 2          | 10      | 60.3510      | 70.0049      |
| 1  | 10     | 3          | 5       | 69.7842      | 78.7158      |
| 1  | 10     | 3          | 6       | 68.2842      | 77.2158      |
| 1  | 10     | 3          | 7       | 67.7842      | 76.7158      |
| 1  | 10     | 3          | 8       | 67.0342      | 75.9658      |
| 1  | 10     | 3          | 9       | 65.7842      | 74.7158      |
| 1  | 10     | 3          | 10      | 64.2842      | 73.2158      |
| 1  | 10     | 4          | 5       | 68.2842      | 77.2158      |
| 1  | 10     | 4          | 6       | 66.7842      | 75.7158      |
| 1  | 10     | 4          | 7       | 65.7842      | 74.7158      |
| 1  | 10     | 4          | 8       | 64.0342      | 72.9658      |
| 1  | 10     | 4          | 9       | 62.2842      | 71.2158      |
| 1  | 10     | 4          | 10      | 62.2842      | 71.2158      |
| 1  | 10     | 5          | 5       | 73.2842      | 82.2158      |
| 1  | 10     | 5          | 6       | 72.0342      | 80.9658      |
| 1  | 10     | 5          | 7       | 71.2842      | 80.2158      |
| 1  | 10     | 5          | 8       | 71.0342      | 79.9658      |
| 1  | 10     | 5          | 9       | 69.0342      | 77.9658      |
| 1  | 10     | 5          | 10      | 67.2842      | 76.2158      |
| 1  | 10     | 6          | 5       | 72.7842      | 81.7158      |
| 1  | 10     | 6          | 6       | 71.0342      | 79.9658      |
| 1  | 10     | 6          | 7       | 70.5342      | 79.4658      |
| 1  | 10     | 6          | 8       | 70.0342      | 78.9658      |
| 1  | 10     | 6          | 9       | 70.0342      | 78.9658      |
| 1  | 10     | 6          | 10      | 69.2842      | 78.2158      |
| 2  | 5      | 2          | 6       | -4.2510      | 2.2510       |
| 2  | 5      | 2          | 7       | -3.9176      | 2.5843       |
| 2  | 5      | 2          | 8       | -4.2510      | 2.2510       |
| 2  | 5      | 2          | 9       | -5.2510      | 1.2510       |
| 2  | 5      | 2          | 10      | -6.5843      | -0.08236     |
| 2  | 5      | 3          | 5       | 0.9117       | 10.5657      |
| 2  | 5      | 3          | 6       | -0.5883      | 9.0657       |
| 2  | 5      | 3          | 7       | -1.0883      | 8.5657       |
| 2  | 5      | 3          | 8       | -1.8383      | 7.8157       |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 9       | 1.7387   | 1.2135         | 85 | 1.43    | 0.1556  | 1.0000 | 0.05  | -0.6741 | 4.1515  |
| 2  | 5      | 3          | 10      | 0.2387   | 1.2135         | 85 | 0.20    | 0.8445  | 1.0000 | 0.05  | -2.1741 | 2.6515  |
| 2  | 5      | 4          | 5       | 4.2387   | 1.2135         | 85 | 3.49    | 0.0008  | 0.1828 | 0.05  | 1.8259  | 6.6515  |
| 2  | 5      | 4          | 6       | 2.7387   | 1.2135         | 85 | 2.26    | 0.0266  | 0.9398 | 0.05  | 0.3259  | 5.1515  |
| 2  | 5      | 4          | 7       | 1.7387   | 1.2135         | 85 | 1.43    | 0.1556  | 1.0000 | 0.05  | -0.6741 | 4.1515  |
| 2  | 5      | 4          | 8       | -0.01130 | 1.2135         | 85 | -0.01   | 0.9926  | 1.0000 | 0.05  | -2.4241 | 2.4015  |
| 2  | 5      | 4          | 9       | -1.7613  | 1.2135         | 85 | -1.45   | 0.1503  | 1.0000 | 0.05  | -4.1741 | 0.6515  |
| 2  | 5      | 4          | 10      | -1.7613  | 1.2135         | 85 | -1.45   | 0.1503  | 1.0000 | 0.05  | -4.1741 | 0.6515  |
| 2  | 5      | 5          | 5       | 9.2387   | 1.2135         | 85 | 7.61    | <.0001  | <.0001 | 0.05  | 6.8259  | 11.6515 |
| 2  | 5      | 5          | 6       | 7.9887   | 1.2135         | 85 | 6.58    | <.0001  | <.0001 | 0.05  | 5.5759  | 10.4015 |
| 2  | 5      | 5          | 7       | 7.2387   | 1.2135         | 85 | 5.97    | <.0001  | <.0001 | 0.05  | 4.8259  | 9.6515  |
| 2  | 5      | 5          | 8       | 6.9887   | 1.2135         | 85 | 5.76    | <.0001  | <.0001 | 0.05  | 4.5759  | 9.4015  |
| 2  | 5      | 5          | 9       | 4.9887   | 1.2135         | 85 | 4.11    | <.0001  | 0.0334 | 0.05  | 2.5759  | 7.4015  |
| 2  | 5      | 5          | 10      | 3.2387   | 1.2135         | 85 | 2.67    | 0.0091  | 0.7311 | 0.05  | 0.8259  | 5.6515  |
| 2  | 5      | 6          | 5       | 8.7387   | 1.2135         | 85 | 7.20    | <.0001  | <.0001 | 0.05  | 6.3259  | 11.1515 |
| 2  | 5      | 6          | 6       | 6.9887   | 1.2135         | 85 | 5.76    | <.0001  | <.0001 | 0.05  | 4.5759  | 9.4015  |
| 2  | 5      | 6          | 7       | 6.4887   | 1.2135         | 85 | 5.35    | <.0001  | 0.0004 | 0.05  | 4.0759  | 8.9015  |
| 2  | 5      | 6          | 8       | 5.9887   | 1.2135         | 85 | 4.94    | <.0001  | 0.0019 | 0.05  | 3.5759  | 8.4015  |
| 2  | 5      | 6          | 9       | 5.9887   | 1.2135         | 85 | 4.94    | <.0001  | 0.0019 | 0.05  | 3.5759  | 8.4015  |
| 2  | 5      | 6          | 10      | 5.2387   | 1.2135         | 85 | 4.32    | <.0001  | 0.0173 | 0.05  | 2.8259  | 7.6515  |
| 2  | 6      | 2          | 7       | 0.3333   | 0.8173         | 85 | 0.41    | 0.6844  | 1.0000 | 0.05  | -1.2917 | 1.9583  |
| 2  | 6      | 2          | 8       | 2.44E-15 | 0.8173         | 85 | 0.00    | 1.0000  | 1.0000 | 0.05  | -1.6250 | 1.6250  |
| 2  | 6      | 2          | 9       | -1.0000  | 0.8173         | 85 | -1.22   | 0.2245  | 1.0000 | 0.05  | -2.6250 | 0.6250  |
| 2  | 6      | 2          | 10      | -2.3333  | 0.8173         | 85 | -2.85   | 0.0054  | 0.5936 | 0.05  | -3.9583 | -0.7083 |
| 2  | 6      | 3          | 5       | 6.7387   | 1.2135         | 85 | 5.55    | <.0001  | 0.0002 | 0.05  | 4.3259  | 9.1515  |
| 2  | 6      | 3          | 6       | 5.2387   | 1.2135         | 85 | 4.32    | <.0001  | 0.0173 | 0.05  | 2.8259  | 7.6515  |
| 2  | 6      | 3          | 7       | 4.7387   | 1.2135         | 85 | 3.90    | 0.0002  | 0.0618 | 0.05  | 2.3259  | 7.1515  |
| 2  | 6      | 3          | 8       | 3.9887   | 1.2135         | 85 | 3.29    | 0.0015  | 0.2878 | 0.05  | 1.5759  | 6.4015  |
| 2  | 6      | 3          | 9       | 2.7387   | 1.2135         | 85 | 2.26    | 0.0266  | 0.9398 | 0.05  | 0.3259  | 5.1515  |
| 2  | 6      | 3          | 10      | 1.2387   | 1.2135         | 85 | 1.02    | 0.3103  | 1.0000 | 0.05  | -1.1741 | 3.6515  |
| 2  | 6      | 4          | 5       | 5.2387   | 1.2135         | 85 | 4.32    | <.0001  | 0.0173 | 0.05  | 2.8259  | 7.6515  |
| 2  | 6      | 4          | 6       | 3.7387   | 1.2135         | 85 | 3.08    | 0.0028  | 0.4234 | 0.05  | 1.3259  | 6.1515  |
| 2  | 6      | 4          | 7       | 2.7387   | 1.2135         | 85 | 2.26    | 0.0266  | 0.9398 | 0.05  | 0.3259  | 5.1515  |
| 2  | 6      | 4          | 8       | 0.9887   | 1.2135         | 85 | 0.81    | 0.4175  | 1.0000 | 0.05  | -1.4241 | 3.4015  |



## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 2  | 5      | 3          | 9       | -3.0883      | 6.5657       |
| 2  | 5      | 3          | 10      | -4.5883      | 5.0657       |
| 2  | 5      | 4          | 5       | -0.5883      | 9.0657       |
| 2  | 5      | 4          | 6       | -2.0883      | 7.5657       |
| 2  | 5      | 4          | 7       | -3.0883      | 6.5657       |
| 2  | 5      | 4          | 8       | -4.8383      | 4.8157       |
| 2  | 5      | 4          | 9       | -6.5883      | 3.0657       |
| 2  | 5      | 4          | 10      | -6.5883      | 3.0657       |
| 2  | 5      | 5          | 5       | 4.4117       | 14.0657      |
| 2  | 5      | 5          | 6       | 3.1617       | 12.8157      |
| 2  | 5      | 5          | 7       | 2.4117       | 12.0657      |
| 2  | 5      | 5          | 8       | 2.1617       | 11.8157      |
| 2  | 5      | 5          | 9       | 0.1617       | 9.8157       |
| 2  | 5      | 5          | 10      | -1.5883      | 8.0657       |
| 2  | 5      | 6          | 5       | 3.9117       | 13.5657      |
| 2  | 5      | 6          | 6       | 2.1617       | 11.8157      |
| 2  | 5      | 6          | 7       | 1.6617       | 11.3157      |
| 2  | 5      | 6          | 8       | 1.1617       | 10.8157      |
| 2  | 5      | 6          | 9       | 1.1617       | 10.8157      |
| 2  | 5      | 6          | 10      | 0.4117       | 10.0657      |
| 2  | 6      | 2          | 7       | -2.9176      | 3.5843       |
| 2  | 6      | 2          | 8       | -3.2510      | 3.2510       |
| 2  | 6      | 2          | 9       | -4.2510      | 2.2510       |
| 2  | 6      | 2          | 10      | -5.5843      | 0.9176       |
| 2  | 6      | 3          | 5       | 1.9117       | 11.5657      |
| 2  | 6      | 3          | 6       | 0.4117       | 10.0657      |
| 2  | 6      | 3          | 7       | -0.08827     | 9.5657       |
| 2  | 6      | 3          | 8       | -0.8383      | 8.8157       |
| 2  | 6      | 3          | 9       | -2.0883      | 7.5657       |
| 2  | 6      | 3          | 10      | -3.5883      | 6.0657       |
| 2  | 6      | 4          | 5       | 0.4117       | 10.0657      |
| 2  | 6      | 4          | 6       | -1.0883      | 8.5657       |
| 2  | 6      | 4          | 7       | -2.0883      | 7.5657       |
| 2  | 6      | 4          | 8       | -3.8383      | 5.8157       |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 9       | -0.7613  | 1.2135         | 85 | -0.63   | 0.5321  | 1.0000 | 0.05  | -3.1741  | 1.6515  |
| 2  | 6      | 4          | 10      | -0.7613  | 1.2135         | 85 | -0.63   | 0.5321  | 1.0000 | 0.05  | -3.1741  | 1.6515  |
| 2  | 6      | 5          | 5       | 10.2387  | 1.2135         | 85 | 8.44    | <.0001  | <.0001 | 0.05  | 7.8259   | 12.6515 |
| 2  | 6      | 5          | 6       | 8.9887   | 1.2135         | 85 | 7.41    | <.0001  | <.0001 | 0.05  | 6.5759   | 11.4015 |
| 2  | 6      | 5          | 7       | 8.2387   | 1.2135         | 85 | 6.79    | <.0001  | <.0001 | 0.05  | 5.8259   | 10.6515 |
| 2  | 6      | 5          | 8       | 7.9887   | 1.2135         | 85 | 6.58    | <.0001  | <.0001 | 0.05  | 5.5759   | 10.4015 |
| 2  | 6      | 5          | 9       | 5.9887   | 1.2135         | 85 | 4.94    | <.0001  | 0.0019 | 0.05  | 3.5759   | 8.4015  |
| 2  | 6      | 5          | 10      | 4.2387   | 1.2135         | 85 | 3.49    | 0.0008  | 0.1828 | 0.05  | 1.8259   | 6.6515  |
| 2  | 6      | 6          | 5       | 9.7387   | 1.2135         | 85 | 8.03    | <.0001  | <.0001 | 0.05  | 7.3259   | 12.1515 |
| 2  | 6      | 6          | 6       | 7.9887   | 1.2135         | 85 | 6.58    | <.0001  | <.0001 | 0.05  | 5.5759   | 10.4015 |
| 2  | 6      | 6          | 7       | 7.4887   | 1.2135         | 85 | 6.17    | <.0001  | <.0001 | 0.05  | 5.0759   | 9.9015  |
| 2  | 6      | 6          | 8       | 6.9887   | 1.2135         | 85 | 5.76    | <.0001  | <.0001 | 0.05  | 4.5759   | 9.4015  |
| 2  | 6      | 6          | 9       | 6.9887   | 1.2135         | 85 | 5.76    | <.0001  | <.0001 | 0.05  | 4.5759   | 9.4015  |
| 2  | 6      | 6          | 10      | 6.2387   | 1.2135         | 85 | 5.14    | <.0001  | 0.0009 | 0.05  | 3.8259   | 8.6515  |
| 2  | 7      | 2          | 8       | -0.3333  | 0.8173         | 85 | -0.41   | 0.6844  | 1.0000 | 0.05  | -1.9583  | 1.2917  |
| 2  | 7      | 2          | 9       | -1.3333  | 0.8173         | 85 | -1.63   | 0.1065  | 0.9995 | 0.05  | -2.9583  | 0.2917  |
| 2  | 7      | 2          | 10      | -2.6667  | 0.8173         | 85 | -3.26   | 0.0016  | 0.3023 | 0.05  | -4.2917  | -1.0417 |
| 2  | 7      | 3          | 5       | 6.4054   | 1.2135         | 85 | 5.28    | <.0001  | 0.0005 | 0.05  | 3.9926   | 8.8181  |
| 2  | 7      | 3          | 6       | 4.9054   | 1.2135         | 85 | 4.04    | 0.0001  | 0.0412 | 0.05  | 2.4926   | 7.3181  |
| 2  | 7      | 3          | 7       | 4.4054   | 1.2135         | 85 | 3.63    | 0.0005  | 0.1305 | 0.05  | 1.9926   | 6.8181  |
| 2  | 7      | 3          | 8       | 3.6554   | 1.2135         | 85 | 3.01    | 0.0034  | 0.4738 | 0.05  | 1.2426   | 6.0681  |
| 2  | 7      | 3          | 9       | 2.4054   | 1.2135         | 85 | 1.98    | 0.0507  | 0.9883 | 0.05  | -0.00741 | 4.8181  |
| 2  | 7      | 3          | 10      | 0.9054   | 1.2135         | 85 | 0.75    | 0.4577  | 1.0000 | 0.05  | -1.5074  | 3.3181  |
| 2  | 7      | 4          | 5       | 4.9054   | 1.2135         | 85 | 4.04    | 0.0001  | 0.0412 | 0.05  | 2.4926   | 7.3181  |
| 2  | 7      | 4          | 6       | 3.4054   | 1.2135         | 85 | 2.81    | 0.0062  | 0.6308 | 0.05  | 0.9926   | 5.8181  |
| 2  | 7      | 4          | 7       | 2.4054   | 1.2135         | 85 | 1.98    | 0.0507  | 0.9883 | 0.05  | -0.00741 | 4.8181  |
| 2  | 7      | 4          | 8       | 0.6554   | 1.2135         | 85 | 0.54    | 0.5906  | 1.0000 | 0.05  | -1.7574  | 3.0681  |
| 2  | 7      | 4          | 9       | -1.0946  | 1.2135         | 85 | -0.90   | 0.3696  | 1.0000 | 0.05  | -3.5074  | 1.3181  |
| 2  | 7      | 4          | 10      | -1.0946  | 1.2135         | 85 | -0.90   | 0.3696  | 1.0000 | 0.05  | -3.5074  | 1.3181  |
| 2  | 7      | 5          | 5       | 9.9054   | 1.2135         | 85 | 8.16    | <.0001  | <.0001 | 0.05  | 7.4926   | 12.3181 |
| 2  | 7      | 5          | 6       | 8.6554   | 1.2135         | 85 | 7.13    | <.0001  | <.0001 | 0.05  | 6.2426   | 11.0681 |
| 2  | 7      | 5          | 7       | 7.9054   | 1.2135         | 85 | 6.51    | <.0001  | <.0001 | 0.05  | 5.4926   | 10.3181 |
| 2  | 7      | 5          | 8       | 7.6554   | 1.2135         | 85 | 6.31    | <.0001  | <.0001 | 0.05  | 5.2426   | 10.0681 |
| 2  | 7      | 5          | 9       | 5.6554   | 1.2135         | 85 | 4.66    | <.0001  | 0.0053 | 0.05  | 3.2426   | 8.0681  |

## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 2  | 6      | 4          | 9       | -5.5883      | 4.0657       |
| 2  | 6      | 4          | 10      | -5.5883      | 4.0657       |
| 2  | 6      | 5          | 5       | 5.4117       | 15.0657      |
| 2  | 6      | 5          | 6       | 4.1617       | 13.8157      |
| 2  | 6      | 5          | 7       | 3.4117       | 13.0657      |
| 2  | 6      | 5          | 8       | 3.1617       | 12.8157      |
| 2  | 6      | 5          | 9       | 1.1617       | 10.8157      |
| 2  | 6      | 5          | 10      | -0.5883      | 9.0657       |
| 2  | 6      | 6          | 5       | 4.9117       | 14.5657      |
| 2  | 6      | 6          | 6       | 3.1617       | 12.8157      |
| 2  | 6      | 6          | 7       | 2.6617       | 12.3157      |
| 2  | 6      | 6          | 8       | 2.1617       | 11.8157      |
| 2  | 6      | 6          | 9       | 2.1617       | 11.8157      |
| 2  | 6      | 6          | 10      | 1.4117       | 11.0657      |
| 2  | 7      | 2          | 8       | -3.5843      | 2.9176       |
| 2  | 7      | 2          | 9       | -4.5843      | 1.9176       |
| 2  | 7      | 2          | 10      | -5.9176      | 0.5843       |
| 2  | 7      | 3          | 5       | 1.5784       | 11.2323      |
| 2  | 7      | 3          | 6       | 0.07839      | 9.7323       |
| 2  | 7      | 3          | 7       | -0.4216      | 9.2323       |
| 2  | 7      | 3          | 8       | -1.1716      | 8.4823       |
| 2  | 7      | 3          | 9       | -2.4216      | 7.2323       |
| 2  | 7      | 3          | 10      | -3.9216      | 5.7323       |
| 2  | 7      | 4          | 5       | 0.07839      | 9.7323       |
| 2  | 7      | 4          | 6       | -1.4216      | 8.2323       |
| 2  | 7      | 4          | 7       | -2.4216      | 7.2323       |
| 2  | 7      | 4          | 8       | -4.1716      | 5.4823       |
| 2  | 7      | 4          | 9       | -5.9216      | 3.7323       |
| 2  | 7      | 4          | 10      | -5.9216      | 3.7323       |
| 2  | 7      | 5          | 5       | 5.0784       | 14.7323      |
| 2  | 7      | 5          | 6       | 3.8284       | 13.4823      |
| 2  | 7      | 5          | 7       | 3.0784       | 12.7323      |
| 2  | 7      | 5          | 8       | 2.8284       | 12.4823      |
| 2  | 7      | 5          | 9       | 0.8284       | 10.4823      |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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      | 5          | 10      | 3.9054   | 1.2135         | 85 | 3.22    | 0.0018  | 0.3299 | 0.05  | 1.4926  | 6.3181  |
| 2  | 7      | 6          | 5       | 9.4054   | 1.2135         | 85 | 7.75    | <.0001  | <.0001 | 0.05  | 6.9926  | 11.8181 |
| 2  | 7      | 6          | 6       | 7.6554   | 1.2135         | 85 | 6.31    | <.0001  | <.0001 | 0.05  | 5.2426  | 10.0681 |
| 2  | 7      | 6          | 7       | 7.1554   | 1.2135         | 85 | 5.90    | <.0001  | <.0001 | 0.05  | 4.7426  | 9.5681  |
| 2  | 7      | 6          | 8       | 6.6554   | 1.2135         | 85 | 5.48    | <.0001  | 0.0002 | 0.05  | 4.2426  | 9.0681  |
| 2  | 7      | 6          | 9       | 6.6554   | 1.2135         | 85 | 5.48    | <.0001  | 0.0002 | 0.05  | 4.2426  | 9.0681  |
| 2  | 7      | 6          | 10      | 5.9054   | 1.2135         | 85 | 4.87    | <.0001  | 0.0025 | 0.05  | 3.4926  | 8.3181  |
| 2  | 8      | 2          | 9       | -1.0000  | 0.8173         | 85 | -1.22   | 0.2245  | 1.0000 | 0.05  | -2.6250 | 0.6250  |
| 2  | 8      | 2          | 10      | -2.3333  | 0.8173         | 85 | -2.85   | 0.0054  | 0.5936 | 0.05  | -3.9583 | -0.7083 |
| 2  | 8      | 3          | 5       | 6.7387   | 1.2135         | 85 | 5.55    | <.0001  | 0.0002 | 0.05  | 4.3259  | 9.1515  |
| 2  | 8      | 3          | 6       | 5.2387   | 1.2135         | 85 | 4.32    | <.0001  | 0.0173 | 0.05  | 2.8259  | 7.6515  |
| 2  | 8      | 3          | 7       | 4.7387   | 1.2135         | 85 | 3.90    | 0.0002  | 0.0618 | 0.05  | 2.3259  | 7.1515  |
| 2  | 8      | 3          | 8       | 3.9887   | 1.2135         | 85 | 3.29    | 0.0015  | 0.2878 | 0.05  | 1.5759  | 6.4015  |
| 2  | 8      | 3          | 9       | 2.7387   | 1.2135         | 85 | 2.26    | 0.0266  | 0.9398 | 0.05  | 0.3259  | 5.1515  |
| 2  | 8      | 3          | 10      | 1.2387   | 1.2135         | 85 | 1.02    | 0.3103  | 1.0000 | 0.05  | -1.1741 | 3.6515  |
| 2  | 8      | 4          | 5       | 5.2387   | 1.2135         | 85 | 4.32    | <.0001  | 0.0173 | 0.05  | 2.8259  | 7.6515  |
| 2  | 8      | 4          | 6       | 3.7387   | 1.2135         | 85 | 3.08    | 0.0028  | 0.4234 | 0.05  | 1.3259  | 6.1515  |
| 2  | 8      | 4          | 7       | 2.7387   | 1.2135         | 85 | 2.26    | 0.0266  | 0.9398 | 0.05  | 0.3259  | 5.1515  |
| 2  | 8      | 4          | 8       | 0.9887   | 1.2135         | 85 | 0.81    | 0.4175  | 1.0000 | 0.05  | -1.4241 | 3.4015  |
| 2  | 8      | 4          | 9       | -0.7613  | 1.2135         | 85 | -0.63   | 0.5321  | 1.0000 | 0.05  | -3.1741 | 1.6515  |
| 2  | 8      | 4          | 10      | -0.7613  | 1.2135         | 85 | -0.63   | 0.5321  | 1.0000 | 0.05  | -3.1741 | 1.6515  |
| 2  | 8      | 5          | 5       | 10.2387  | 1.2135         | 85 | 8.44    | <.0001  | <.0001 | 0.05  | 7.8259  | 12.6515 |
| 2  | 8      | 5          | 6       | 8.9887   | 1.2135         | 85 | 7.41    | <.0001  | <.0001 | 0.05  | 6.5759  | 11.4015 |
| 2  | 8      | 5          | 7       | 8.2387   | 1.2135         | 85 | 6.79    | <.0001  | <.0001 | 0.05  | 5.8259  | 10.6515 |
| 2  | 8      | 5          | 8       | 7.9887   | 1.2135         | 85 | 6.58    | <.0001  | <.0001 | 0.05  | 5.5759  | 10.4015 |
| 2  | 8      | 5          | 9       | 5.9887   | 1.2135         | 85 | 4.94    | <.0001  | 0.0019 | 0.05  | 3.5759  | 8.4015  |
| 2  | 8      | 5          | 10      | 4.2387   | 1.2135         | 85 | 3.49    | 0.0008  | 0.1828 | 0.05  | 1.8259  | 6.6515  |
| 2  | 8      | 6          | 5       | 9.7387   | 1.2135         | 85 | 8.03    | <.0001  | <.0001 | 0.05  | 7.3259  | 12.1515 |
| 2  | 8      | 6          | 6       | 7.9887   | 1.2135         | 85 | 6.58    | <.0001  | <.0001 | 0.05  | 5.5759  | 10.4015 |
| 2  | 8      | 6          | 7       | 7.4887   | 1.2135         | 85 | 6.17    | <.0001  | <.0001 | 0.05  | 5.0759  | 9.9015  |
| 2  | 8      | 6          | 8       | 6.9887   | 1.2135         | 85 | 5.76    | <.0001  | <.0001 | 0.05  | 4.5759  | 9.4015  |
| 2  | 8      | 6          | 9       | 6.9887   | 1.2135         | 85 | 5.76    | <.0001  | <.0001 | 0.05  | 4.5759  | 9.4015  |
| 2  | 8      | 6          | 10      | 6.2387   | 1.2135         | 85 | 5.14    | <.0001  | 0.0009 | 0.05  | 3.8259  | 8.6515  |
| 2  | 9      | 2          | 10      | -1.3333  | 0.8173         | 85 | -1.63   | 0.1065  | 0.9995 | 0.05  | -2.9583 | 0.2917  |

## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 2  | 7      | 5          | 10      | -0.9216      | 8.7323       |
| 2  | 7      | 6          | 5       | 4.5784       | 14.2323      |
| 2  | 7      | 6          | 6       | 2.8284       | 12.4823      |
| 2  | 7      | 6          | 7       | 2.3284       | 11.9823      |
| 2  | 7      | 6          | 8       | 1.8284       | 11.4823      |
| 2  | 7      | 6          | 9       | 1.8284       | 11.4823      |
| 2  | 7      | 6          | 10      | 1.0784       | 10.7323      |
| 2  | 8      | 2          | 9       | -4.2510      | 2.2510       |
| 2  | 8      | 2          | 10      | -5.5843      | 0.9176       |
| 2  | 8      | 3          | 5       | 1.9117       | 11.5657      |
| 2  | 8      | 3          | 6       | 0.4117       | 10.0657      |
| 2  | 8      | 3          | 7       | -0.08827     | 9.5657       |
| 2  | 8      | 3          | 8       | -0.8383      | 8.8157       |
| 2  | 8      | 3          | 9       | -2.0883      | 7.5657       |
| 2  | 8      | 3          | 10      | -3.5883      | 6.0657       |
| 2  | 8      | 4          | 5       | 0.4117       | 10.0657      |
| 2  | 8      | 4          | 6       | -1.0883      | 8.5657       |
| 2  | 8      | 4          | 7       | -2.0883      | 7.5657       |
| 2  | 8      | 4          | 8       | -3.8383      | 5.8157       |
| 2  | 8      | 4          | 9       | -5.5883      | 4.0657       |
| 2  | 8      | 4          | 10      | -5.5883      | 4.0657       |
| 2  | 8      | 5          | 5       | 5.4117       | 15.0657      |
| 2  | 8      | 5          | 6       | 4.1617       | 13.8157      |
| 2  | 8      | 5          | 7       | 3.4117       | 13.0657      |
| 2  | 8      | 5          | 8       | 3.1617       | 12.8157      |
| 2  | 8      | 5          | 9       | 1.1617       | 10.8157      |
| 2  | 8      | 5          | 10      | -0.5883      | 9.0657       |
| 2  | 8      | 6          | 5       | 4.9117       | 14.5657      |
| 2  | 8      | 6          | 6       | 3.1617       | 12.8157      |
| 2  | 8      | 6          | 7       | 2.6617       | 12.3157      |
| 2  | 8      | 6          | 8       | 2.1617       | 11.8157      |
| 2  | 8      | 6          | 9       | 2.1617       | 11.8157      |
| 2  | 8      | 6          | 10      | 1.4117       | 11.0657      |
| 2  | 9      | 2          | 10      | -4.5843      | 1.9176       |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 5       | 7.7387   | 1.2135         | 85 | 6.38    | <.0001  | <.0001 | 0.05  | 5.3259  | 10.1515 |
| 2  | 9      | 3          | 6       | 6.2387   | 1.2135         | 85 | 5.14    | <.0001  | 0.0009 | 0.05  | 3.8259  | 8.6515  |
| 2  | 9      | 3          | 7       | 5.7387   | 1.2135         | 85 | 4.73    | <.0001  | 0.0041 | 0.05  | 3.3259  | 8.1515  |
| 2  | 9      | 3          | 8       | 4.9887   | 1.2135         | 85 | 4.11    | <.0001  | 0.0334 | 0.05  | 2.5759  | 7.4015  |
| 2  | 9      | 3          | 9       | 3.7387   | 1.2135         | 85 | 3.08    | 0.0028  | 0.4234 | 0.05  | 1.3259  | 6.1515  |
| 2  | 9      | 3          | 10      | 2.2387   | 1.2135         | 85 | 1.84    | 0.0685  | 0.9961 | 0.05  | -0.1741 | 4.6515  |
| 2  | 9      | 4          | 5       | 6.2387   | 1.2135         | 85 | 5.14    | <.0001  | 0.0009 | 0.05  | 3.8259  | 8.6515  |
| 2  | 9      | 4          | 6       | 4.7387   | 1.2135         | 85 | 3.90    | 0.0002  | 0.0618 | 0.05  | 2.3259  | 7.1515  |
| 2  | 9      | 4          | 7       | 3.7387   | 1.2135         | 85 | 3.08    | 0.0028  | 0.4234 | 0.05  | 1.3259  | 6.1515  |
| 2  | 9      | 4          | 8       | 1.9887   | 1.2135         | 85 | 1.64    | 0.1050  | 0.9995 | 0.05  | -0.4241 | 4.4015  |
| 2  | 9      | 4          | 9       | 0.2387   | 1.2135         | 85 | 0.20    | 0.8445  | 1.0000 | 0.05  | -2.1741 | 2.6515  |
| 2  | 9      | 4          | 10      | 0.2387   | 1.2135         | 85 | 0.20    | 0.8445  | 1.0000 | 0.05  | -2.1741 | 2.6515  |
| 2  | 9      | 5          | 5       | 11.2387  | 1.2135         | 85 | 9.26    | <.0001  | <.0001 | 0.05  | 8.8259  | 13.6515 |
| 2  | 9      | 5          | 6       | 9.9887   | 1.2135         | 85 | 8.23    | <.0001  | <.0001 | 0.05  | 7.5759  | 12.4015 |
| 2  | 9      | 5          | 7       | 9.2387   | 1.2135         | 85 | 7.61    | <.0001  | <.0001 | 0.05  | 6.8259  | 11.6515 |
| 2  | 9      | 5          | 8       | 8.9887   | 1.2135         | 85 | 7.41    | <.0001  | <.0001 | 0.05  | 6.5759  | 11.4015 |
| 2  | 9      | 5          | 9       | 6.9887   | 1.2135         | 85 | 5.76    | <.0001  | <.0001 | 0.05  | 4.5759  | 9.4015  |
| 2  | 9      | 5          | 10      | 5.2387   | 1.2135         | 85 | 4.32    | <.0001  | 0.0173 | 0.05  | 2.8259  | 7.6515  |
| 2  | 9      | 6          | 5       | 10.7387  | 1.2135         | 85 | 8.85    | <.0001  | <.0001 | 0.05  | 8.3259  | 13.1515 |
| 2  | 9      | 6          | 6       | 8.9887   | 1.2135         | 85 | 7.41    | <.0001  | <.0001 | 0.05  | 6.5759  | 11.4015 |
| 2  | 9      | 6          | 7       | 8.4887   | 1.2135         | 85 | 7.00    | <.0001  | <.0001 | 0.05  | 6.0759  | 10.9015 |
| 2  | 9      | 6          | 8       | 7.9887   | 1.2135         | 85 | 6.58    | <.0001  | <.0001 | 0.05  | 5.5759  | 10.4015 |
| 2  | 9      | 6          | 9       | 7.9887   | 1.2135         | 85 | 6.58    | <.0001  | <.0001 | 0.05  | 5.5759  | 10.4015 |
| 2  | 9      | 6          | 10      | 7.2387   | 1.2135         | 85 | 5.97    | <.0001  | <.0001 | 0.05  | 4.8259  | 9.6515  |
| 2  | 10     | 3          | 5       | 9.0720   | 1.2135         | 85 | 7.48    | <.0001  | <.0001 | 0.05  | 6.6593  | 11.4848 |
| 2  | 10     | 3          | 6       | 7.5720   | 1.2135         | 85 | 6.24    | <.0001  | <.0001 | 0.05  | 5.1593  | 9.9848  |
| 2  | 10     | 3          | 7       | 7.0720   | 1.2135         | 85 | 5.83    | <.0001  | <.0001 | 0.05  | 4.6593  | 9.4848  |
| 2  | 10     | 3          | 8       | 6.3220   | 1.2135         | 85 | 5.21    | <.0001  | 0.0007 | 0.05  | 3.9093  | 8.7348  |
| 2  | 10     | 3          | 9       | 5.0720   | 1.2135         | 85 | 4.18    | <.0001  | 0.0269 | 0.05  | 2.6593  | 7.4848  |
| 2  | 10     | 3          | 10      | 3.5720   | 1.2135         | 85 | 2.94    | 0.0042  | 0.5257 | 0.05  | 1.1593  | 5.9848  |
| 2  | 10     | 4          | 5       | 7.5720   | 1.2135         | 85 | 6.24    | <.0001  | <.0001 | 0.05  | 5.1593  | 9.9848  |
| 2  | 10     | 4          | 6       | 6.0720   | 1.2135         | 85 | 5.00    | <.0001  | 0.0015 | 0.05  | 3.6593  | 8.4848  |
| 2  | 10     | 4          | 7       | 5.0720   | 1.2135         | 85 | 4.18    | <.0001  | 0.0269 | 0.05  | 2.6593  | 7.4848  |
| 2  | 10     | 4          | 8       | 3.3220   | 1.2135         | 85 | 2.74    | 0.0075  | 0.6820 | 0.05  | 0.9093  | 5.7348  |

## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 2  | 9      | 3          | 5       | 2.9117       | 12.5657      |
| 2  | 9      | 3          | 6       | 1.4117       | 11.0657      |
| 2  | 9      | 3          | 7       | 0.9117       | 10.5657      |
| 2  | 9      | 3          | 8       | 0.1617       | 9.8157       |
| 2  | 9      | 3          | 9       | -1.0883      | 8.5657       |
| 2  | 9      | 3          | 10      | -2.5883      | 7.0657       |
| 2  | 9      | 4          | 5       | 1.4117       | 11.0657      |
| 2  | 9      | 4          | 6       | -0.08827     | 9.5657       |
| 2  | 9      | 4          | 7       | -1.0883      | 8.5657       |
| 2  | 9      | 4          | 8       | -2.8383      | 6.8157       |
| 2  | 9      | 4          | 9       | -4.5883      | 5.0657       |
| 2  | 9      | 4          | 10      | -4.5883      | 5.0657       |
| 2  | 9      | 5          | 5       | 6.4117       | 16.0657      |
| 2  | 9      | 5          | 6       | 5.1617       | 14.8157      |
| 2  | 9      | 5          | 7       | 4.4117       | 14.0657      |
| 2  | 9      | 5          | 8       | 4.1617       | 13.8157      |
| 2  | 9      | 5          | 9       | 2.1617       | 11.8157      |
| 2  | 9      | 5          | 10      | 0.4117       | 10.0657      |
| 2  | 9      | 6          | 5       | 5.9117       | 15.5657      |
| 2  | 9      | 6          | 6       | 4.1617       | 13.8157      |
| 2  | 9      | 6          | 7       | 3.6617       | 13.3157      |
| 2  | 9      | 6          | 8       | 3.1617       | 12.8157      |
| 2  | 9      | 6          | 9       | 3.1617       | 12.8157      |
| 2  | 9      | 6          | 10      | 2.4117       | 12.0657      |
| 2  | 10     | 3          | 5       | 4.2451       | 13.8990      |
| 2  | 10     | 3          | 6       | 2.7451       | 12.3990      |
| 2  | 10     | 3          | 7       | 2.2451       | 11.8990      |
| 2  | 10     | 3          | 8       | 1.4951       | 11.1490      |
| 2  | 10     | 3          | 9       | 0.2451       | 9.8990       |
| 2  | 10     | 3          | 10      | -1.2549      | 8.3990       |
| 2  | 10     | 4          | 5       | 2.7451       | 12.3990      |
| 2  | 10     | 4          | 6       | 1.2451       | 10.8990      |
| 2  | 10     | 4          | 7       | 0.2451       | 9.8990       |
| 2  | 10     | 4          | 8       | -1.5049      | 8.1490       |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 9       | 1.5720   | 1.2135         | 85 | 1.30    | 0.1987  | 1.0000 | 0.05  | -0.8407 | 3.9848   |
| 2  | 10     | 4          | 10      | 1.5720   | 1.2135         | 85 | 1.30    | 0.1987  | 1.0000 | 0.05  | -0.8407 | 3.9848   |
| 2  | 10     | 5          | 5       | 12.5720  | 1.2135         | 85 | 10.36   | <.0001  | <.0001 | 0.05  | 10.1593 | 14.9848  |
| 2  | 10     | 5          | 6       | 11.3220  | 1.2135         | 85 | 9.33    | <.0001  | <.0001 | 0.05  | 8.9093  | 13.7348  |
| 2  | 10     | 5          | 7       | 10.5720  | 1.2135         | 85 | 8.71    | <.0001  | <.0001 | 0.05  | 8.1593  | 12.9848  |
| 2  | 10     | 5          | 8       | 10.3220  | 1.2135         | 85 | 8.51    | <.0001  | <.0001 | 0.05  | 7.9093  | 12.7348  |
| 2  | 10     | 5          | 9       | 8.3220   | 1.2135         | 85 | 6.86    | <.0001  | <.0001 | 0.05  | 5.9093  | 10.7348  |
| 2  | 10     | 5          | 10      | 6.5720   | 1.2135         | 85 | 5.42    | <.0001  | 0.0003 | 0.05  | 4.1593  | 8.9848   |
| 2  | 10     | 6          | 5       | 12.0720  | 1.2135         | 85 | 9.95    | <.0001  | <.0001 | 0.05  | 9.6593  | 14.4848  |
| 2  | 10     | 6          | 6       | 10.3220  | 1.2135         | 85 | 8.51    | <.0001  | <.0001 | 0.05  | 7.9093  | 12.7348  |
| 2  | 10     | 6          | 7       | 9.8220   | 1.2135         | 85 | 8.09    | <.0001  | <.0001 | 0.05  | 7.4093  | 12.2348  |
| 2  | 10     | 6          | 8       | 9.3220   | 1.2135         | 85 | 7.68    | <.0001  | <.0001 | 0.05  | 6.9093  | 11.7348  |
| 2  | 10     | 6          | 9       | 9.3220   | 1.2135         | 85 | 7.68    | <.0001  | <.0001 | 0.05  | 6.9093  | 11.7348  |
| 2  | 10     | 6          | 10      | 8.5720   | 1.2135         | 85 | 7.06    | <.0001  | <.0001 | 0.05  | 6.1593  | 10.9848  |
| 3  | 5      | 3          | 6       | -1.5000  | 0.7078         | 85 | -2.12   | 0.0370  | 0.9714 | 0.05  | -2.9073 | -0.09270 |
| 3  | 5      | 3          | 7       | -2.0000  | 0.7078         | 85 | -2.83   | 0.0059  | 0.6160 | 0.05  | -3.4073 | -0.5927  |
| 3  | 5      | 3          | 8       | -2.7500  | 0.7078         | 85 | -3.89   | 0.0002  | 0.0654 | 0.05  | -4.1573 | -1.3427  |
| 3  | 5      | 3          | 9       | -4.0000  | 0.7078         | 85 | -5.65   | <.0001  | 0.0001 | 0.05  | -5.4073 | -2.5927  |
| 3  | 5      | 3          | 10      | -5.5000  | 0.7078         | 85 | -7.77   | <.0001  | <.0001 | 0.05  | -6.9073 | -4.0927  |
| 3  | 5      | 4          | 5       | -1.5000  | 1.1227         | 85 | -1.34   | 0.1851  | 1.0000 | 0.05  | -3.7322 | 0.7322   |
| 3  | 5      | 4          | 6       | -3.0000  | 1.1227         | 85 | -2.67   | 0.0090  | 0.7289 | 0.05  | -5.2322 | -0.7678  |
| 3  | 5      | 4          | 7       | -4.0000  | 1.1227         | 85 | -3.56   | 0.0006  | 0.1545 | 0.05  | -6.2322 | -1.7678  |
| 3  | 5      | 4          | 8       | -5.7500  | 1.1227         | 85 | -5.12   | <.0001  | 0.0010 | 0.05  | -7.9822 | -3.5178  |
| 3  | 5      | 4          | 9       | -7.5000  | 1.1227         | 85 | -6.68   | <.0001  | <.0001 | 0.05  | -9.7322 | -5.2678  |
| 3  | 5      | 4          | 10      | -7.5000  | 1.1227         | 85 | -6.68   | <.0001  | <.0001 | 0.05  | -9.7322 | -5.2678  |
| 3  | 5      | 5          | 5       | 3.5000   | 1.1227         | 85 | 3.12    | 0.0025  | 0.3974 | 0.05  | 1.2678  | 5.7322   |
| 3  | 5      | 5          | 6       | 2.2500   | 1.1227         | 85 | 2.00    | 0.0482  | 0.9864 | 0.05  | 0.01776 | 4.4822   |
| 3  | 5      | 5          | 7       | 1.5000   | 1.1227         | 85 | 1.34    | 0.1851  | 1.0000 | 0.05  | -0.7322 | 3.7322   |
| 3  | 5      | 5          | 8       | 1.2500   | 1.1227         | 85 | 1.11    | 0.2687  | 1.0000 | 0.05  | -0.9822 | 3.4822   |
| 3  | 5      | 5          | 9       | -0.7500  | 1.1227         | 85 | -0.67   | 0.5059  | 1.0000 | 0.05  | -2.9822 | 1.4822   |
| 3  | 5      | 5          | 10      | -2.5000  | 1.1227         | 85 | -2.23   | 0.0286  | 0.9482 | 0.05  | -4.7322 | -0.2678  |
| 3  | 5      | 6          | 5       | 3.0000   | 1.1227         | 85 | 2.67    | 0.0090  | 0.7289 | 0.05  | 0.7678  | 5.2322   |
| 3  | 5      | 6          | 6       | 1.2500   | 1.1227         | 85 | 1.11    | 0.2687  | 1.0000 | 0.05  | -0.9822 | 3.4822   |
| 3  | 5      | 6          | 7       | 0.7500   | 1.1227         | 85 | 0.67    | 0.5059  | 1.0000 | 0.05  | -1.4822 | 2.9822   |



## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 2  | 10     | 4          | 9       | -3.2549      | 6.3990       |
| 2  | 10     | 4          | 10      | -3.2549      | 6.3990       |
| 2  | 10     | 5          | 5       | 7.7451       | 17.3990      |
| 2  | 10     | 5          | 6       | 6.4951       | 16.1490      |
| 2  | 10     | 5          | 7       | 5.7451       | 15.3990      |
| 2  | 10     | 5          | 8       | 5.4951       | 15.1490      |
| 2  | 10     | 5          | 9       | 3.4951       | 13.1490      |
| 2  | 10     | 5          | 10      | 1.7451       | 11.3990      |
| 2  | 10     | 6          | 5       | 7.2451       | 16.8990      |
| 2  | 10     | 6          | 6       | 5.4951       | 15.1490      |
| 2  | 10     | 6          | 7       | 4.9951       | 14.6490      |
| 2  | 10     | 6          | 8       | 4.4951       | 14.1490      |
| 2  | 10     | 6          | 9       | 4.4951       | 14.1490      |
| 2  | 10     | 6          | 10      | 3.7451       | 13.3990      |
| 3  | 5      | 3          | 6       | -4.3154      | 1.3154       |
| 3  | 5      | 3          | 7       | -4.8154      | 0.8154       |
| 3  | 5      | 3          | 8       | -5.5654      | 0.06542      |
| 3  | 5      | 3          | 9       | -6.8154      | -1.1846      |
| 3  | 5      | 3          | 10      | -8.3154      | -2.6846      |
| 3  | 5      | 4          | 5       | -5.9658      | 2.9658       |
| 3  | 5      | 4          | 6       | -7.4658      | 1.4658       |
| 3  | 5      | 4          | 7       | -8.4658      | 0.4658       |
| 3  | 5      | 4          | 8       | -10.2158     | -1.2842      |
| 3  | 5      | 4          | 9       | -11.9658     | -3.0342      |
| 3  | 5      | 4          | 10      | -11.9658     | -3.0342      |
| 3  | 5      | 5          | 5       | -0.9658      | 7.9658       |
| 3  | 5      | 5          | 6       | -2.2158      | 6.7158       |
| 3  | 5      | 5          | 7       | -2.9658      | 5.9658       |
| 3  | 5      | 5          | 8       | -3.2158      | 5.7158       |
| 3  | 5      | 5          | 9       | -5.2158      | 3.7158       |
| 3  | 5      | 5          | 10      | -6.9658      | 1.9658       |
| 3  | 5      | 6          | 5       | -1.4658      | 7.4658       |
| 3  | 5      | 6          | 6       | -3.2158      | 5.7158       |
| 3  | 5      | 6          | 7       | -3.7158      | 5.2158       |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 8       | 0.2500   | 1.1227         | 85 | 0.22    | 0.8243  | 1.0000 | 0.05  | -1.9822 | 2.4822  |
| 3  | 5      | 6          | 9       | 0.2500   | 1.1227         | 85 | 0.22    | 0.8243  | 1.0000 | 0.05  | -1.9822 | 2.4822  |
| 3  | 5      | 6          | 10      | -0.5000  | 1.1227         | 85 | -0.45   | 0.6572  | 1.0000 | 0.05  | -2.7322 | 1.7322  |
| 3  | 6      | 3          | 7       | -0.5000  | 0.7078         | 85 | -0.71   | 0.4819  | 1.0000 | 0.05  | -1.9073 | 0.9073  |
| 3  | 6      | 3          | 8       | -1.2500  | 0.7078         | 85 | -1.77   | 0.0810  | 0.9981 | 0.05  | -2.6573 | 0.1573  |
| 3  | 6      | 3          | 9       | -2.5000  | 0.7078         | 85 | -3.53   | 0.0007  | 0.1666 | 0.05  | -3.9073 | -1.0927 |
| 3  | 6      | 3          | 10      | -4.0000  | 0.7078         | 85 | -5.65   | <.0001  | 0.0001 | 0.05  | -5.4073 | -2.5927 |
| 3  | 6      | 4          | 5       | -2.5E-7  | 1.1227         | 85 | -0.00   | 1.0000  | 1.0000 | 0.05  | -2.2322 | 2.2322  |
| 3  | 6      | 4          | 6       | -1.5000  | 1.1227         | 85 | -1.34   | 0.1851  | 1.0000 | 0.05  | -3.7322 | 0.7322  |
| 3  | 6      | 4          | 7       | -2.5000  | 1.1227         | 85 | -2.23   | 0.0286  | 0.9482 | 0.05  | -4.7322 | -0.2678 |
| 3  | 6      | 4          | 8       | -4.2500  | 1.1227         | 85 | -3.79   | 0.0003  | 0.0866 | 0.05  | -6.4822 | -2.0178 |
| 3  | 6      | 4          | 9       | -6.0000  | 1.1227         | 85 | -5.34   | <.0001  | 0.0004 | 0.05  | -8.2322 | -3.7678 |
| 3  | 6      | 4          | 10      | -6.0000  | 1.1227         | 85 | -5.34   | <.0001  | 0.0004 | 0.05  | -8.2322 | -3.7678 |
| 3  | 6      | 5          | 5       | 5.0000   | 1.1227         | 85 | 4.45    | <.0001  | 0.0109 | 0.05  | 2.7678  | 7.2322  |
| 3  | 6      | 5          | 6       | 3.7500   | 1.1227         | 85 | 3.34    | 0.0012  | 0.2576 | 0.05  | 1.5178  | 5.9822  |
| 3  | 6      | 5          | 7       | 3.0000   | 1.1227         | 85 | 2.67    | 0.0090  | 0.7289 | 0.05  | 0.7678  | 5.2322  |
| 3  | 6      | 5          | 8       | 2.7500   | 1.1227         | 85 | 2.45    | 0.0164  | 0.8637 | 0.05  | 0.5178  | 4.9822  |
| 3  | 6      | 5          | 9       | 0.7500   | 1.1227         | 85 | 0.67    | 0.5059  | 1.0000 | 0.05  | -1.4822 | 2.9822  |
| 3  | 6      | 5          | 10      | -1.0000  | 1.1227         | 85 | -0.89   | 0.3756  | 1.0000 | 0.05  | -3.2322 | 1.2322  |
| 3  | 6      | 6          | 5       | 4.5000   | 1.1227         | 85 | 4.01    | 0.0001  | 0.0457 | 0.05  | 2.2678  | 6.7322  |
| 3  | 6      | 6          | 6       | 2.7500   | 1.1227         | 85 | 2.45    | 0.0164  | 0.8637 | 0.05  | 0.5178  | 4.9822  |
| 3  | 6      | 6          | 7       | 2.2500   | 1.1227         | 85 | 2.00    | 0.0482  | 0.9864 | 0.05  | 0.01776 | 4.4822  |
| 3  | 6      | 6          | 8       | 1.7500   | 1.1227         | 85 | 1.56    | 0.1228  | 0.9998 | 0.05  | -0.4822 | 3.9822  |
| 3  | 6      | 6          | 9       | 1.7500   | 1.1227         | 85 | 1.56    | 0.1228  | 0.9998 | 0.05  | -0.4822 | 3.9822  |
| 3  | 6      | 6          | 10      | 1.0000   | 1.1227         | 85 | 0.89    | 0.3756  | 1.0000 | 0.05  | -1.2322 | 3.2322  |
| 3  | 7      | 3          | 8       | -0.7500  | 0.7078         | 85 | -1.06   | 0.2923  | 1.0000 | 0.05  | -2.1573 | 0.6573  |
| 3  | 7      | 3          | 9       | -2.0000  | 0.7078         | 85 | -2.83   | 0.0059  | 0.6160 | 0.05  | -3.4073 | -0.5927 |
| 3  | 7      | 3          | 10      | -3.5000  | 0.7078         | 85 | -4.94   | <.0001  | 0.0019 | 0.05  | -4.9073 | -2.0927 |
| 3  | 7      | 4          | 5       | 0.5000   | 1.1227         | 85 | 0.45    | 0.6572  | 1.0000 | 0.05  | -1.7322 | 2.7322  |
| 3  | 7      | 4          | 6       | -1.0000  | 1.1227         | 85 | -0.89   | 0.3756  | 1.0000 | 0.05  | -3.2322 | 1.2322  |
| 3  | 7      | 4          | 7       | -2.0000  | 1.1227         | 85 | -1.78   | 0.0784  | 0.9978 | 0.05  | -4.2322 | 0.2322  |
| 3  | 7      | 4          | 8       | -3.7500  | 1.1227         | 85 | -3.34   | 0.0012  | 0.2576 | 0.05  | -5.9822 | -1.5178 |
| 3  | 7      | 4          | 9       | -5.5000  | 1.1227         | 85 | -4.90   | <.0001  | 0.0022 | 0.05  | -7.7322 | -3.2678 |
| 3  | 7      | 4          | 10      | -5.5000  | 1.1227         | 85 | -4.90   | <.0001  | 0.0022 | 0.05  | -7.7322 | -3.2678 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 3  | 5      | 6          | 8       | -4.2158      | 4.7158       |
| 3  | 5      | 6          | 9       | -4.2158      | 4.7158       |
| 3  | 5      | 6          | 10      | -4.9658      | 3.9658       |
| 3  | 6      | 3          | 7       | -3.3154      | 2.3154       |
| 3  | 6      | 3          | 8       | -4.0654      | 1.5654       |
| 3  | 6      | 3          | 9       | -5.3154      | 0.3154       |
| 3  | 6      | 3          | 10      | -6.8154      | -1.1846      |
| 3  | 6      | 4          | 5       | -4.4658      | 4.4658       |
| 3  | 6      | 4          | 6       | -5.9658      | 2.9658       |
| 3  | 6      | 4          | 7       | -6.9658      | 1.9658       |
| 3  | 6      | 4          | 8       | -8.7158      | 0.2158       |
| 3  | 6      | 4          | 9       | -10.4658     | -1.5342      |
| 3  | 6      | 4          | 10      | -10.4658     | -1.5342      |
| 3  | 6      | 5          | 5       | 0.5342       | 9.4658       |
| 3  | 6      | 5          | 6       | -0.7158      | 8.2158       |
| 3  | 6      | 5          | 7       | -1.4658      | 7.4658       |
| 3  | 6      | 5          | 8       | -1.7158      | 7.2158       |
| 3  | 6      | 5          | 9       | -3.7158      | 5.2158       |
| 3  | 6      | 5          | 10      | -5.4658      | 3.4658       |
| 3  | 6      | 6          | 5       | 0.03419      | 8.9658       |
| 3  | 6      | 6          | 6       | -1.7158      | 7.2158       |
| 3  | 6      | 6          | 7       | -2.2158      | 6.7158       |
| 3  | 6      | 6          | 8       | -2.7158      | 6.2158       |
| 3  | 6      | 6          | 9       | -2.7158      | 6.2158       |
| 3  | 6      | 6          | 10      | -3.4658      | 5.4658       |
| 3  | 7      | 3          | 8       | -3.5654      | 2.0654       |
| 3  | 7      | 3          | 9       | -4.8154      | 0.8154       |
| 3  | 7      | 3          | 10      | -6.3154      | -0.6846      |
| 3  | 7      | 4          | 5       | -3.9658      | 4.9658       |
| 3  | 7      | 4          | 6       | -5.4658      | 3.4658       |
| 3  | 7      | 4          | 7       | -6.4658      | 2.4658       |
| 3  | 7      | 4          | 8       | -8.2158      | 0.7158       |
| 3  | 7      | 4          | 9       | -9.9658      | -1.0342      |
| 3  | 7      | 4          | 10      | -9.9658      | -1.0342      |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 5       | 5.5000   | 1.1227         | 85 | 4.90    | <.0001  | 0.0022 | 0.05  | 3.2678  | 7.7322   |
| 3  | 7      | 5          | 6       | 4.2500   | 1.1227         | 85 | 3.79    | 0.0003  | 0.0866 | 0.05  | 2.0178  | 6.4822   |
| 3  | 7      | 5          | 7       | 3.5000   | 1.1227         | 85 | 3.12    | 0.0025  | 0.3974 | 0.05  | 1.2678  | 5.7322   |
| 3  | 7      | 5          | 8       | 3.2500   | 1.1227         | 85 | 2.89    | 0.0048  | 0.5631 | 0.05  | 1.0178  | 5.4822   |
| 3  | 7      | 5          | 9       | 1.2500   | 1.1227         | 85 | 1.11    | 0.2687  | 1.0000 | 0.05  | -0.9822 | 3.4822   |
| 3  | 7      | 5          | 10      | -0.5000  | 1.1227         | 85 | -0.45   | 0.6572  | 1.0000 | 0.05  | -2.7322 | 1.7322   |
| 3  | 7      | 6          | 5       | 5.0000   | 1.1227         | 85 | 4.45    | <.0001  | 0.0109 | 0.05  | 2.7678  | 7.2322   |
| 3  | 7      | 6          | 6       | 3.2500   | 1.1227         | 85 | 2.89    | 0.0048  | 0.5631 | 0.05  | 1.0178  | 5.4822   |
| 3  | 7      | 6          | 7       | 2.7500   | 1.1227         | 85 | 2.45    | 0.0164  | 0.8637 | 0.05  | 0.5178  | 4.9822   |
| 3  | 7      | 6          | 8       | 2.2500   | 1.1227         | 85 | 2.00    | 0.0482  | 0.9864 | 0.05  | 0.01776 | 4.4822   |
| 3  | 7      | 6          | 9       | 2.2500   | 1.1227         | 85 | 2.00    | 0.0482  | 0.9864 | 0.05  | 0.01776 | 4.4822   |
| 3  | 7      | 6          | 10      | 1.5000   | 1.1227         | 85 | 1.34    | 0.1851  | 1.0000 | 0.05  | -0.7322 | 3.7322   |
| 3  | 8      | 3          | 9       | -1.2500  | 0.7078         | 85 | -1.77   | 0.0810  | 0.9981 | 0.05  | -2.6573 | 0.1573   |
| 3  | 8      | 3          | 10      | -2.7500  | 0.7078         | 85 | -3.89   | 0.0002  | 0.0654 | 0.05  | -4.1573 | -1.3427  |
| 3  | 8      | 4          | 5       | 1.2500   | 1.1227         | 85 | 1.11    | 0.2687  | 1.0000 | 0.05  | -0.9822 | 3.4822   |
| 3  | 8      | 4          | 6       | -0.2500  | 1.1227         | 85 | -0.22   | 0.8243  | 1.0000 | 0.05  | -2.4822 | 1.9822   |
| 3  | 8      | 4          | 7       | -1.2500  | 1.1227         | 85 | -1.11   | 0.2687  | 1.0000 | 0.05  | -3.4822 | 0.9822   |
| 3  | 8      | 4          | 8       | -3.0000  | 1.1227         | 85 | -2.67   | 0.0090  | 0.7289 | 0.05  | -5.2322 | -0.7678  |
| 3  | 8      | 4          | 9       | -4.7500  | 1.1227         | 85 | -4.23   | <.0001  | 0.0229 | 0.05  | -6.9822 | -2.5178  |
| 3  | 8      | 4          | 10      | -4.7500  | 1.1227         | 85 | -4.23   | <.0001  | 0.0229 | 0.05  | -6.9822 | -2.5178  |
| 3  | 8      | 5          | 5       | 6.2500   | 1.1227         | 85 | 5.57    | <.0001  | 0.0002 | 0.05  | 4.0178  | 8.4822   |
| 3  | 8      | 5          | 6       | 5.0000   | 1.1227         | 85 | 4.45    | <.0001  | 0.0109 | 0.05  | 2.7678  | 7.2322   |
| 3  | 8      | 5          | 7       | 4.2500   | 1.1227         | 85 | 3.79    | 0.0003  | 0.0866 | 0.05  | 2.0178  | 6.4822   |
| 3  | 8      | 5          | 8       | 4.0000   | 1.1227         | 85 | 3.56    | 0.0006  | 0.1545 | 0.05  | 1.7678  | 6.2322   |
| 3  | 8      | 5          | 9       | 2.0000   | 1.1227         | 85 | 1.78    | 0.0784  | 0.9978 | 0.05  | -0.2322 | 4.2322   |
| 3  | 8      | 5          | 10      | 0.2500   | 1.1227         | 85 | 0.22    | 0.8243  | 1.0000 | 0.05  | -1.9822 | 2.4822   |
| 3  | 8      | 6          | 5       | 5.7500   | 1.1227         | 85 | 5.12    | <.0001  | 0.0010 | 0.05  | 3.5178  | 7.9822   |
| 3  | 8      | 6          | 6       | 4.0000   | 1.1227         | 85 | 3.56    | 0.0006  | 0.1545 | 0.05  | 1.7678  | 6.2322   |
| 3  | 8      | 6          | 7       | 3.5000   | 1.1227         | 85 | 3.12    | 0.0025  | 0.3974 | 0.05  | 1.2678  | 5.7322   |
| 3  | 8      | 6          | 8       | 3.0000   | 1.1227         | 85 | 2.67    | 0.0090  | 0.7289 | 0.05  | 0.7678  | 5.2322   |
| 3  | 8      | 6          | 9       | 3.0000   | 1.1227         | 85 | 2.67    | 0.0090  | 0.7289 | 0.05  | 0.7678  | 5.2322   |
| 3  | 8      | 6          | 10      | 2.2500   | 1.1227         | 85 | 2.00    | 0.0482  | 0.9864 | 0.05  | 0.01776 | 4.4822   |
| 3  | 9      | 3          | 10      | -1.5000  | 0.7078         | 85 | -2.12   | 0.0370  | 0.9714 | 0.05  | -2.9073 | -0.09270 |
| 3  | 9      | 4          | 5       | 2.5000   | 1.1227         | 85 | 2.23    | 0.0286  | 0.9482 | 0.05  | 0.2678  | 4.7322   |

## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 3  | 7      | 5          | 5       | 1.0342       | 9.9658       |
| 3  | 7      | 5          | 6       | -0.2158      | 8.7158       |
| 3  | 7      | 5          | 7       | -0.9658      | 7.9658       |
| 3  | 7      | 5          | 8       | -1.2158      | 7.7158       |
| 3  | 7      | 5          | 9       | -3.2158      | 5.7158       |
| 3  | 7      | 5          | 10      | -4.9658      | 3.9658       |
| 3  | 7      | 6          | 5       | 0.5342       | 9.4658       |
| 3  | 7      | 6          | 6       | -1.2158      | 7.7158       |
| 3  | 7      | 6          | 7       | -1.7158      | 7.2158       |
| 3  | 7      | 6          | 8       | -2.2158      | 6.7158       |
| 3  | 7      | 6          | 9       | -2.2158      | 6.7158       |
| 3  | 7      | 6          | 10      | -2.9658      | 5.9658       |
| 3  | 8      | 3          | 9       | -4.0654      | 1.5654       |
| 3  | 8      | 3          | 10      | -5.5654      | 0.06542      |
| 3  | 8      | 4          | 5       | -3.2158      | 5.7158       |
| 3  | 8      | 4          | 6       | -4.7158      | 4.2158       |
| 3  | 8      | 4          | 7       | -5.7158      | 3.2158       |
| 3  | 8      | 4          | 8       | -7.4658      | 1.4658       |
| 3  | 8      | 4          | 9       | -9.2158      | -0.2842      |
| 3  | 8      | 4          | 10      | -9.2158      | -0.2842      |
| 3  | 8      | 5          | 5       | 1.7842       | 10.7158      |
| 3  | 8      | 5          | 6       | 0.5342       | 9.4658       |
| 3  | 8      | 5          | 7       | -0.2158      | 8.7158       |
| 3  | 8      | 5          | 8       | -0.4658      | 8.4658       |
| 3  | 8      | 5          | 9       | -2.4658      | 6.4658       |
| 3  | 8      | 5          | 10      | -4.2158      | 4.7158       |
| 3  | 8      | 6          | 5       | 1.2842       | 10.2158      |
| 3  | 8      | 6          | 6       | -0.4658      | 8.4658       |
| 3  | 8      | 6          | 7       | -0.9658      | 7.9658       |
| 3  | 8      | 6          | 8       | -1.4658      | 7.4658       |
| 3  | 8      | 6          | 9       | -1.4658      | 7.4658       |
| 3  | 8      | 6          | 10      | -2.2158      | 6.7158       |
| 3  | 9      | 3          | 10      | -4.3154      | 1.3154       |
| 3  | 9      | 4          | 5       | -1.9658      | 6.9658       |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 6       | 1.0000   | 1.1227         | 85 | 0.89    | 0.3756  | 1.0000 | 0.05  | -1.2322 | 3.2322  |
| 3  | 9      | 4          | 7       | 1.42E-14 | 1.1227         | 85 | 0.00    | 1.0000  | 1.0000 | 0.05  | -2.2322 | 2.2322  |
| 3  | 9      | 4          | 8       | -1.7500  | 1.1227         | 85 | -1.56   | 0.1228  | 0.9998 | 0.05  | -3.9822 | 0.4822  |
| 3  | 9      | 4          | 9       | -3.5000  | 1.1227         | 85 | -3.12   | 0.0025  | 0.3974 | 0.05  | -5.7322 | -1.2678 |
| 3  | 9      | 4          | 10      | -3.5000  | 1.1227         | 85 | -3.12   | 0.0025  | 0.3974 | 0.05  | -5.7322 | -1.2678 |
| 3  | 9      | 5          | 5       | 7.5000   | 1.1227         | 85 | 6.68    | <.0001  | <.0001 | 0.05  | 5.2678  | 9.7322  |
| 3  | 9      | 5          | 6       | 6.2500   | 1.1227         | 85 | 5.57    | <.0001  | 0.0002 | 0.05  | 4.0178  | 8.4822  |
| 3  | 9      | 5          | 7       | 5.5000   | 1.1227         | 85 | 4.90    | <.0001  | 0.0022 | 0.05  | 3.2678  | 7.7322  |
| 3  | 9      | 5          | 8       | 5.2500   | 1.1227         | 85 | 4.68    | <.0001  | 0.0050 | 0.05  | 3.0178  | 7.4822  |
| 3  | 9      | 5          | 9       | 3.2500   | 1.1227         | 85 | 2.89    | 0.0048  | 0.5631 | 0.05  | 1.0178  | 5.4822  |
| 3  | 9      | 5          | 10      | 1.5000   | 1.1227         | 85 | 1.34    | 0.1851  | 1.0000 | 0.05  | -0.7322 | 3.7322  |
| 3  | 9      | 6          | 5       | 7.0000   | 1.1227         | 85 | 6.23    | <.0001  | <.0001 | 0.05  | 4.7678  | 9.2322  |
| 3  | 9      | 6          | 6       | 5.2500   | 1.1227         | 85 | 4.68    | <.0001  | 0.0050 | 0.05  | 3.0178  | 7.4822  |
| 3  | 9      | 6          | 7       | 4.7500   | 1.1227         | 85 | 4.23    | <.0001  | 0.0229 | 0.05  | 2.5178  | 6.9822  |
| 3  | 9      | 6          | 8       | 4.2500   | 1.1227         | 85 | 3.79    | 0.0003  | 0.0866 | 0.05  | 2.0178  | 6.4822  |
| 3  | 9      | 6          | 9       | 4.2500   | 1.1227         | 85 | 3.79    | 0.0003  | 0.0866 | 0.05  | 2.0178  | 6.4822  |
| 3  | 9      | 6          | 10      | 3.5000   | 1.1227         | 85 | 3.12    | 0.0025  | 0.3974 | 0.05  | 1.2678  | 5.7322  |
| 3  | 10     | 4          | 5       | 4.0000   | 1.1227         | 85 | 3.56    | 0.0006  | 0.1545 | 0.05  | 1.7678  | 6.2322  |
| 3  | 10     | 4          | 6       | 2.5000   | 1.1227         | 85 | 2.23    | 0.0286  | 0.9482 | 0.05  | 0.2678  | 4.7322  |
| 3  | 10     | 4          | 7       | 1.5000   | 1.1227         | 85 | 1.34    | 0.1851  | 1.0000 | 0.05  | -0.7322 | 3.7322  |
| 3  | 10     | 4          | 8       | -0.2500  | 1.1227         | 85 | -0.22   | 0.8243  | 1.0000 | 0.05  | -2.4822 | 1.9822  |
| 3  | 10     | 4          | 9       | -2.0000  | 1.1227         | 85 | -1.78   | 0.0784  | 0.9978 | 0.05  | -4.2322 | 0.2322  |
| 3  | 10     | 4          | 10      | -2.0000  | 1.1227         | 85 | -1.78   | 0.0784  | 0.9978 | 0.05  | -4.2322 | 0.2322  |
| 3  | 10     | 5          | 5       | 9.0000   | 1.1227         | 85 | 8.02    | <.0001  | <.0001 | 0.05  | 6.7678  | 11.2322 |
| 3  | 10     | 5          | 6       | 7.7500   | 1.1227         | 85 | 6.90    | <.0001  | <.0001 | 0.05  | 5.5178  | 9.9822  |
| 3  | 10     | 5          | 7       | 7.0000   | 1.1227         | 85 | 6.23    | <.0001  | <.0001 | 0.05  | 4.7678  | 9.2322  |
| 3  | 10     | 5          | 8       | 6.7500   | 1.1227         | 85 | 6.01    | <.0001  | <.0001 | 0.05  | 4.5178  | 8.9822  |
| 3  | 10     | 5          | 9       | 4.7500   | 1.1227         | 85 | 4.23    | <.0001  | 0.0229 | 0.05  | 2.5178  | 6.9822  |
| 3  | 10     | 5          | 10      | 3.0000   | 1.1227         | 85 | 2.67    | 0.0090  | 0.7289 | 0.05  | 0.7678  | 5.2322  |
| 3  | 10     | 6          | 5       | 8.5000   | 1.1227         | 85 | 7.57    | <.0001  | <.0001 | 0.05  | 6.2678  | 10.7322 |
| 3  | 10     | 6          | 6       | 6.7500   | 1.1227         | 85 | 6.01    | <.0001  | <.0001 | 0.05  | 4.5178  | 8.9822  |
| 3  | 10     | 6          | 7       | 6.2500   | 1.1227         | 85 | 5.57    | <.0001  | 0.0002 | 0.05  | 4.0178  | 8.4822  |
| 3  | 10     | 6          | 8       | 5.7500   | 1.1227         | 85 | 5.12    | <.0001  | 0.0010 | 0.05  | 3.5178  | 7.9822  |
| 3  | 10     | 6          | 9       | 5.7500   | 1.1227         | 85 | 5.12    | <.0001  | 0.0010 | 0.05  | 3.5178  | 7.9822  |

## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 3  | 9      | 4          | 6       | -3.4658      | 5.4658       |
| 3  | 9      | 4          | 7       | -4.4658      | 4.4658       |
| 3  | 9      | 4          | 8       | -6.2158      | 2.7158       |
| 3  | 9      | 4          | 9       | -7.9658      | 0.9658       |
| 3  | 9      | 4          | 10      | -7.9658      | 0.9658       |
| 3  | 9      | 5          | 5       | 3.0342       | 11.9658      |
| 3  | 9      | 5          | 6       | 1.7842       | 10.7158      |
| 3  | 9      | 5          | 7       | 1.0342       | 9.9658       |
| 3  | 9      | 5          | 8       | 0.7842       | 9.7158       |
| 3  | 9      | 5          | 9       | -1.2158      | 7.7158       |
| 3  | 9      | 5          | 10      | -2.9658      | 5.9658       |
| 3  | 9      | 6          | 5       | 2.5342       | 11.4658      |
| 3  | 9      | 6          | 6       | 0.7842       | 9.7158       |
| 3  | 9      | 6          | 7       | 0.2842       | 9.2158       |
| 3  | 9      | 6          | 8       | -0.2158      | 8.7158       |
| 3  | 9      | 6          | 9       | -0.2158      | 8.7158       |
| 3  | 9      | 6          | 10      | -0.9658      | 7.9658       |
| 3  | 10     | 4          | 5       | -0.4658      | 8.4658       |
| 3  | 10     | 4          | 6       | -1.9658      | 6.9658       |
| 3  | 10     | 4          | 7       | -2.9658      | 5.9658       |
| 3  | 10     | 4          | 8       | -4.7158      | 4.2158       |
| 3  | 10     | 4          | 9       | -6.4658      | 2.4658       |
| 3  | 10     | 4          | 10      | -6.4658      | 2.4658       |
| 3  | 10     | 5          | 5       | 4.5342       | 13.4658      |
| 3  | 10     | 5          | 6       | 3.2842       | 12.2158      |
| 3  | 10     | 5          | 7       | 2.5342       | 11.4658      |
| 3  | 10     | 5          | 8       | 2.2842       | 11.2158      |
| 3  | 10     | 5          | 9       | 0.2842       | 9.2158       |
| 3  | 10     | 5          | 10      | -1.4658      | 7.4658       |
| 3  | 10     | 6          | 5       | 4.0342       | 12.9658      |
| 3  | 10     | 6          | 6       | 2.2842       | 11.2158      |
| 3  | 10     | 6          | 7       | 1.7842       | 10.7158      |
| 3  | 10     | 6          | 8       | 1.2842       | 10.2158      |
| 3  | 10     | 6          | 9       | 1.2842       | 10.2158      |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |          |                |    |         |         |        |       |         |          |
|--|--------|------------|---------|----------|----------------|----|---------|---------|--------|-------|---------|----------|
| treatment  | number | _treatment | _number | Estimate | Standard Error | DF | t Value | Pr >  t | Adj P  | Alpha | Lower   | Upper    |
| 3  | 10     | 6          | 10      | 5.0000   | 1.1227         | 85 | 4.45    | <.0001  | 0.0109 | 0.05  | 2.7678  | 7.2322   |
| 4  | 5      | 4          | 6       | -1.5000  | 0.7078         | 85 | -2.12   | 0.0370  | 0.9714 | 0.05  | -2.9073 | -0.09270 |
| 4  | 5      | 4          | 7       | -2.5000  | 0.7078         | 85 | -3.53   | 0.0007  | 0.1666 | 0.05  | -3.9073 | -1.0927  |
| 4  | 5      | 4          | 8       | -4.2500  | 0.7078         | 85 | -6.00   | <.0001  | <.0001 | 0.05  | -5.6573 | -2.8427  |
| 4  | 5      | 4          | 9       | -6.0000  | 0.7078         | 85 | -8.48   | <.0001  | <.0001 | 0.05  | -7.4073 | -4.5927  |
| 4  | 5      | 4          | 10      | -6.0000  | 0.7078         | 85 | -8.48   | <.0001  | <.0001 | 0.05  | -7.4073 | -4.5927  |
| 4  | 5      | 5          | 5       | 5.0000   | 1.1227         | 85 | 4.45    | <.0001  | 0.0109 | 0.05  | 2.7678  | 7.2322   |
| 4  | 5      | 5          | 6       | 3.7500   | 1.1227         | 85 | 3.34    | 0.0012  | 0.2576 | 0.05  | 1.5178  | 5.9822   |
| 4  | 5      | 5          | 7       | 3.0000   | 1.1227         | 85 | 2.67    | 0.0090  | 0.7289 | 0.05  | 0.7678  | 5.2322   |
| 4  | 5      | 5          | 8       | 2.7500   | 1.1227         | 85 | 2.45    | 0.0164  | 0.8637 | 0.05  | 0.5178  | 4.9822   |
| 4  | 5      | 5          | 9       | 0.7500   | 1.1227         | 85 | 0.67    | 0.5059  | 1.0000 | 0.05  | -1.4822 | 2.9822   |
| 4  | 5      | 5          | 10      | -1.0000  | 1.1227         | 85 | -0.89   | 0.3756  | 1.0000 | 0.05  | -3.2322 | 1.2322   |
| 4  | 5      | 6          | 5       | 4.5000   | 1.1227         | 85 | 4.01    | 0.0001  | 0.0457 | 0.05  | 2.2678  | 6.7322   |
| 4  | 5      | 6          | 6       | 2.7500   | 1.1227         | 85 | 2.45    | 0.0164  | 0.8637 | 0.05  | 0.5178  | 4.9822   |
| 4  | 5      | 6          | 7       | 2.2500   | 1.1227         | 85 | 2.00    | 0.0482  | 0.9864 | 0.05  | 0.01776 | 4.4822   |
| 4  | 5      | 6          | 8       | 1.7500   | 1.1227         | 85 | 1.56    | 0.1228  | 0.9998 | 0.05  | -0.4822 | 3.9822   |
| 4  | 5      | 6          | 9       | 1.7500   | 1.1227         | 85 | 1.56    | 0.1228  | 0.9998 | 0.05  | -0.4822 | 3.9822   |
| 4  | 5      | 6          | 10      | 1.0000   | 1.1227         | 85 | 0.89    | 0.3756  | 1.0000 | 0.05  | -1.2322 | 3.2322   |
| 4  | 6      | 4          | 7       | -1.0000  | 0.7078         | 85 | -1.41   | 0.1614  | 1.0000 | 0.05  | -2.4073 | 0.4073   |
| 4  | 6      | 4          | 8       | -2.7500  | 0.7078         | 85 | -3.89   | 0.0002  | 0.0654 | 0.05  | -4.1573 | -1.3427  |
| 4  | 6      | 4          | 9       | -4.5000  | 0.7078         | 85 | -6.36   | <.0001  | <.0001 | 0.05  | -5.9073 | -3.0927  |
| 4  | 6      | 4          | 10      | -4.5000  | 0.7078         | 85 | -6.36   | <.0001  | <.0001 | 0.05  | -5.9073 | -3.0927  |
| 4  | 6      | 5          | 5       | 6.5000   | 1.1227         | 85 | 5.79    | <.0001  | <.0001 | 0.05  | 4.2678  | 8.7322   |
| 4  | 6      | 5          | 6       | 5.2500   | 1.1227         | 85 | 4.68    | <.0001  | 0.0050 | 0.05  | 3.0178  | 7.4822   |
| 4  | 6      | 5          | 7       | 4.5000   | 1.1227         | 85 | 4.01    | 0.0001  | 0.0457 | 0.05  | 2.2678  | 6.7322   |
| 4  | 6      | 5          | 8       | 4.2500   | 1.1227         | 85 | 3.79    | 0.0003  | 0.0866 | 0.05  | 2.0178  | 6.4822   |
| 4  | 6      | 5          | 9       | 2.2500   | 1.1227         | 85 | 2.00    | 0.0482  | 0.9864 | 0.05  | 0.01776 | 4.4822   |
| 4  | 6      | 5          | 10      | 0.5000   | 1.1227         | 85 | 0.45    | 0.6572  | 1.0000 | 0.05  | -1.7322 | 2.7322   |
| 4  | 6      | 6          | 5       | 6.0000   | 1.1227         | 85 | 5.34    | <.0001  | 0.0004 | 0.05  | 3.7678  | 8.2322   |
| 4  | 6      | 6          | 6       | 4.2500   | 1.1227         | 85 | 3.79    | 0.0003  | 0.0866 | 0.05  | 2.0178  | 6.4822   |
| 4  | 6      | 6          | 7       | 3.7500   | 1.1227         | 85 | 3.34    | 0.0012  | 0.2576 | 0.05  | 1.5178  | 5.9822   |
| 4  | 6      | 6          | 8       | 3.2500   | 1.1227         | 85 | 2.89    | 0.0048  | 0.5631 | 0.05  | 1.0178  | 5.4822   |
| 4  | 6      | 6          | 9       | 3.2500   | 1.1227         | 85 | 2.89    | 0.0048  | 0.5631 | 0.05  | 1.0178  | 5.4822   |
| 4  | 6      | 6          | 10      | 2.5000   | 1.1227         | 85 | 2.23    | 0.0286  | 0.9482 | 0.05  | 0.2678  | 4.7322   |



The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |           |           |
|--|--------|------------|---------|-----------|-----------|
| treatment  | number | _treatment | _number | Adj Lower | Adj Upper |
| 3  | 10     | 6          | 10      | 0.5342    | 9.4658    |
| 4  | 5      | 4          | 6       | -4.3154   | 1.3154    |
| 4  | 5      | 4          | 7       | -5.3154   | 0.3154    |
| 4  | 5      | 4          | 8       | -7.0654   | -1.4346   |
| 4  | 5      | 4          | 9       | -8.8154   | -3.1846   |
| 4  | 5      | 4          | 10      | -8.8154   | -3.1846   |
| 4  | 5      | 5          | 5       | 0.5342    | 9.4658    |
| 4  | 5      | 5          | 6       | -0.7158   | 8.2158    |
| 4  | 5      | 5          | 7       | -1.4658   | 7.4658    |
| 4  | 5      | 5          | 8       | -1.7158   | 7.2158    |
| 4  | 5      | 5          | 9       | -3.7158   | 5.2158    |
| 4  | 5      | 5          | 10      | -5.4658   | 3.4658    |
| 4  | 5      | 6          | 5       | 0.03419   | 8.9658    |
| 4  | 5      | 6          | 6       | -1.7158   | 7.2158    |
| 4  | 5      | 6          | 7       | -2.2158   | 6.7158    |
| 4  | 5      | 6          | 8       | -2.7158   | 6.2158    |
| 4  | 5      | 6          | 9       | -2.7158   | 6.2158    |
| 4  | 5      | 6          | 10      | -3.4658   | 5.4658    |
| 4  | 6      | 4          | 7       | -3.8154   | 1.8154    |
| 4  | 6      | 4          | 8       | -5.5654   | 0.06542   |
| 4  | 6      | 4          | 9       | -7.3154   | -1.6846   |
| 4  | 6      | 4          | 10      | -7.3154   | -1.6846   |
| 4  | 6      | 5          | 5       | 2.0342    | 10.9658   |
| 4  | 6      | 5          | 6       | 0.7842    | 9.7158    |
| 4  | 6      | 5          | 7       | 0.03419   | 8.9658    |
| 4  | 6      | 5          | 8       | -0.2158   | 8.7158    |
| 4  | 6      | 5          | 9       | -2.2158   | 6.7158    |
| 4  | 6      | 5          | 10      | -3.9658   | 4.9658    |
| 4  | 6      | 6          | 5       | 1.5342    | 10.4658   |
| 4  | 6      | 6          | 6       | -0.2158   | 8.7158    |
| 4  | 6      | 6          | 7       | -0.7158   | 8.2158    |
| 4  | 6      | 6          | 8       | -1.2158   | 7.7158    |
| 4  | 6      | 6          | 9       | -1.2158   | 7.7158    |
| 4  | 6      | 6          | 10      | -1.9658   | 6.9658    |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 8       | -1.7500  | 0.7078         | 85 | -2.47   | 0.0154  | 0.8520 | 0.05  | -3.1573 | -0.3427 |
| 4  | 7      | 4          | 9       | -3.5000  | 0.7078         | 85 | -4.94   | <.0001  | 0.0019 | 0.05  | -4.9073 | -2.0927 |
| 4  | 7      | 4          | 10      | -3.5000  | 0.7078         | 85 | -4.94   | <.0001  | 0.0019 | 0.05  | -4.9073 | -2.0927 |
| 4  | 7      | 5          | 5       | 7.5000   | 1.1227         | 85 | 6.68    | <.0001  | <.0001 | 0.05  | 5.2678  | 9.7322  |
| 4  | 7      | 5          | 6       | 6.2500   | 1.1227         | 85 | 5.57    | <.0001  | 0.0002 | 0.05  | 4.0178  | 8.4822  |
| 4  | 7      | 5          | 7       | 5.5000   | 1.1227         | 85 | 4.90    | <.0001  | 0.0022 | 0.05  | 3.2678  | 7.7322  |
| 4  | 7      | 5          | 8       | 5.2500   | 1.1227         | 85 | 4.68    | <.0001  | 0.0050 | 0.05  | 3.0178  | 7.4822  |
| 4  | 7      | 5          | 9       | 3.2500   | 1.1227         | 85 | 2.89    | 0.0048  | 0.5631 | 0.05  | 1.0178  | 5.4822  |
| 4  | 7      | 5          | 10      | 1.5000   | 1.1227         | 85 | 1.34    | 0.1851  | 1.0000 | 0.05  | -0.7322 | 3.7322  |
| 4  | 7      | 6          | 5       | 7.0000   | 1.1227         | 85 | 6.23    | <.0001  | <.0001 | 0.05  | 4.7678  | 9.2322  |
| 4  | 7      | 6          | 6       | 5.2500   | 1.1227         | 85 | 4.68    | <.0001  | 0.0050 | 0.05  | 3.0178  | 7.4822  |
| 4  | 7      | 6          | 7       | 4.7500   | 1.1227         | 85 | 4.23    | <.0001  | 0.0229 | 0.05  | 2.5178  | 6.9822  |
| 4  | 7      | 6          | 8       | 4.2500   | 1.1227         | 85 | 3.79    | 0.0003  | 0.0866 | 0.05  | 2.0178  | 6.4822  |
| 4  | 7      | 6          | 9       | 4.2500   | 1.1227         | 85 | 3.79    | 0.0003  | 0.0866 | 0.05  | 2.0178  | 6.4822  |
| 4  | 7      | 6          | 10      | 3.5000   | 1.1227         | 85 | 3.12    | 0.0025  | 0.3974 | 0.05  | 1.2678  | 5.7322  |
| 4  | 8      | 4          | 9       | -1.7500  | 0.7078         | 85 | -2.47   | 0.0154  | 0.8520 | 0.05  | -3.1573 | -0.3427 |
| 4  | 8      | 4          | 10      | -1.7500  | 0.7078         | 85 | -2.47   | 0.0154  | 0.8520 | 0.05  | -3.1573 | -0.3427 |
| 4  | 8      | 5          | 5       | 9.2500   | 1.1227         | 85 | 8.24    | <.0001  | <.0001 | 0.05  | 7.0178  | 11.4822 |
| 4  | 8      | 5          | 6       | 8.0000   | 1.1227         | 85 | 7.13    | <.0001  | <.0001 | 0.05  | 5.7678  | 10.2322 |
| 4  | 8      | 5          | 7       | 7.2500   | 1.1227         | 85 | 6.46    | <.0001  | <.0001 | 0.05  | 5.0178  | 9.4822  |
| 4  | 8      | 5          | 8       | 7.0000   | 1.1227         | 85 | 6.23    | <.0001  | <.0001 | 0.05  | 4.7678  | 9.2322  |
| 4  | 8      | 5          | 9       | 5.0000   | 1.1227         | 85 | 4.45    | <.0001  | 0.0109 | 0.05  | 2.7678  | 7.2322  |
| 4  | 8      | 5          | 10      | 3.2500   | 1.1227         | 85 | 2.89    | 0.0048  | 0.5631 | 0.05  | 1.0178  | 5.4822  |
| 4  | 8      | 6          | 5       | 8.7500   | 1.1227         | 85 | 7.79    | <.0001  | <.0001 | 0.05  | 6.5178  | 10.9822 |
| 4  | 8      | 6          | 6       | 7.0000   | 1.1227         | 85 | 6.23    | <.0001  | <.0001 | 0.05  | 4.7678  | 9.2322  |
| 4  | 8      | 6          | 7       | 6.5000   | 1.1227         | 85 | 5.79    | <.0001  | <.0001 | 0.05  | 4.2678  | 8.7322  |
| 4  | 8      | 6          | 8       | 6.0000   | 1.1227         | 85 | 5.34    | <.0001  | 0.0004 | 0.05  | 3.7678  | 8.2322  |
| 4  | 8      | 6          | 9       | 6.0000   | 1.1227         | 85 | 5.34    | <.0001  | 0.0004 | 0.05  | 3.7678  | 8.2322  |
| 4  | 8      | 6          | 10      | 5.2500   | 1.1227         | 85 | 4.68    | <.0001  | 0.0050 | 0.05  | 3.0178  | 7.4822  |
| 4  | 9      | 4          | 10      | 2.5E-7   | 0.7078         | 85 | 0.00    | 1.0000  | 1.0000 | 0.05  | -1.4073 | 1.4073  |
| 4  | 9      | 5          | 5       | 11.0000  | 1.1227         | 85 | 9.80    | <.0001  | <.0001 | 0.05  | 8.7678  | 13.2322 |
| 4  | 9      | 5          | 6       | 9.7500   | 1.1227         | 85 | 8.68    | <.0001  | <.0001 | 0.05  | 7.5178  | 11.9822 |
| 4  | 9      | 5          | 7       | 9.0000   | 1.1227         | 85 | 8.02    | <.0001  | <.0001 | 0.05  | 6.7678  | 11.2322 |
| 4  | 9      | 5          | 8       | 8.7500   | 1.1227         | 85 | 7.79    | <.0001  | <.0001 | 0.05  | 6.5178  | 10.9822 |

## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 4  | 7      | 4          | 8       | -4.5654      | 1.0654       |
| 4  | 7      | 4          | 9       | -6.3154      | -0.6846      |
| 4  | 7      | 4          | 10      | -6.3154      | -0.6846      |
| 4  | 7      | 5          | 5       | 3.0342       | 11.9658      |
| 4  | 7      | 5          | 6       | 1.7842       | 10.7158      |
| 4  | 7      | 5          | 7       | 1.0342       | 9.9658       |
| 4  | 7      | 5          | 8       | 0.7842       | 9.7158       |
| 4  | 7      | 5          | 9       | -1.2158      | 7.7158       |
| 4  | 7      | 5          | 10      | -2.9658      | 5.9658       |
| 4  | 7      | 6          | 5       | 2.5342       | 11.4658      |
| 4  | 7      | 6          | 6       | 0.7842       | 9.7158       |
| 4  | 7      | 6          | 7       | 0.2842       | 9.2158       |
| 4  | 7      | 6          | 8       | -0.2158      | 8.7158       |
| 4  | 7      | 6          | 9       | -0.2158      | 8.7158       |
| 4  | 7      | 6          | 10      | -0.9658      | 7.9658       |
| 4  | 8      | 4          | 9       | -4.5654      | 1.0654       |
| 4  | 8      | 4          | 10      | -4.5654      | 1.0654       |
| 4  | 8      | 5          | 5       | 4.7842       | 13.7158      |
| 4  | 8      | 5          | 6       | 3.5342       | 12.4658      |
| 4  | 8      | 5          | 7       | 2.7842       | 11.7158      |
| 4  | 8      | 5          | 8       | 2.5342       | 11.4658      |
| 4  | 8      | 5          | 9       | 0.5342       | 9.4658       |
| 4  | 8      | 5          | 10      | -1.2158      | 7.7158       |
| 4  | 8      | 6          | 5       | 4.2842       | 13.2158      |
| 4  | 8      | 6          | 6       | 2.5342       | 11.4658      |
| 4  | 8      | 6          | 7       | 2.0342       | 10.9658      |
| 4  | 8      | 6          | 8       | 1.5342       | 10.4658      |
| 4  | 8      | 6          | 9       | 1.5342       | 10.4658      |
| 4  | 8      | 6          | 10      | 0.7842       | 9.7158       |
| 4  | 9      | 4          | 10      | -2.8154      | 2.8154       |
| 4  | 9      | 5          | 5       | 6.5342       | 15.4658      |
| 4  | 9      | 5          | 6       | 5.2842       | 14.2158      |
| 4  | 9      | 5          | 7       | 4.5342       | 13.4658      |
| 4  | 9      | 5          | 8       | 4.2842       | 13.2158      |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 9       | 6.7500   | 1.1227         | 85 | 6.01    | <.0001  | <.0001 | 0.05  | 4.5178  | 8.9822   |
| 4  | 9      | 5          | 10      | 5.0000   | 1.1227         | 85 | 4.45    | <.0001  | 0.0109 | 0.05  | 2.7678  | 7.2322   |
| 4  | 9      | 6          | 5       | 10.5000  | 1.1227         | 85 | 9.35    | <.0001  | <.0001 | 0.05  | 8.2678  | 12.7322  |
| 4  | 9      | 6          | 6       | 8.7500   | 1.1227         | 85 | 7.79    | <.0001  | <.0001 | 0.05  | 6.5178  | 10.9822  |
| 4  | 9      | 6          | 7       | 8.2500   | 1.1227         | 85 | 7.35    | <.0001  | <.0001 | 0.05  | 6.0178  | 10.4822  |
| 4  | 9      | 6          | 8       | 7.7500   | 1.1227         | 85 | 6.90    | <.0001  | <.0001 | 0.05  | 5.5178  | 9.9822   |
| 4  | 9      | 6          | 9       | 7.7500   | 1.1227         | 85 | 6.90    | <.0001  | <.0001 | 0.05  | 5.5178  | 9.9822   |
| 4  | 9      | 6          | 10      | 7.0000   | 1.1227         | 85 | 6.23    | <.0001  | <.0001 | 0.05  | 4.7678  | 9.2322   |
| 4  | 10     | 5          | 5       | 11.0000  | 1.1227         | 85 | 9.80    | <.0001  | <.0001 | 0.05  | 8.7678  | 13.2322  |
| 4  | 10     | 5          | 6       | 9.7500   | 1.1227         | 85 | 8.68    | <.0001  | <.0001 | 0.05  | 7.5178  | 11.9822  |
| 4  | 10     | 5          | 7       | 9.0000   | 1.1227         | 85 | 8.02    | <.0001  | <.0001 | 0.05  | 6.7678  | 11.2322  |
| 4  | 10     | 5          | 8       | 8.7500   | 1.1227         | 85 | 7.79    | <.0001  | <.0001 | 0.05  | 6.5178  | 10.9822  |
| 4  | 10     | 5          | 9       | 6.7500   | 1.1227         | 85 | 6.01    | <.0001  | <.0001 | 0.05  | 4.5178  | 8.9822   |
| 4  | 10     | 5          | 10      | 5.0000   | 1.1227         | 85 | 4.45    | <.0001  | 0.0109 | 0.05  | 2.7678  | 7.2322   |
| 4  | 10     | 6          | 5       | 10.5000  | 1.1227         | 85 | 9.35    | <.0001  | <.0001 | 0.05  | 8.2678  | 12.7322  |
| 4  | 10     | 6          | 6       | 8.7500   | 1.1227         | 85 | 7.79    | <.0001  | <.0001 | 0.05  | 6.5178  | 10.9822  |
| 4  | 10     | 6          | 7       | 8.2500   | 1.1227         | 85 | 7.35    | <.0001  | <.0001 | 0.05  | 6.0178  | 10.4822  |
| 4  | 10     | 6          | 8       | 7.7500   | 1.1227         | 85 | 6.90    | <.0001  | <.0001 | 0.05  | 5.5178  | 9.9822   |
| 4  | 10     | 6          | 9       | 7.7500   | 1.1227         | 85 | 6.90    | <.0001  | <.0001 | 0.05  | 5.5178  | 9.9822   |
| 4  | 10     | 6          | 10      | 7.0000   | 1.1227         | 85 | 6.23    | <.0001  | <.0001 | 0.05  | 4.7678  | 9.2322   |
| 5  | 5      | 5          | 6       | -1.2500  | 0.7078         | 85 | -1.77   | 0.0810  | 0.9981 | 0.05  | -2.6573 | 0.1573   |
| 5  | 5      | 5          | 7       | -2.0000  | 0.7078         | 85 | -2.83   | 0.0059  | 0.6160 | 0.05  | -3.4073 | -0.5927  |
| 5  | 5      | 5          | 8       | -2.2500  | 0.7078         | 85 | -3.18   | 0.0021  | 0.3556 | 0.05  | -3.6573 | -0.8427  |
| 5  | 5      | 5          | 9       | -4.2500  | 0.7078         | 85 | -6.00   | <.0001  | <.0001 | 0.05  | -5.6573 | -2.8427  |
| 5  | 5      | 5          | 10      | -6.0000  | 0.7078         | 85 | -8.48   | <.0001  | <.0001 | 0.05  | -7.4073 | -4.5927  |
| 5  | 5      | 6          | 5       | -0.5000  | 1.1227         | 85 | -0.45   | 0.6572  | 1.0000 | 0.05  | -2.7322 | 1.7322   |
| 5  | 5      | 6          | 6       | -2.2500  | 1.1227         | 85 | -2.00   | 0.0482  | 0.9864 | 0.05  | -4.4822 | -0.01776 |
| 5  | 5      | 6          | 7       | -2.7500  | 1.1227         | 85 | -2.45   | 0.0164  | 0.8637 | 0.05  | -4.9822 | -0.5178  |
| 5  | 5      | 6          | 8       | -3.2500  | 1.1227         | 85 | -2.89   | 0.0048  | 0.5631 | 0.05  | -5.4822 | -1.0178  |
| 5  | 5      | 6          | 9       | -3.2500  | 1.1227         | 85 | -2.89   | 0.0048  | 0.5631 | 0.05  | -5.4822 | -1.0178  |
| 5  | 5      | 6          | 10      | -4.0000  | 1.1227         | 85 | -3.56   | 0.0006  | 0.1545 | 0.05  | -6.2322 | -1.7678  |
| 5  | 6      | 5          | 7       | -0.7500  | 0.7078         | 85 | -1.06   | 0.2923  | 1.0000 | 0.05  | -2.1573 | 0.6573   |
| 5  | 6      | 5          | 8       | -1.0000  | 0.7078         | 85 | -1.41   | 0.1614  | 1.0000 | 0.05  | -2.4073 | 0.4073   |
| 5  | 6      | 5          | 9       | -3.0000  | 0.7078         | 85 | -4.24   | <.0001  | 0.0223 | 0.05  | -4.4073 | -1.5927  |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |           |           |
|--|--------|------------|---------|-----------|-----------|
| treatment  | number | _treatment | _number | Adj Lower | Adj Upper |
| 4  | 9      | 5          | 9       | 2.2842    | 11.2158   |
| 4  | 9      | 5          | 10      | 0.5342    | 9.4658    |
| 4  | 9      | 6          | 5       | 6.0342    | 14.9658   |
| 4  | 9      | 6          | 6       | 4.2842    | 13.2158   |
| 4  | 9      | 6          | 7       | 3.7842    | 12.7158   |
| 4  | 9      | 6          | 8       | 3.2842    | 12.2158   |
| 4  | 9      | 6          | 9       | 3.2842    | 12.2158   |
| 4  | 9      | 6          | 10      | 2.5342    | 11.4658   |
| 4  | 10     | 5          | 5       | 6.5342    | 15.4658   |
| 4  | 10     | 5          | 6       | 5.2842    | 14.2158   |
| 4  | 10     | 5          | 7       | 4.5342    | 13.4658   |
| 4  | 10     | 5          | 8       | 4.2842    | 13.2158   |
| 4  | 10     | 5          | 9       | 2.2842    | 11.2158   |
| 4  | 10     | 5          | 10      | 0.5342    | 9.4658    |
| 4  | 10     | 6          | 5       | 6.0342    | 14.9658   |
| 4  | 10     | 6          | 6       | 4.2842    | 13.2158   |
| 4  | 10     | 6          | 7       | 3.7842    | 12.7158   |
| 4  | 10     | 6          | 8       | 3.2842    | 12.2158   |
| 4  | 10     | 6          | 9       | 3.2842    | 12.2158   |
| 4  | 10     | 6          | 10      | 2.5342    | 11.4658   |
| 5  | 5      | 5          | 6       | -4.0654   | 1.5654    |
| 5  | 5      | 5          | 7       | -4.8154   | 0.8154    |
| 5  | 5      | 5          | 8       | -5.0654   | 0.5654    |
| 5  | 5      | 5          | 9       | -7.0654   | -1.4346   |
| 5  | 5      | 5          | 10      | -8.8154   | -3.1846   |
| 5  | 5      | 6          | 5       | -4.9658   | 3.9658    |
| 5  | 5      | 6          | 6       | -6.7158   | 2.2158    |
| 5  | 5      | 6          | 7       | -7.2158   | 1.7158    |
| 5  | 5      | 6          | 8       | -7.7158   | 1.2158    |
| 5  | 5      | 6          | 9       | -7.7158   | 1.2158    |
| 5  | 5      | 6          | 10      | -8.4658   | 0.4658    |
| 5  | 6      | 5          | 7       | -3.5654   | 2.0654    |
| 5  | 6      | 5          | 8       | -3.8154   | 1.8154    |
| 5  | 6      | 5          | 9       | -5.8154   | -0.1846   |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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      | 5          | 10      | -4.7500  | 0.7078         | 85 | -6.71   | <.0001  | <.0001 | 0.05  | -6.1573 | -3.3427 |
| 5  | 6      | 6          | 5       | 0.7500   | 1.1227         | 85 | 0.67    | 0.5059  | 1.0000 | 0.05  | -1.4822 | 2.9822  |
| 5  | 6      | 6          | 6       | -1.0000  | 1.1227         | 85 | -0.89   | 0.3756  | 1.0000 | 0.05  | -3.2322 | 1.2322  |
| 5  | 6      | 6          | 7       | -1.5000  | 1.1227         | 85 | -1.34   | 0.1851  | 1.0000 | 0.05  | -3.7322 | 0.7322  |
| 5  | 6      | 6          | 8       | -2.0000  | 1.1227         | 85 | -1.78   | 0.0784  | 0.9978 | 0.05  | -4.2322 | 0.2322  |
| 5  | 6      | 6          | 9       | -2.0000  | 1.1227         | 85 | -1.78   | 0.0784  | 0.9978 | 0.05  | -4.2322 | 0.2322  |
| 5  | 6      | 6          | 10      | -2.7500  | 1.1227         | 85 | -2.45   | 0.0164  | 0.8637 | 0.05  | -4.9822 | -0.5178 |
| 5  | 7      | 5          | 8       | -0.2500  | 0.7078         | 85 | -0.35   | 0.7248  | 1.0000 | 0.05  | -1.6573 | 1.1573  |
| 5  | 7      | 5          | 9       | -2.2500  | 0.7078         | 85 | -3.18   | 0.0021  | 0.3556 | 0.05  | -3.6573 | -0.8427 |
| 5  | 7      | 5          | 10      | -4.0000  | 0.7078         | 85 | -5.65   | <.0001  | 0.0001 | 0.05  | -5.4073 | -2.5927 |
| 5  | 7      | 6          | 5       | 1.5000   | 1.1227         | 85 | 1.34    | 0.1851  | 1.0000 | 0.05  | -0.7322 | 3.7322  |
| 5  | 7      | 6          | 6       | -0.2500  | 1.1227         | 85 | -0.22   | 0.8243  | 1.0000 | 0.05  | -2.4822 | 1.9822  |
| 5  | 7      | 6          | 7       | -0.7500  | 1.1227         | 85 | -0.67   | 0.5059  | 1.0000 | 0.05  | -2.9822 | 1.4822  |
| 5  | 7      | 6          | 8       | -1.2500  | 1.1227         | 85 | -1.11   | 0.2687  | 1.0000 | 0.05  | -3.4822 | 0.9822  |
| 5  | 7      | 6          | 9       | -1.2500  | 1.1227         | 85 | -1.11   | 0.2687  | 1.0000 | 0.05  | -3.4822 | 0.9822  |
| 5  | 7      | 6          | 10      | -2.0000  | 1.1227         | 85 | -1.78   | 0.0784  | 0.9978 | 0.05  | -4.2322 | 0.2322  |
| 5  | 8      | 5          | 9       | -2.0000  | 0.7078         | 85 | -2.83   | 0.0059  | 0.6160 | 0.05  | -3.4073 | -0.5927 |
| 5  | 8      | 5          | 10      | -3.7500  | 0.7078         | 85 | -5.30   | <.0001  | 0.0005 | 0.05  | -5.1573 | -2.3427 |
| 5  | 8      | 6          | 5       | 1.7500   | 1.1227         | 85 | 1.56    | 0.1228  | 0.9998 | 0.05  | -0.4822 | 3.9822  |
| 5  | 8      | 6          | 6       | -619E-14 | 1.1227         | 85 | -0.00   | 1.0000  | 1.0000 | 0.05  | -2.2322 | 2.2322  |
| 5  | 8      | 6          | 7       | -0.5000  | 1.1227         | 85 | -0.45   | 0.6572  | 1.0000 | 0.05  | -2.7322 | 1.7322  |
| 5  | 8      | 6          | 8       | -1.0000  | 1.1227         | 85 | -0.89   | 0.3756  | 1.0000 | 0.05  | -3.2322 | 1.2322  |
| 5  | 8      | 6          | 9       | -1.0000  | 1.1227         | 85 | -0.89   | 0.3756  | 1.0000 | 0.05  | -3.2322 | 1.2322  |
| 5  | 8      | 6          | 10      | -1.7500  | 1.1227         | 85 | -1.56   | 0.1228  | 0.9998 | 0.05  | -3.9822 | 0.4822  |
| 5  | 9      | 5          | 10      | -1.7500  | 0.7078         | 85 | -2.47   | 0.0154  | 0.8520 | 0.05  | -3.1573 | -0.3427 |
| 5  | 9      | 6          | 5       | 3.7500   | 1.1227         | 85 | 3.34    | 0.0012  | 0.2576 | 0.05  | 1.5178  | 5.9822  |
| 5  | 9      | 6          | 6       | 2.0000   | 1.1227         | 85 | 1.78    | 0.0784  | 0.9978 | 0.05  | -0.2322 | 4.2322  |
| 5  | 9      | 6          | 7       | 1.5000   | 1.1227         | 85 | 1.34    | 0.1851  | 1.0000 | 0.05  | -0.7322 | 3.7322  |
| 5  | 9      | 6          | 8       | 1.0000   | 1.1227         | 85 | 0.89    | 0.3756  | 1.0000 | 0.05  | -1.2322 | 3.2322  |
| 5  | 9      | 6          | 9       | 1.0000   | 1.1227         | 85 | 0.89    | 0.3756  | 1.0000 | 0.05  | -1.2322 | 3.2322  |
| 5  | 9      | 6          | 10      | 0.2500   | 1.1227         | 85 | 0.22    | 0.8243  | 1.0000 | 0.05  | -1.9822 | 2.4822  |
| 5  | 10     | 6          | 5       | 5.5000   | 1.1227         | 85 | 4.90    | <.0001  | 0.0022 | 0.05  | 3.2678  | 7.7322  |
| 5  | 10     | 6          | 6       | 3.7500   | 1.1227         | 85 | 3.34    | 0.0012  | 0.2576 | 0.05  | 1.5178  | 5.9822  |
| 5  | 10     | 6          | 7       | 3.2500   | 1.1227         | 85 | 2.89    | 0.0048  | 0.5631 | 0.05  | 1.0178  | 5.4822  |

## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 5  | 6      | 5          | 10      | -7.5654      | -1.9346      |
| 5  | 6      | 6          | 5       | -3.7158      | 5.2158       |
| 5  | 6      | 6          | 6       | -5.4658      | 3.4658       |
| 5  | 6      | 6          | 7       | -5.9658      | 2.9658       |
| 5  | 6      | 6          | 8       | -6.4658      | 2.4658       |
| 5  | 6      | 6          | 9       | -6.4658      | 2.4658       |
| 5  | 6      | 6          | 10      | -7.2158      | 1.7158       |
| 5  | 7      | 5          | 8       | -3.0654      | 2.5654       |
| 5  | 7      | 5          | 9       | -5.0654      | 0.5654       |
| 5  | 7      | 5          | 10      | -6.8154      | -1.1846      |
| 5  | 7      | 6          | 5       | -2.9658      | 5.9658       |
| 5  | 7      | 6          | 6       | -4.7158      | 4.2158       |
| 5  | 7      | 6          | 7       | -5.2158      | 3.7158       |
| 5  | 7      | 6          | 8       | -5.7158      | 3.2158       |
| 5  | 7      | 6          | 9       | -5.7158      | 3.2158       |
| 5  | 7      | 6          | 10      | -6.4658      | 2.4658       |
| 5  | 8      | 5          | 9       | -4.8154      | 0.8154       |
| 5  | 8      | 5          | 10      | -6.5654      | -0.9346      |
| 5  | 8      | 6          | 5       | -2.7158      | 6.2158       |
| 5  | 8      | 6          | 6       | -4.4658      | 4.4658       |
| 5  | 8      | 6          | 7       | -4.9658      | 3.9658       |
| 5  | 8      | 6          | 8       | -5.4658      | 3.4658       |
| 5  | 8      | 6          | 9       | -5.4658      | 3.4658       |
| 5  | 8      | 6          | 10      | -6.2158      | 2.7158       |
| 5  | 9      | 5          | 10      | -4.5654      | 1.0654       |
| 5  | 9      | 6          | 5       | -0.7158      | 8.2158       |
| 5  | 9      | 6          | 6       | -2.4658      | 6.4658       |
| 5  | 9      | 6          | 7       | -2.9658      | 5.9658       |
| 5  | 9      | 6          | 8       | -3.4658      | 5.4658       |
| 5  | 9      | 6          | 9       | -3.4658      | 5.4658       |
| 5  | 9      | 6          | 10      | -4.2158      | 4.7158       |
| 5  | 10     | 6          | 5       | 1.0342       | 9.9658       |
| 5  | 10     | 6          | 6       | -0.7158      | 8.2158       |
| 5  | 10     | 6          | 7       | -1.2158      | 7.7158       |

The PLM Procedure

| Differences of treatment*number Least Squares Means<br>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          | 8       | 2.7500   | 1.1227         | 85 | 2.45    | 0.0164  | 0.8637 | 0.05  | 0.5178  | 4.9822  |
| 5  | 10     | 6          | 9       | 2.7500   | 1.1227         | 85 | 2.45    | 0.0164  | 0.8637 | 0.05  | 0.5178  | 4.9822  |
| 5  | 10     | 6          | 10      | 2.0000   | 1.1227         | 85 | 1.78    | 0.0784  | 0.9978 | 0.05  | -0.2322 | 4.2322  |
| 6  | 5      | 6          | 6       | -1.7500  | 0.7078         | 85 | -2.47   | 0.0154  | 0.8520 | 0.05  | -3.1573 | -0.3427 |
| 6  | 5      | 6          | 7       | -2.2500  | 0.7078         | 85 | -3.18   | 0.0021  | 0.3556 | 0.05  | -3.6573 | -0.8427 |
| 6  | 5      | 6          | 8       | -2.7500  | 0.7078         | 85 | -3.89   | 0.0002  | 0.0654 | 0.05  | -4.1573 | -1.3427 |
| 6  | 5      | 6          | 9       | -2.7500  | 0.7078         | 85 | -3.89   | 0.0002  | 0.0654 | 0.05  | -4.1573 | -1.3427 |
| 6  | 5      | 6          | 10      | -3.5000  | 0.7078         | 85 | -4.94   | <.0001  | 0.0019 | 0.05  | -4.9073 | -2.0927 |
| 6  | 6      | 6          | 7       | -0.5000  | 0.7078         | 85 | -0.71   | 0.4819  | 1.0000 | 0.05  | -1.9073 | 0.9073  |
| 6  | 6      | 6          | 8       | -1.0000  | 0.7078         | 85 | -1.41   | 0.1614  | 1.0000 | 0.05  | -2.4073 | 0.4073  |
| 6  | 6      | 6          | 9       | -1.0000  | 0.7078         | 85 | -1.41   | 0.1614  | 1.0000 | 0.05  | -2.4073 | 0.4073  |
| 6  | 6      | 6          | 10      | -1.7500  | 0.7078         | 85 | -2.47   | 0.0154  | 0.8520 | 0.05  | -3.1573 | -0.3427 |
| 6  | 7      | 6          | 8       | -0.5000  | 0.7078         | 85 | -0.71   | 0.4819  | 1.0000 | 0.05  | -1.9073 | 0.9073  |
| 6  | 7      | 6          | 9       | -0.5000  | 0.7078         | 85 | -0.71   | 0.4819  | 1.0000 | 0.05  | -1.9073 | 0.9073  |
| 6  | 7      | 6          | 10      | -1.2500  | 0.7078         | 85 | -1.77   | 0.0810  | 0.9981 | 0.05  | -2.6573 | 0.1573  |
| 6  | 8      | 6          | 9       | 1.29E-14 | 0.7078         | 85 | 0.00    | 1.0000  | 1.0000 | 0.05  | -1.4073 | 1.4073  |
| 6  | 8      | 6          | 10      | -0.7500  | 0.7078         | 85 | -1.06   | 0.2923  | 1.0000 | 0.05  | -2.1573 | 0.6573  |
| 6  | 9      | 6          | 10      | -0.7500  | 0.7078         | 85 | -1.06   | 0.2923  | 1.0000 | 0.05  | -2.1573 | 0.6573  |



## The PLM Procedure

| Differences of treatment*number Least Squares Means<br>Adjustment for Multiple Comparisons: Tukey-Kramer |        |            |         |              |              |
|--|--------|------------|---------|--------------|--------------|
| treatment  | number | _treatment | _number | Adj<br>Lower | Adj<br>Upper |
| 5  | 10     | 6          | 8       | -1.7158      | 7.2158       |
| 5  | 10     | 6          | 9       | -1.7158      | 7.2158       |
| 5  | 10     | 6          | 10      | -2.4658      | 6.4658       |
| 6  | 5      | 6          | 6       | -4.5654      | 1.0654       |
| 6  | 5      | 6          | 7       | -5.0654      | 0.5654       |
| 6  | 5      | 6          | 8       | -5.5654      | 0.06542      |
| 6  | 5      | 6          | 9       | -5.5654      | 0.06542      |
| 6  | 5      | 6          | 10      | -6.3154      | -0.6846      |
| 6  | 6      | 6          | 7       | -3.3154      | 2.3154       |
| 6  | 6      | 6          | 8       | -3.8154      | 1.8154       |
| 6  | 6      | 6          | 9       | -3.8154      | 1.8154       |
| 6  | 6      | 6          | 10      | -4.5654      | 1.0654       |
| 6  | 7      | 6          | 8       | -3.3154      | 2.3154       |
| 6  | 7      | 6          | 9       | -3.3154      | 2.3154       |
| 6  | 7      | 6          | 10      | -4.0654      | 1.5654       |
| 6  | 8      | 6          | 9       | -2.8154      | 2.8154       |
| 6  | 8      | 6          | 10      | -3.5654      | 2.0654       |
| 6  | 9      | 6          | 10      | -3.5654      | 2.0654       |



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 |   |   |   |   |   |   |
| 2  | 9      | 22.9887  |   | F |   | E |   |   |
|  |        |          |   | F |   | E |   |   |
| 4  | 9      | 22.7500  |   | F |   | E |   |   |
|  |        |          |   | F |   | E |   |   |
| 4  | 10     | 22.7500  |   | F |   | E |   |   |
|  |        |          |   | F |   | E |   |   |
| 2  | 6      | 21.9887  |   | F |   | E | G |   |
|  |        |          |   | F |   | E | G |   |
| 2  | 8      | 21.9887  |   | F |   | E | G |   |
|  |        |          |   | F |   | E | G |   |
| 2  | 7      | 21.6554  |   | F |   | E | G |   |
|  |        |          |   | F |   | E | G |   |
| 4  | 8      | 21.0000  |   | F | H | E | G |   |
|  |        |          |   | F | H | E | G |   |
| 2  | 5      | 20.9887  |   | F | H | E | G |   |
|  |        |          |   | F | H | E | G |   |
| 3  | 10     | 20.7500  |   | F | H | E | G |   |
|  |        |          |   | F | H |   | G |   |
| 3  | 9      | 19.2500  |   | F | H | I | G |   |
|  |        |          |   | F | H | I | G |   |
| 4  | 7      | 19.2500  |   | F | H | I | G |   |
|  |        |          |   | F | H | I | G |   |
| 4  | 6      | 18.2500  | J | F | H | I | G |   |
|  |        |          | J |   | H | I | G |   |
| 3  | 8      | 18.0000  | J | K | H | I | G |   |
|  |        |          | J | K | H | I | G |   |
| 5  | 10     | 17.7500  | J | K | H | I | G |   |
|  |        |          | J | K | H | I | G |   |
| 3  | 7      | 17.2500  | J | K | H | I | G | L |
|  |        |          | J | K | H | I |   | L |
| 4  | 5      | 16.7500  | J | K | H | I |   | L |
|  |        |          | J | K | H | I |   | L |
| 3  | 6      | 16.7500  | J | K | H | I |   | L |
|  |        |          | J | K |   | I |   | 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 |   |   |   |   |   |   |
| 5  | 9      | 16.0000  | J | K |   | I | M | L |
|  |        |          | J | K |   | I | M | L |
| 6  | 10     | 15.7500  | J | K | N | I | M | L |
|  |        |          | J | K | N | I | M | L |
| 3  | 5      | 15.2500  | J | K | N | I | M | L |
|  |        |          | J | K | N | I | M | L |
| 6  | 8      | 15.0000  | J | K | N | I | M | L |
|  |        |          | J | K | N | I | M | L |
| 6  | 9      | 15.0000  | J | K | N | I | M | L |
|  |        |          | J | K | N |   | M | L |
| 6  | 7      | 14.5000  | J | K | N |   | M | L |
|  |        |          | J | K | N |   | M | L |
| 6  | 6      | 14.0000  | J | K | N |   | M | L |
|  |        |          | J | K | N |   | M | L |
| 5  | 8      | 14.0000  | J | K | N |   | M | L |
|  |        |          |   | K | N |   | M | L |
| 5  | 7      | 13.7500  |   | K | N |   | M | L |
|  |        |          |   |   | N |   | M | L |
| 5  | 6      | 13.0000  |   |   | N |   | M | L |
|  |        |          |   |   | N |   | M |   |
| 6  | 5      | 12.2500  |   |   | N |   | M |   |
|  |        |          |   |   | N |   |   |   |
| 5  | 5      | 11.7500  |   |   | N |   |   |   |

**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 | 138 |

| MIVQUE(0) SSQ Matrix |           |                     |           |            |
|----------------------|-----------|---------------------|-----------|------------|
| Source               | replicate | replicate*treatment | Error     | assessment |
| replicate            | 3492.0    | 612.00000           | 102.00000 | 1126.0     |
| replicate*treatment  | 612.00000 | 612.00000           | 102.00000 | 1048.0     |
| Error                | 102.00000 | 102.00000           | 102.00000 | 259.83341  |

| MIVQUE(0) Estimates      |            |
|--------------------------|------------|
| Variance Component       | assessment |
| Var(replicate)           | 0.02708    |
| Var(replicate*treatment) | 1.51834    |
| Var(Error)               | 1.00196    |

**The GLM Procedure**

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

|                                    |    |
|------------------------------------|----|
| <b>Number of Observations Read</b> | 24 |
| <b>Number of Observations Used</b> | 23 |

The GLM Procedure

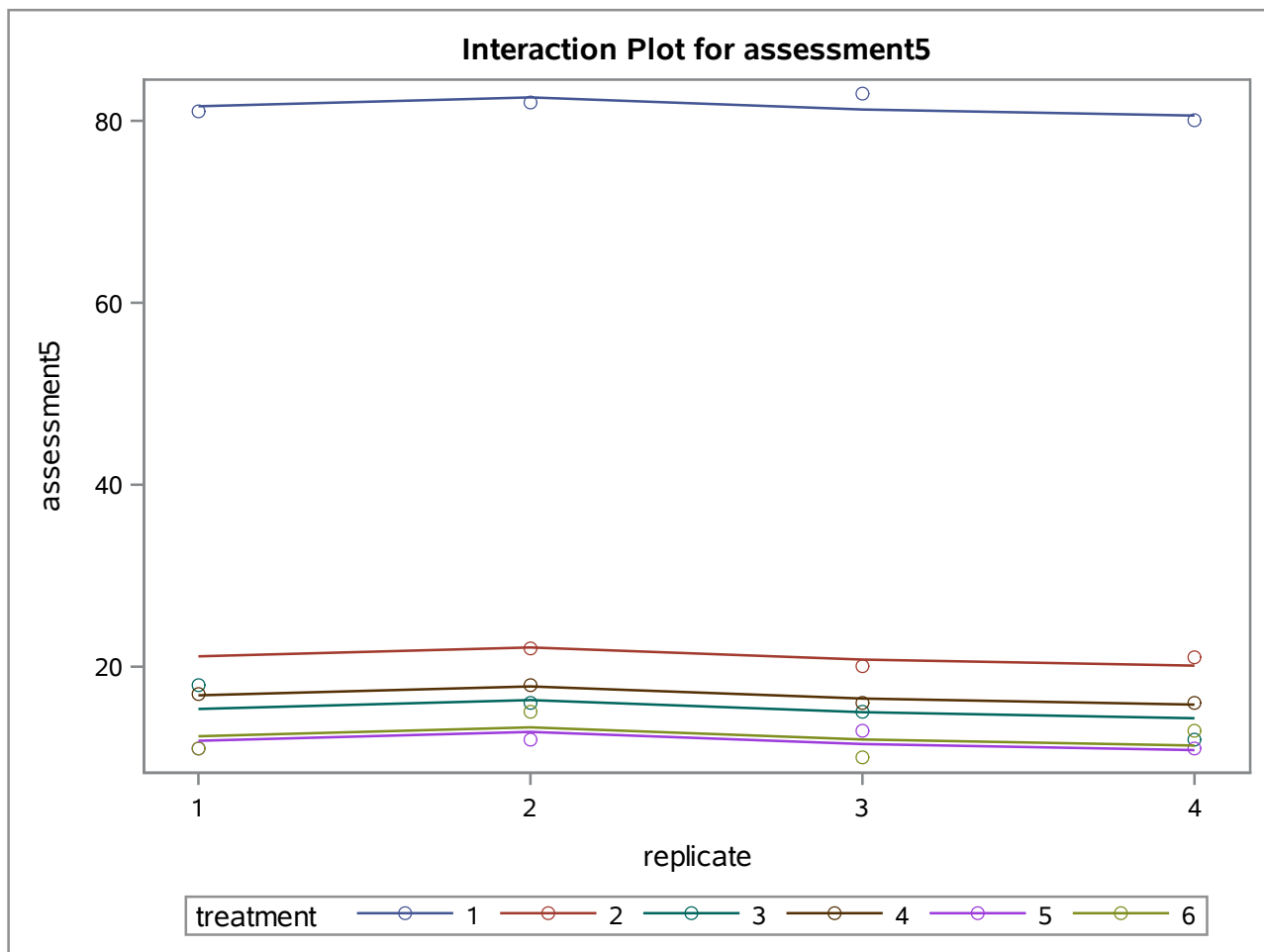
Dependent Variable: assessment5

| Source          | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model           | 8  | 14771.73137    | 1846.46642  | 771.91  | <.0001 |
| Error           | 14 | 33.48890       | 2.39206     |         |        |
| Corrected Total | 22 | 14805.22026    |             |         |        |

| R-Square | Coeff Var | Root MSE | assessment5 Mean |
|----------|-----------|----------|------------------|
| 0.997738 | 5.803015  | 1.546630 | 26.65218         |

| Source    | DF | Type I SS   | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 18.18406    | 6.06135     | 2.53    | 0.0990 |
| treatment | 5  | 14753.54730 | 2950.70946  | 1233.54 | <.0001 |

| Source    | DF | Type III SS | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 12.51112    | 4.17037     | 1.74    | 0.2041 |
| treatment | 5  | 14753.54730 | 2950.70946  | 1233.54 | <.0001 |



The GLM Procedure

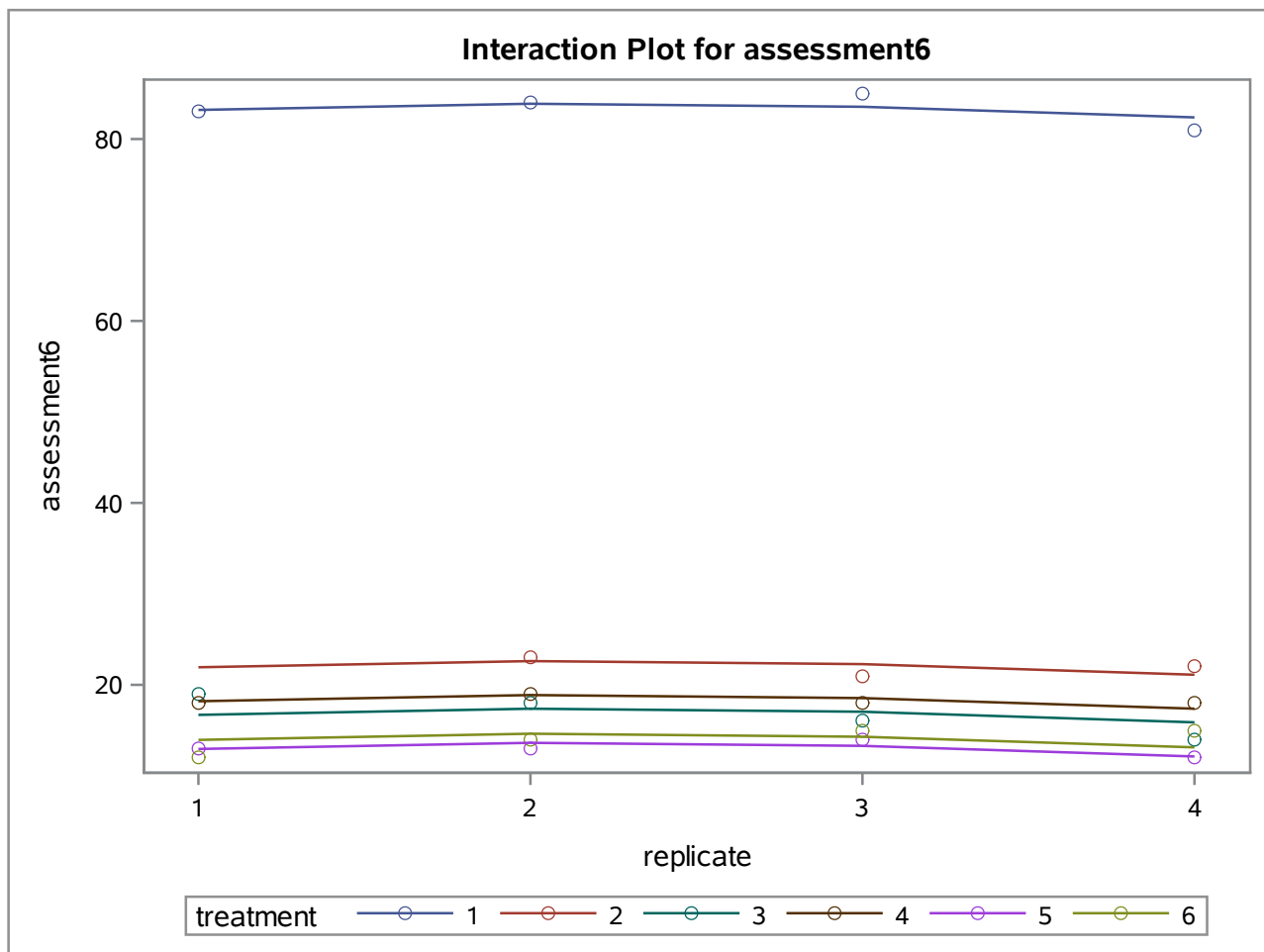
Dependent Variable: assessment6

| Source          | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model           | 8  | 14895.82276    | 1861.97785  | 973.08  | <.0001 |
| Error           | 14 | 26.78890       | 1.91349     |         |        |
| Corrected Total | 22 | 14922.61166    |             |         |        |

| R-Square | Coeff Var | Root MSE | assessment6 Mean |
|----------|-----------|----------|------------------|
| 0.998205 | 4.917416  | 1.383291 | 28.13044         |

| Source    | DF | Type I SS   | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 12.27536    | 4.09179     | 2.14    | 0.1411 |
| treatment | 5  | 14883.54740 | 2976.70948  | 1555.64 | <.0001 |

| Source    | DF | Type III SS | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 7.46111     | 2.48704     | 1.30    | 0.3135 |
| treatment | 5  | 14883.54740 | 2976.70948  | 1555.64 | <.0001 |





The GLM Procedure

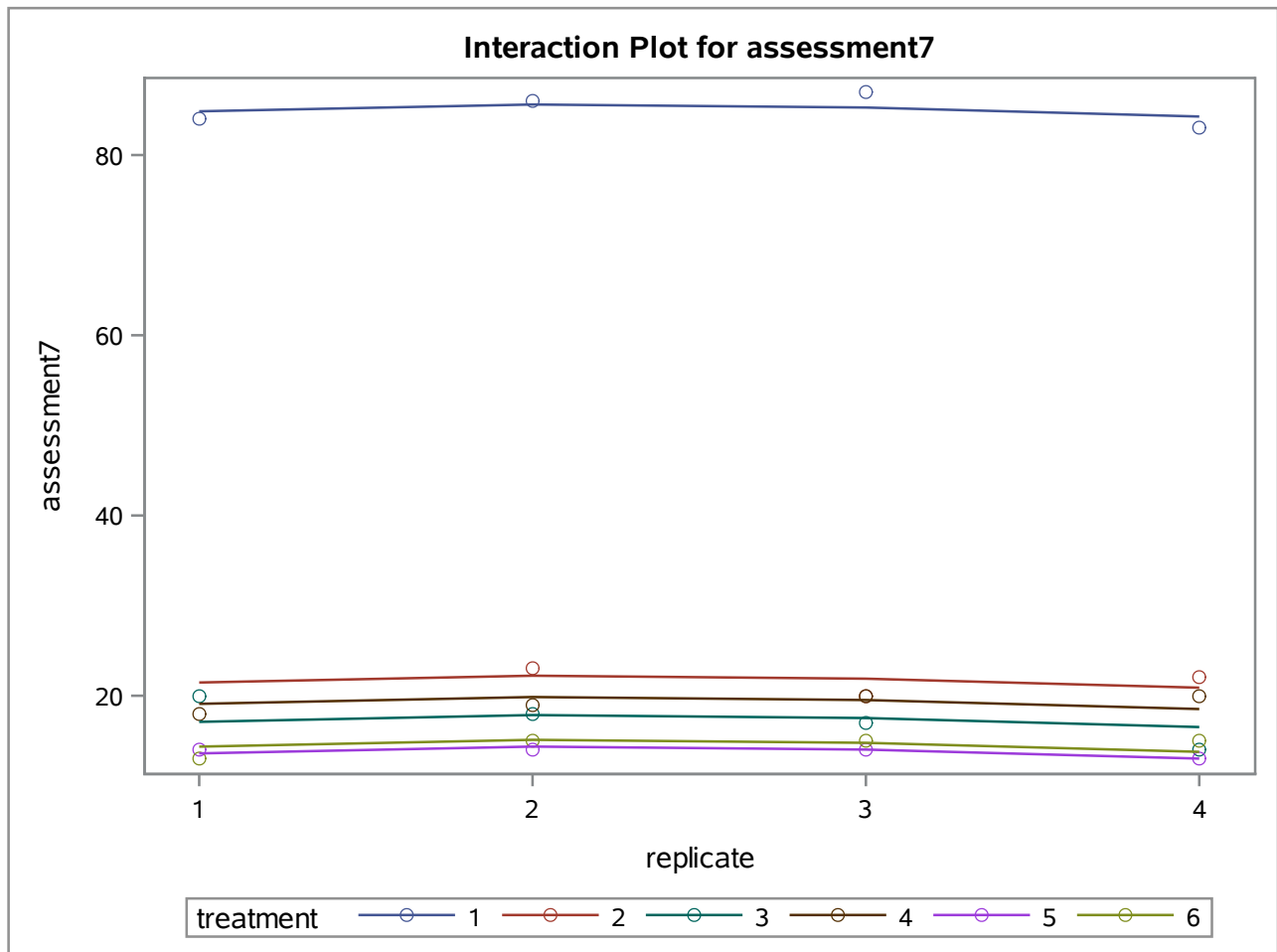
Dependent Variable: assessment7

| Source          | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model           | 8  | 15414.62290    | 1926.82786  | 793.66  | <.0001 |
| Error           | 14 | 33.98890       | 2.42778     |         |        |
| Corrected Total | 22 | 15448.61180    |             |         |        |

| R-Square | Coeff Var | Root MSE | assessment7 Mean |
|----------|-----------|----------|------------------|
| 0.997800 | 5.397147  | 1.558133 | 28.86957         |

| Source    | DF | Type I SS   | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 11.30870    | 3.76957     | 1.55    | 0.2450 |
| treatment | 5  | 15403.31420 | 3080.66284  | 1268.92 | <.0001 |

| Source    | DF | Type III SS | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 5.92778     | 1.97593     | 0.81    | 0.5072 |
| treatment | 5  | 15403.31420 | 3080.66284  | 1268.92 | <.0001 |



The GLM Procedure

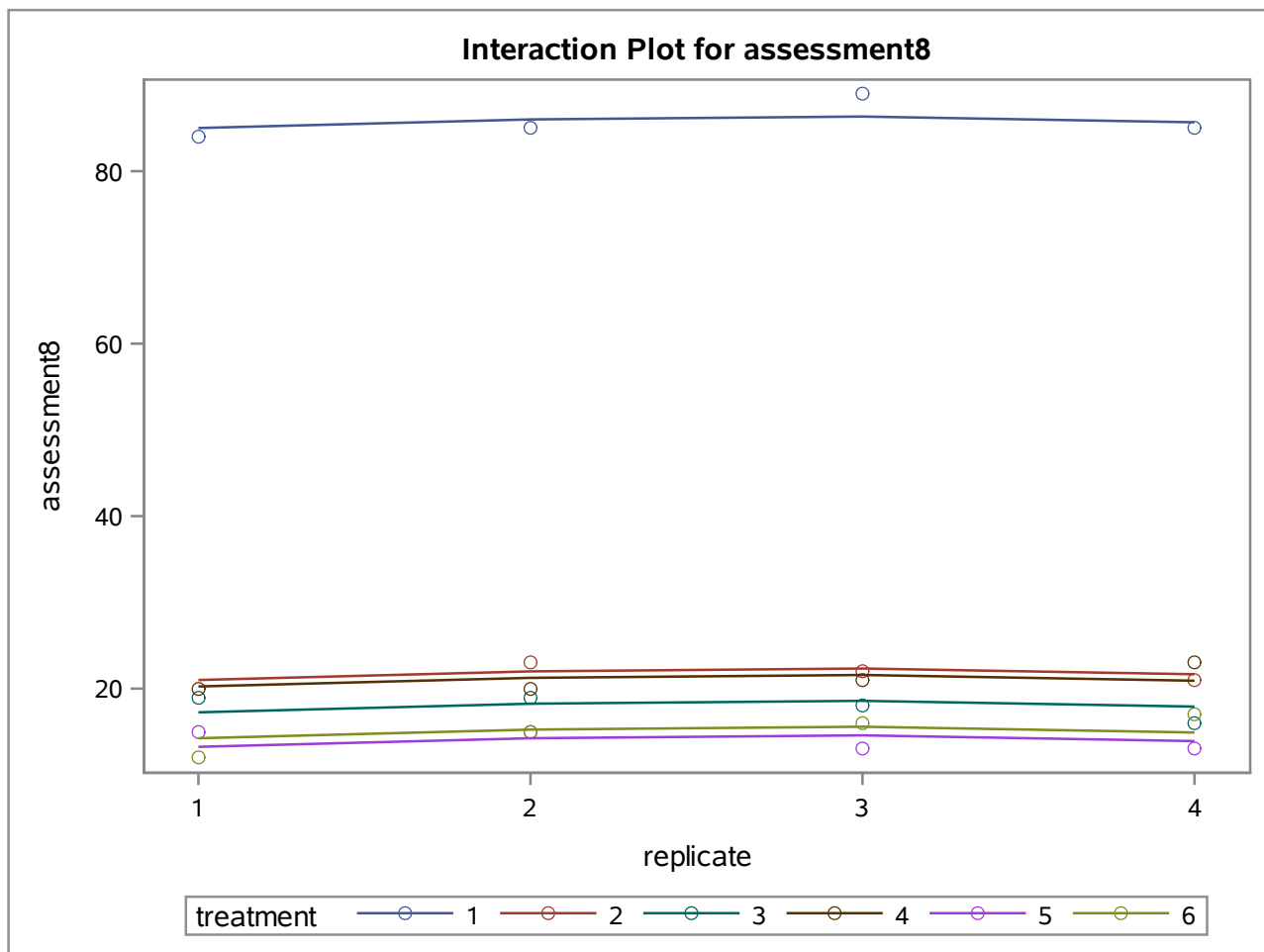
Dependent Variable: assessment8

| Source          | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model           | 8  | 15449.81472    | 1931.22684  | 648.89  | <.0001 |
| Error           | 14 | 41.66668       | 2.97619     |         |        |
| Corrected Total | 22 | 15491.48140    |             |         |        |

| R-Square | Coeff Var | Root MSE | assessment8 Mean |
|----------|-----------|----------|------------------|
| 0.997310 | 5.826545  | 1.725164 | 29.60870         |

| Source    | DF | Type I SS   | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 2.31159     | 0.77053     | 0.26    | 0.8538 |
| treatment | 5  | 15447.50313 | 3089.50063  | 1038.07 | <.0001 |

| Source    | DF | Type III SS | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 5.08334     | 1.69445     | 0.57    | 0.6443 |
| treatment | 5  | 15447.50313 | 3089.50063  | 1038.07 | <.0001 |



The GLM Procedure

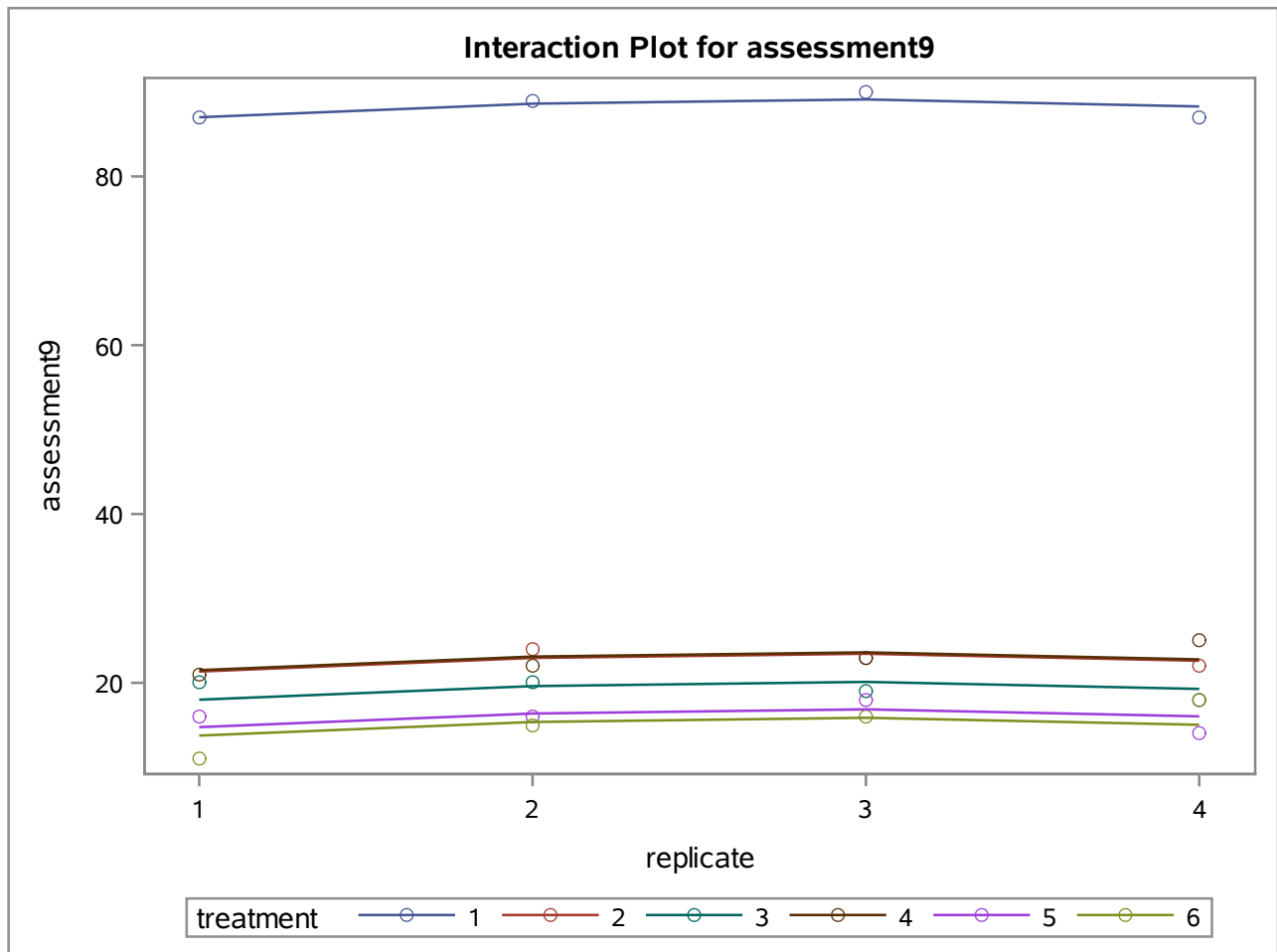
Dependent Variable: assessment9

| Source          | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model           | 8  | 16063.23755    | 2007.90469  | 673.76  | <.0001 |
| Error           | 14 | 41.72224       | 2.98016     |         |        |
| Corrected Total | 22 | 16104.95979    |             |         |        |

| R-Square | Coeff Var | Root MSE | assessment9 Mean |
|----------|-----------|----------|------------------|
| 0.997409 | 5.560955  | 1.726314 | 31.04348         |

| Source    | DF | Type I SS   | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 2.12319     | 0.70773     | 0.24    | 0.8687 |
| treatment | 5  | 16061.11436 | 3212.22287  | 1077.87 | <.0001 |

| Source    | DF | Type III SS | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 12.52778    | 4.17593     | 1.40    | 0.2838 |
| treatment | 5  | 16061.11436 | 3212.22287  | 1077.87 | <.0001 |



### Split Plot - Multivariate Repeated

#### The GLM Procedure

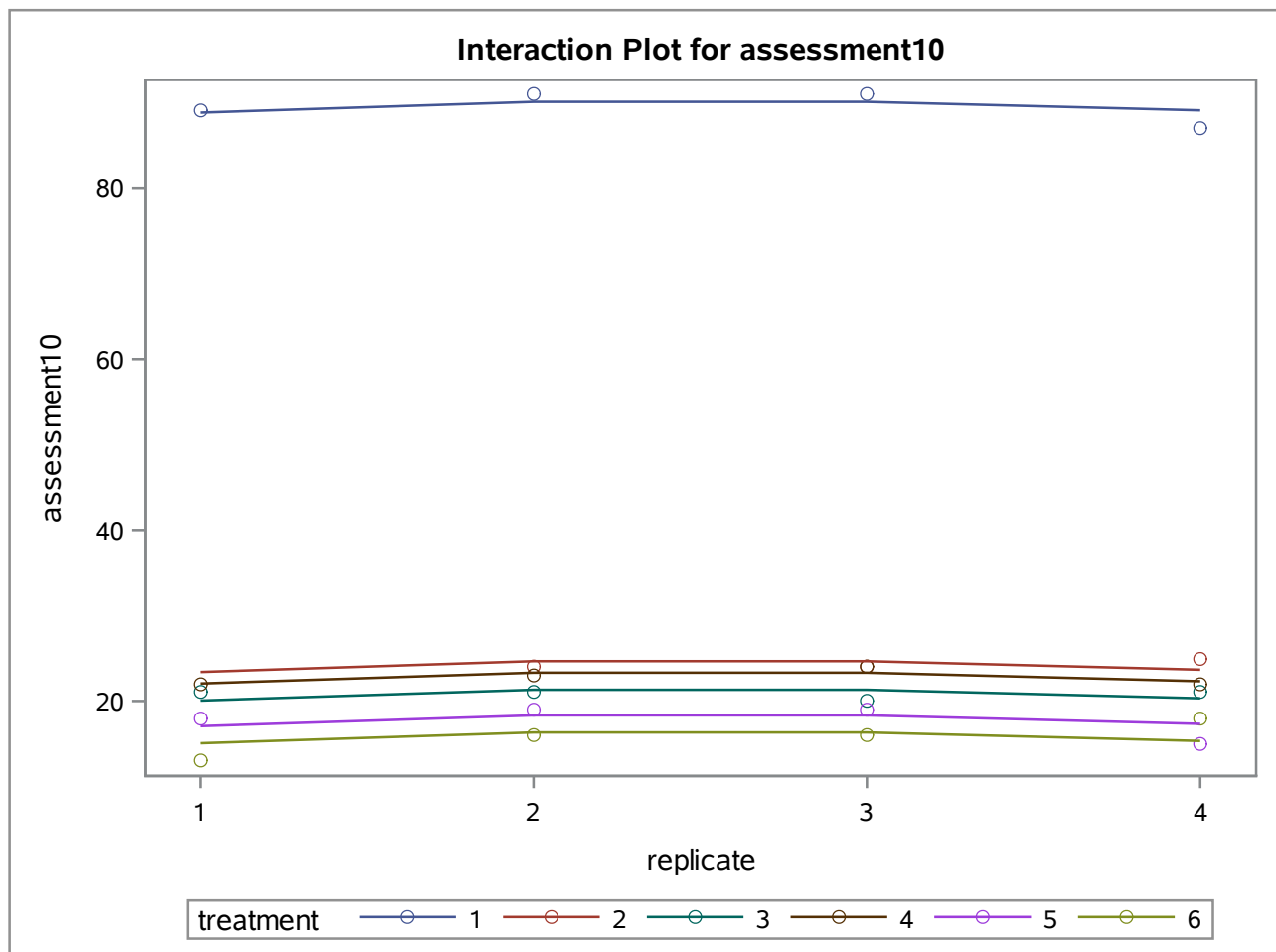
Dependent Variable: assessment10

| Source          | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|----|----------------|-------------|---------|--------|
| Model           | 8  | 16125.21193    | 2015.65149  | 898.70  | <.0001 |
| Error           | 14 | 31.40001       | 2.24286     |         |        |
| Corrected Total | 22 | 16156.61193    |             |         |        |

| R-Square | Coeff Var | Root MSE | assessment10 Mean |
|----------|-----------|----------|-------------------|
| 0.998057 | 4.661055  | 1.497617 | 32.13044          |

| Source    | DF | Type I SS   | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 5.40869     | 1.80290     | 0.80    | 0.5123 |
| treatment | 5  | 16119.80323 | 3223.96065  | 1437.43 | <.0001 |

| Source    | DF | Type III SS | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| replicate | 3  | 7.26667     | 2.42222     | 1.08    | 0.3895 |
| treatment | 5  | 16119.80323 | 3223.96065  | 1437.43 | <.0001 |



### Split Plot - Multivariate Repeated

#### 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 = 14   | assessment5        | assessment6        | assessment7        | assessment8        | assessment9        | assessment10       |
| assessment5   | 1.000000           | 0.687393<br>0.0046 | 0.675632<br>0.0057 | 0.419403<br>0.1197 | 0.500868<br>0.0572 | 0.343329<br>0.2103 |
| assessment6   | 0.687393<br>0.0046 | 1.000000           | 0.874715<br><.0001 | 0.678447<br>0.0054 | 0.784347<br>0.0005 | 0.583849<br>0.0223 |
| assessment7   | 0.675632<br>0.0057 | 0.874715<br><.0001 | 1.000000           | 0.724108<br>0.0023 | 0.704448<br>0.0034 | 0.450481<br>0.0920 |
| assessment8   | 0.419403<br>0.1197 | 0.678447<br>0.0054 | 0.724108<br>0.0023 | 1.000000           | 0.775483<br>0.0007 | 0.414698<br>0.1243 |
| assessment9   | 0.500868<br>0.0572 | 0.784347<br>0.0005 | 0.704448<br>0.0034 | 0.775483<br>0.0007 | 1.000000           | 0.672284<br>0.0060 |
| assessment10  | 0.343329<br>0.2103 | 0.583849<br>0.0223 | 0.450481<br>0.0920 | 0.414698<br>0.1243 | 0.672284<br>0.0060 | 1.000000           |

| time_N represents the contrast between the nth level of time and the last |             |             |             |             |             |              |
|---|-------------|-------------|-------------|-------------|-------------|--------------|
| 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   |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|
| 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  | 42.622 | 23.922 | 28.344 | 20.933 | 14.656 |
| time_2  | 23.922 | 24.322 | 26.144 | 22.133 | 16.356 |
| time_3  | 28.344 | 26.144 | 35.956 | 28.933 | 18.878 |
| time_4  | 20.933 | 22.133 | 28.933 | 43.067 | 24.400 |
| time_5  | 14.656 | 16.356 | 18.878 | 24.400 | 24.456 |

### Split Plot - Multivariate Repeated

#### 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 = 14  | time_1             | time_2             | time_3             | time_4             | time_5             |
| time_1   | 1.000000           | 0.742988<br>0.0015 | 0.724047<br>0.0023 | 0.488596<br>0.0646 | 0.453937<br>0.0892 |
| time_2   | 0.742988<br>0.0015 | 1.000000           | 0.884087<br><.0001 | 0.683872<br>0.0049 | 0.670617<br>0.0062 |
| time_3   | 0.724047<br>0.0023 | 0.884087<br><.0001 | 1.000000           | 0.735267<br>0.0018 | 0.636618<br>0.0107 |
| time_4   | 0.488596<br>0.0646 | 0.683872<br>0.0049 | 0.735267<br>0.0018 | 1.000000           | 0.751849<br>0.0012 |
| time_5   | 0.453937<br>0.0892 | 0.670617<br>0.0062 | 0.636618<br>0.0107 | 0.751849<br>0.0012 | 1.000000           |

| Sphericity Tests      |    |                     |            |            |
|-----------------------|----|---------------------|------------|------------|
| Variables             | DF | Mauchly's Criterion | Chi-Square | Pr > ChiSq |
| Transformed Variates  | 14 | 0.0136056           | 51.996971  | <.0001     |
| Orthogonal Components | 14 | 0.2393245           | 17.302214  | 0.2404     |

| MANOVA Test Criteria and Exact F Statistics for the Hypothesis of no time Effect<br>H = Type III SSCP Matrix for time<br>E = Error SSCP Matrix |             |         |        |        |        |
|--|-------------|---------|--------|--------|--------|
| S=1 M=1.5 N=4  |             |         |        |        |        |
| Statistic  | Value       | F Value | Num DF | Den DF | Pr > F |
| Wilks' Lambda  | 0.04028168  | 47.65   | 5      | 10     | <.0001 |
| Pillai's Trace   | 0.95971832  | 47.65   | 5      | 10     | <.0001 |
| Hotelling-Lawley Trace   | 23.82518120 | 47.65   | 5      | 10     | <.0001 |
| Roy's Greatest Root  | 23.82518120 | 47.65   | 5      | 10     | <.0001 |

| MANOVA Test Criteria and F Approximations for the Hypothesis of no time*replicate Effect<br>H = Type III SSCP Matrix for time*replicate<br>E = Error SSCP Matrix |            |         |        |        |        |
|--|------------|---------|--------|--------|--------|
| S=3 M=0.5 N=4  |            |         |        |        |        |
| Statistic  | Value      | F Value | Num DF | Den DF | Pr > F |
| Wilks' Lambda  | 0.45719282 | 0.61    | 15     | 28.007 | 0.8404 |
| Pillai's Trace   | 0.60656961 | 0.61    | 15     | 36     | 0.8486 |
| Hotelling-Lawley Trace   | 1.05098982 | 0.65    | 15     | 14.315 | 0.7906 |
| Roy's Greatest Root  | 0.90835770 | 2.18    | 5      | 12     | 0.1247 |
| NOTE: F Statistic for Roy's Greatest Root is an upper bound.   |            |         |        |        |        |

**Split Plot - Multivariate Repeated****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=5 M=-0.5 N=4   |            |         |        |        |        |
| Statistic  | Value      | F Value | Num DF | Den DF | Pr > F |
| Wilks' Lambda  | 0.08255352 | 1.48    | 25     | 38.65  | 0.1338 |
| Pillai's Trace   | 1.39860459 | 1.09    | 25     | 70     | 0.3796 |
| Hotelling-Lawley Trace   | 6.10503442 | 2.22    | 25     | 16.678 | 0.0477 |
| Roy's Greatest Root  | 5.34570027 | 14.97   | 5      | 14     | <.0001 |
| NOTE: F Statistic for Roy's Greatest Root is an upper bound.                             |            |         |        |        |        |

**Split Plot - Multivariate Repeated****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  | 32.72964    | 10.90988    | 1.08    | 0.3910 |
| treatment | 5  | 92597.80369 | 18519.56074 | 1826.68 | <.0001 |
| Error     | 14 | 141.93708   | 10.13836    |         |        |



**Split Plot - Multivariate Repeated**

**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  |
| <b>time</b>           | 5  | 415.5482351 | 83.1096470  | 86.68   | <.0001 | <.0001     | <.0001 |
| <b>time*replicate</b> | 15 | 18.0481512  | 1.2032101   | 1.25    | 0.2544 | 0.2814     | 0.2597 |
| <b>time*treatment</b> | 25 | 71.0259425  | 2.8410377   | 2.96    | 0.0002 | 0.0016     | 0.0003 |
| <b>Error(time)</b>    | 70 | 67.1185409  | 0.9588363   |         |        |            |        |

|                                     |        |
|-------------------------------------|--------|
| <b>Greenhouse-Geisser Epsilon</b>   | 0.6851 |
| <b>Huynh-Feldt-Lecoutre Epsilon</b> | 0.9340 |

**Split Plot - Multivariate Repeated**

**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  | 642.6695660 | 642.6695660 | 211.10  | <.0001 |
| replicate | 3  | 10.0444485  | 3.3481495   | 1.10    | 0.3820 |
| treatment | 5  | 59.8777908  | 11.9755582  | 3.93    | 0.0195 |
| Error     | 14 | 42.6222345  | 3.0444453   |         |        |

**Contrast Variable: time\_2**

| Source    | DF | Type III SS | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| Mean      | 1  | 341.2507694 | 341.2507694 | 196.43  | <.0001 |
| replicate | 3  | 3.5944451   | 1.1981484   | 0.69    | 0.5733 |
| treatment | 5  | 53.8777897  | 10.7755579  | 6.20    | 0.0031 |
| Error     | 14 | 24.3222299  | 1.7373021   |         |        |

**Contrast Variable: time\_3**

| Source    | DF | Type III SS | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| Mean      | 1  | 231.2007449 | 231.2007449 | 90.02   | <.0001 |
| replicate | 3  | 2.4611114   | 0.8203705   | 0.32    | 0.8112 |
| treatment | 5  | 26.6777879  | 5.3355576   | 2.08    | 0.1292 |
| Error     | 14 | 35.9555629  | 2.5682545   |         |        |

**Contrast Variable: time\_4**

| Source    | DF | Type III SS | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| Mean      | 1  | 142.5062708 | 142.5062708 | 46.33   | <.0001 |
| replicate | 3  | 1.3499987   | 0.4499996   | 0.15    | 0.9304 |
| treatment | 5  | 27.3000070  | 5.4600014   | 1.77    | 0.1827 |
| Error     | 14 | 43.0666748  | 3.0761911   |         |        |

**Contrast Variable: time\_5**

| Source    | DF | Type III SS | Mean Square | F Value | Pr > F |
|-----------|----|-------------|-------------|---------|--------|
| Mean      | 1  | 28.61736393 | 28.61736393 | 16.38   | 0.0012 |
| replicate | 3  | 3.46111056  | 1.15370352  | 0.66    | 0.5899 |
| treatment | 5  | 8.24444872  | 1.64888974  | 0.94    | 0.4831 |
| Error     | 14 | 24.45556394 | 1.74682600  |         |        |

**Split Plot - Multivariate Repeated**

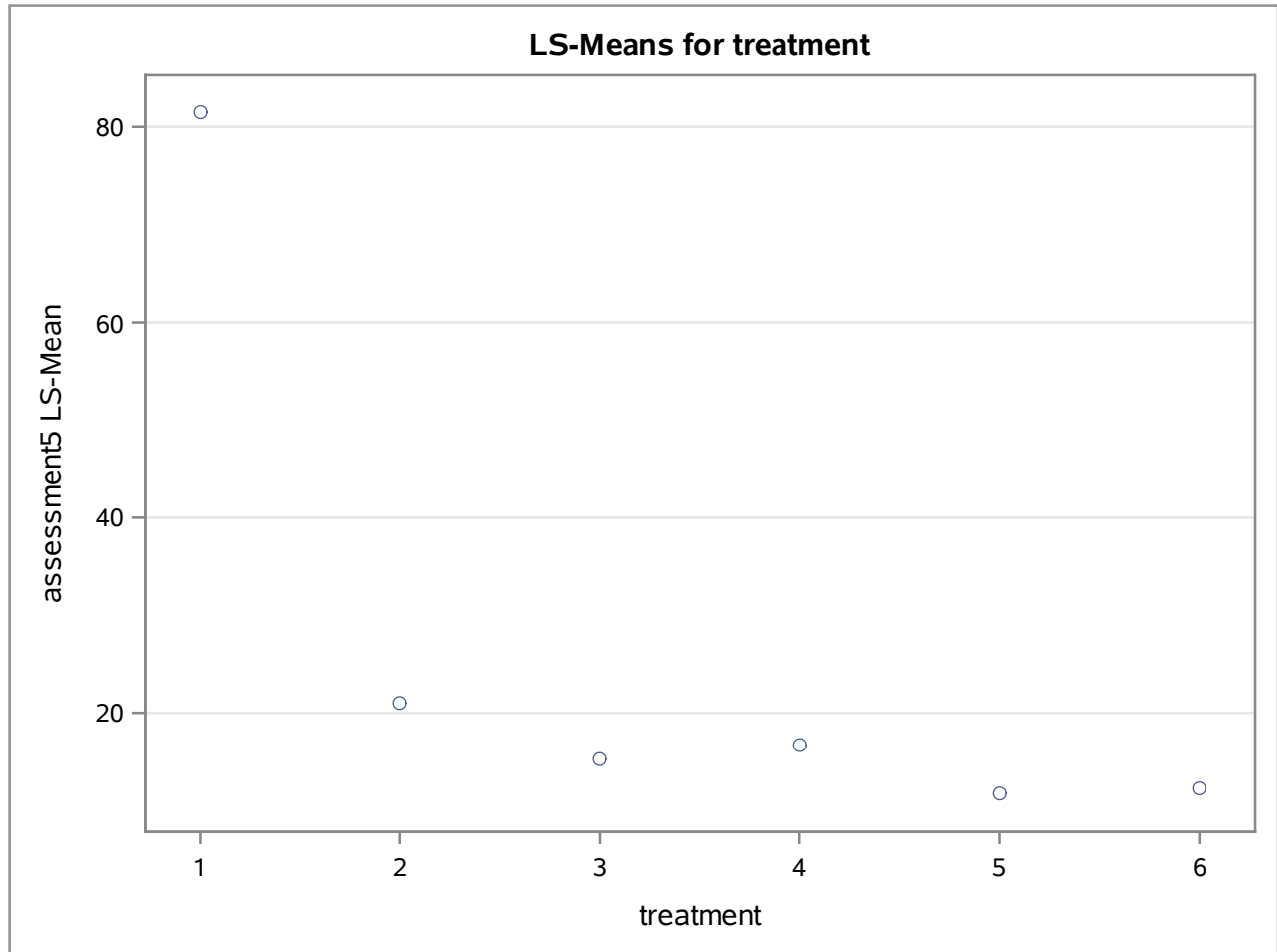
**The GLM Procedure**  
**Least Squares Means**  
**Adjustment for Multiple Comparisons: Tukey-Kramer**

| treatment | assessment5<br>LSMEAN | Standard<br>Error | Pr >  t | LSMEAN<br>Number |
|-----------|-----------------------|-------------------|---------|------------------|
| 1         | 81.5000080            | 0.7733150         | <.0001  | 1                |
| 2         | 21.0333353            | 0.9149986         | <.0001  | 2                |
| 3         | 15.2500017            | 0.7733150         | <.0001  | 3                |
| 4         | 16.7500020            | 0.7733150         | <.0001  | 4                |
| 5         | 11.7500010            | 0.7733150         | <.0001  | 5                |
| 6         | 12.2500012            | 0.7733150         | <.0001  | 6                |

| Least Squares Means for effect treatment<br>Pr >  t  for H0: LSMean(i)=LSMean(j) |        |        |        |        |        |        |
|--|--------|--------|--------|--------|--------|--------|
| Dependent Variable: assessment5  |        |        |        |        |        |        |
| i/j  | 1      | 2      | 3      | 4      | 5      | 6      |
| 1  |        | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 2  | <.0001 |        | 0.0029 | 0.0293 | <.0001 | <.0001 |
| 3  | <.0001 | 0.0029 |        | 0.7423 | 0.0577 | 0.1273 |
| 4  | <.0001 | 0.0293 | 0.7423 |        | 0.0047 | 0.0108 |
| 5  | <.0001 | <.0001 | 0.0577 | 0.0047 |        | 0.9969 |
| 6  | <.0001 | <.0001 | 0.1273 | 0.0108 | 0.9969 |        |

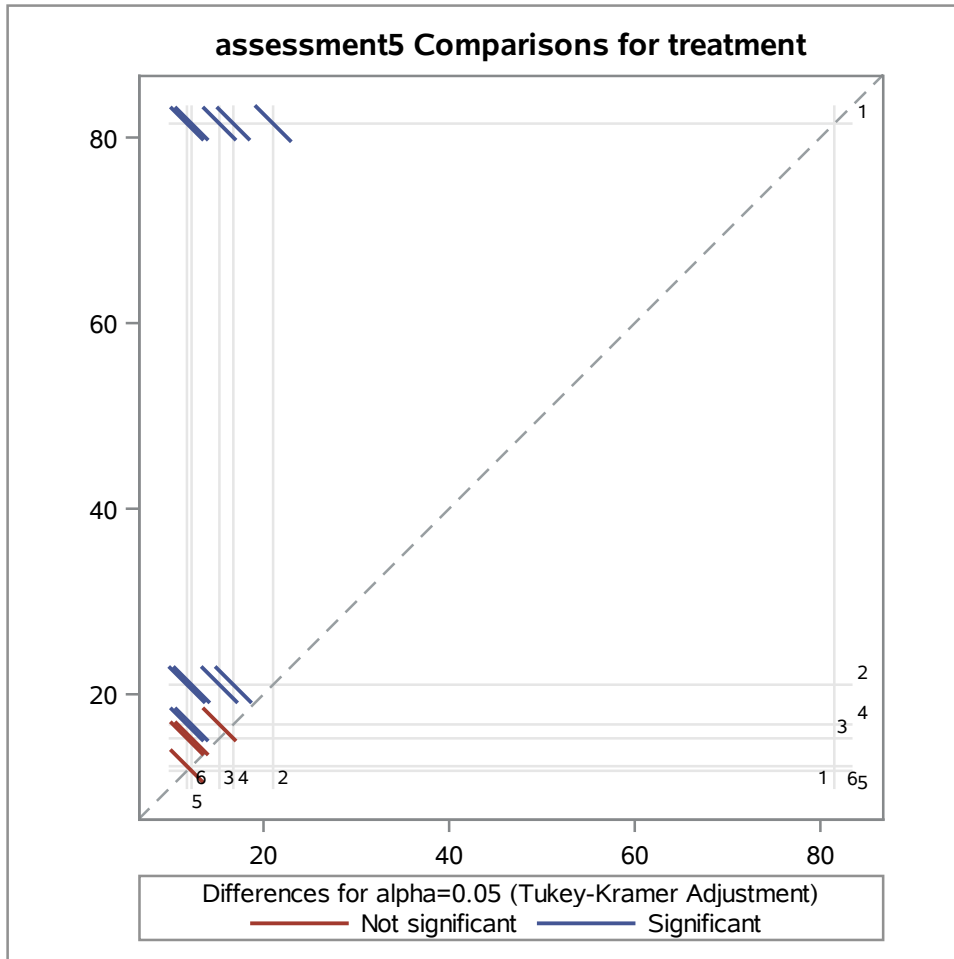
**Split Plot - Multivariate Repeated**

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



### Split Plot - Multivariate Repeated

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



| Tukey-Kramer Comparison Lines for Least Squares Means of treatment |   |                       |           |                  |
|--|---|-----------------------|-----------|------------------|
| LS-means with the same letter are not significantly different.     |   |                       |           |                  |
|  |   | assessment5<br>LSMEAN | treatment | LSMEAN<br>Number |
|  | A | 81.50001              | 1         | 1                |
|  |   |                       |           |                  |
|  | B | 21.03334              | 2         | 2                |
|  |   |                       |           |                  |
|  | C | 16.75000              | 4         | 4                |
|  | C |                       |           |                  |
| D  | C | 15.25000              | 3         | 3                |
| D  |   |                       |           |                  |
| D  |   | 12.25000              | 6         | 6                |
| D  |   |                       |           |                  |
| D  |   | 11.75000              | 5         | 5                |

**Split Plot - Multivariate Repeated**

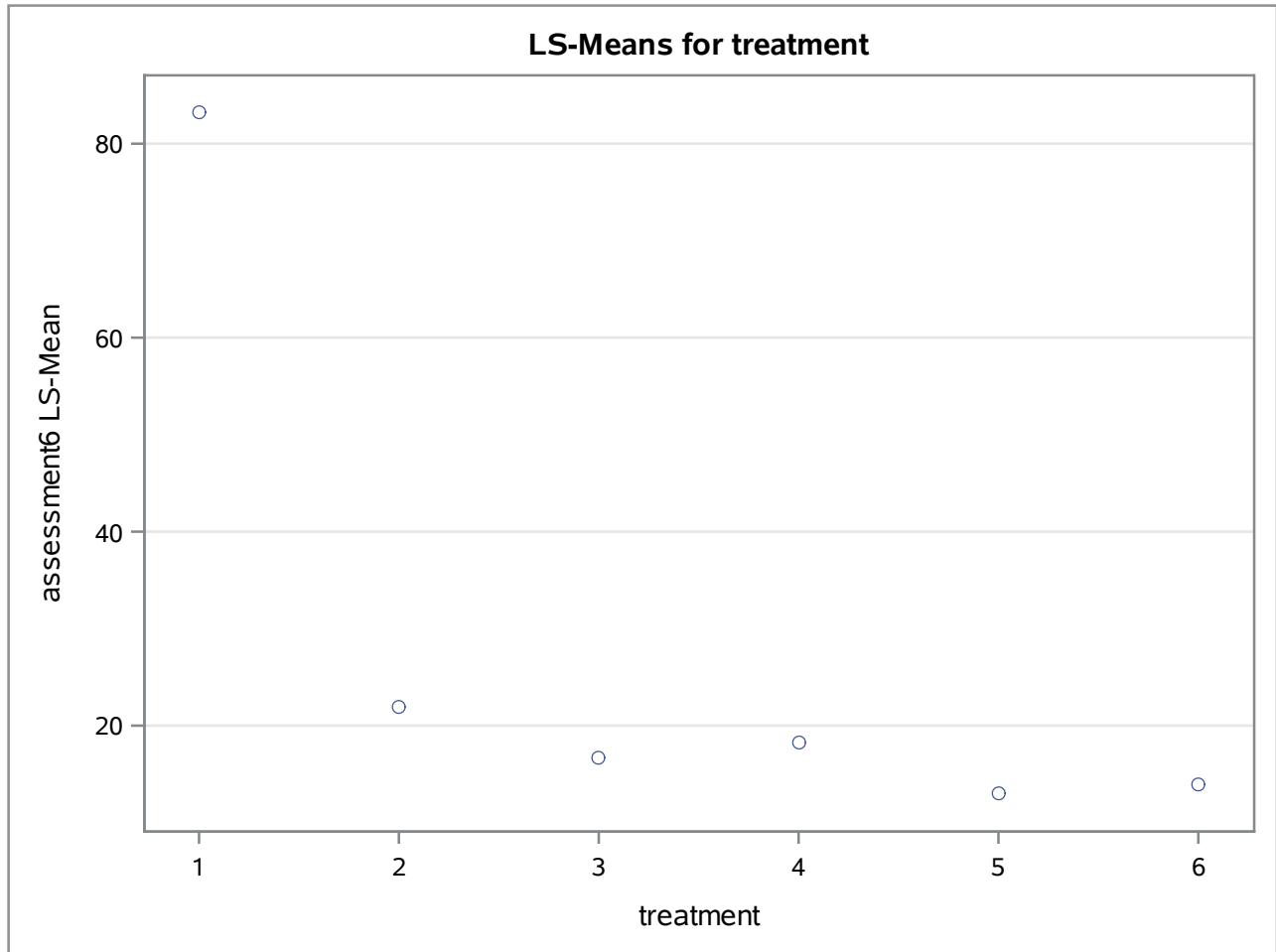
**The GLM Procedure**  
**Least Squares Means**  
**Adjustment for Multiple Comparisons: Tukey-Kramer**

| treatment | assessment6<br>LSMEAN | Standard<br>Error | Pr >  t | LSMEAN<br>Number |
|-----------|-----------------------|-------------------|---------|------------------|
| 1         | 83.2500082            | 0.6916453         | <.0001  | 1                |
| 2         | 21.9833353            | 0.8183658         | <.0001  | 2                |
| 3         | 16.7500017            | 0.6916453         | <.0001  | 3                |
| 4         | 18.2500020            | 0.6916453         | <.0001  | 4                |
| 5         | 13.0000010            | 0.6916453         | <.0001  | 5                |
| 6         | 14.0000015            | 0.6916453         | <.0001  | 6                |

| Least Squares Means for effect treatment<br>Pr >  t  for H0: LSMean(i)=LSMean(j) |        |        |        |        |        |        |
|--|--------|--------|--------|--------|--------|--------|
| Dependent Variable: assessment6  |        |        |        |        |        |        |
| i/j  | 1      | 2      | 3      | 4      | 5      | 6      |
| 1  |        | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 2  | <.0001 |        | 0.0027 | 0.0345 | <.0001 | <.0001 |
| 3  | <.0001 | 0.0027 |        | 0.6504 | 0.0182 | 0.1135 |
| 4  | <.0001 | 0.0345 | 0.6504 |        | 0.0011 | 0.0071 |
| 5  | <.0001 | <.0001 | 0.0182 | 0.0011 |        | 0.9027 |
| 6  | <.0001 | <.0001 | 0.1135 | 0.0071 | 0.9027 |        |

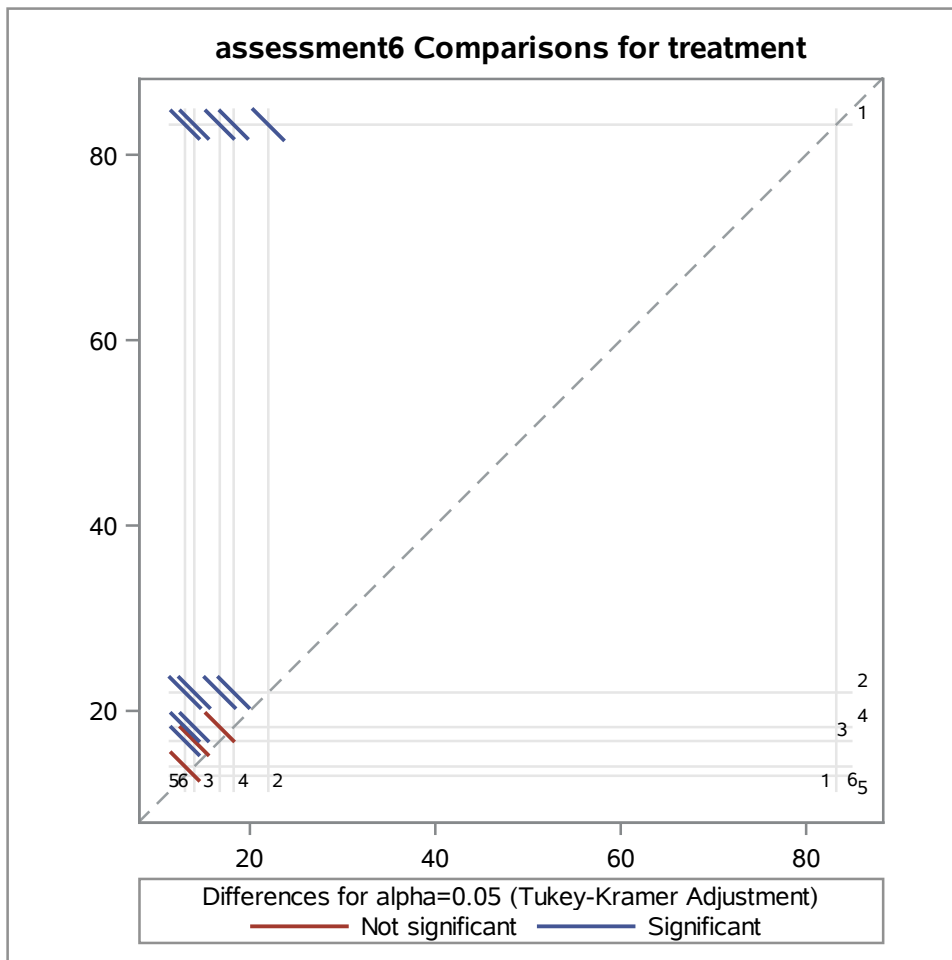
### Split Plot - Multivariate Repeated

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



### Split Plot - Multivariate Repeated

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



| Tukey-Kramer Comparison Lines for Least Squares Means of treatment |   |                       |           |                  |
|--|---|-----------------------|-----------|------------------|
| LS-means with the same letter are not significantly different.     |   |                       |           |                  |
|  |   | assessment6<br>LSMEAN | treatment | LSMEAN<br>Number |
|  | A | 83.25001              | 1         | 1                |
|  |   |                       |           |                  |
|  | B | 21.98334              | 2         | 2                |
|  |   |                       |           |                  |
|  | C | 18.25000              | 4         | 4                |
|  | C |                       |           |                  |
| D  | C | 16.75000              | 3         | 3                |
| D  |   |                       |           |                  |
| D  | E | 14.00000              | 6         | 6                |
|  | E |                       |           |                  |
|  | E | 13.00000              | 5         | 5                |



## Split Plot - Multivariate Repeated

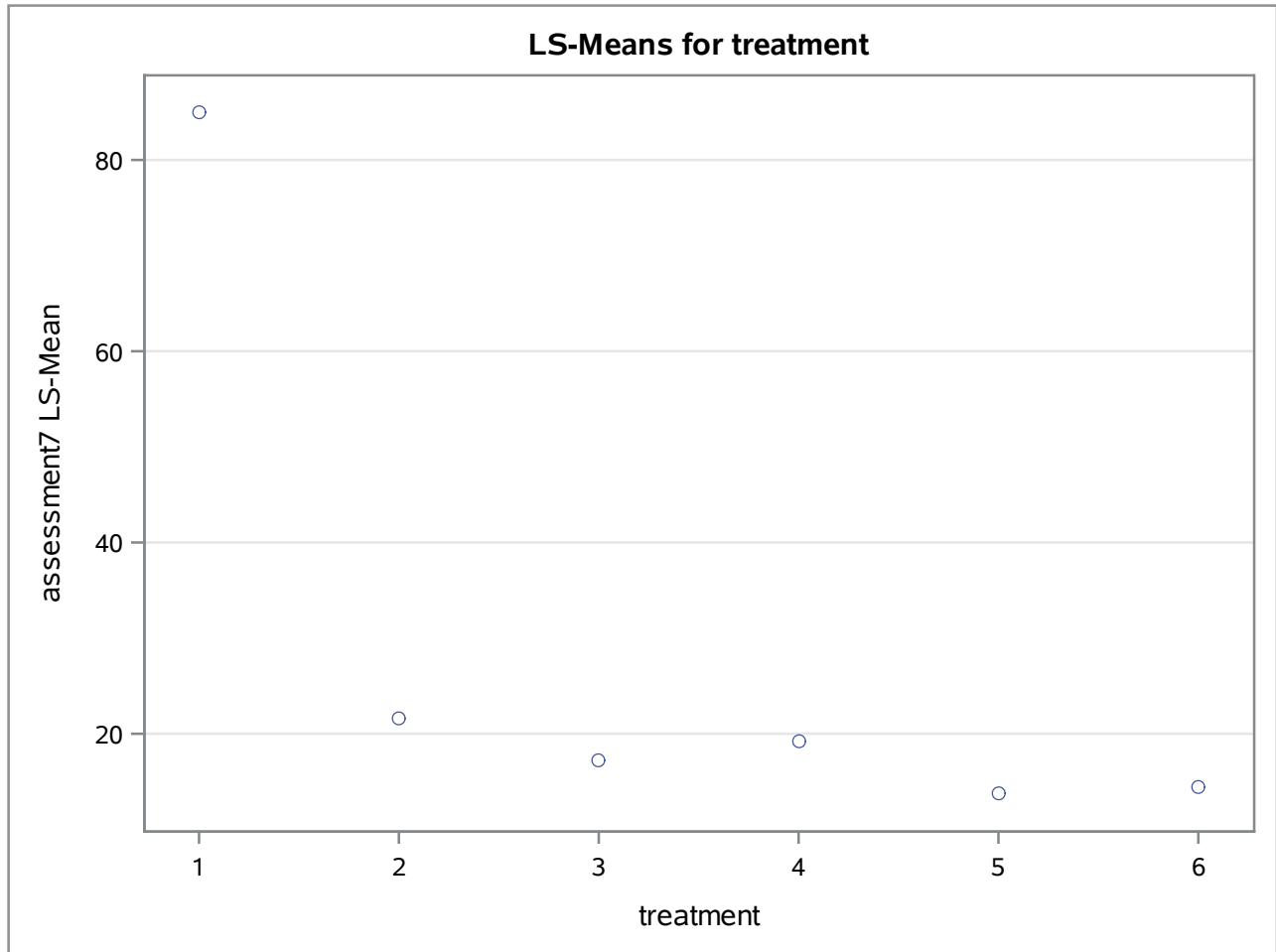
### The GLM Procedure Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer

| treatment | assessment7<br>LSMEAN | Standard<br>Error | Pr >  t | LSMEAN<br>Number |
|-----------|-----------------------|-------------------|---------|------------------|
| 1         | 85.0000085            | 0.7790665         | <.0001  | 1                |
| 2         | 21.6166686            | 0.9218039         | <.0001  | 2                |
| 3         | 17.2500018            | 0.7790665         | <.0001  | 3                |
| 4         | 19.2500020            | 0.7790665         | <.0001  | 4                |
| 5         | 13.7500010            | 0.7790665         | <.0001  | 5                |
| 6         | 14.5000018            | 0.7790665         | <.0001  | 6                |

| Least Squares Means for effect treatment<br>Pr >  t  for H0: LSMean(i)=LSMean(j)<br>Dependent Variable: assessment7 |        |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|--------|
| i/j   | 1      | 2      | 3      | 4      | 5      | 6      |
| 1   |        | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 2   | <.0001 |        | 0.0271 | 0.4088 | 0.0002 | 0.0005 |
| 3   | <.0001 | 0.0271 |        | 0.4873 | 0.0601 | 0.1902 |
| 4   | <.0001 | 0.4088 | 0.4873 |        | 0.0022 | 0.0075 |
| 5   | <.0001 | 0.0002 | 0.0601 | 0.0022 |        | 0.9813 |
| 6   | <.0001 | 0.0005 | 0.1902 | 0.0075 | 0.9813 |        |

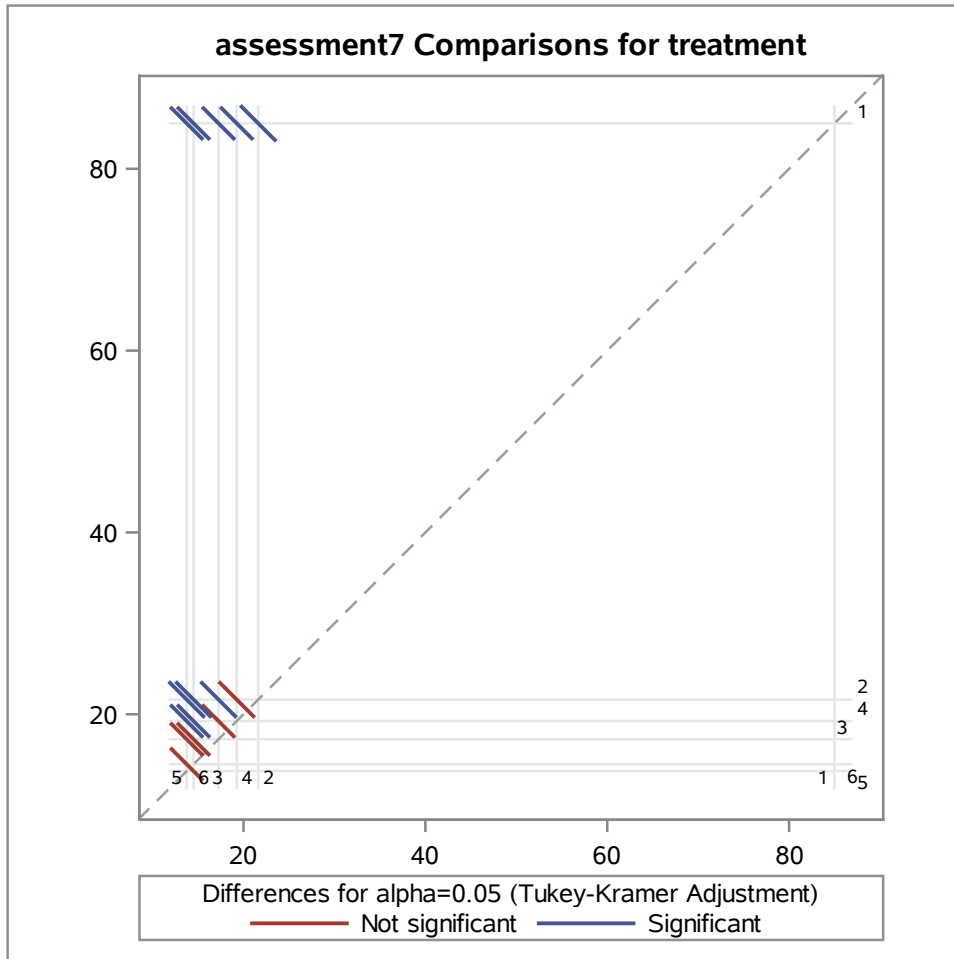
### Split Plot - Multivariate Repeated

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



### Split Plot - Multivariate Repeated

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



| Tukey-Kramer Comparison Lines for Least Squares Means of treatment |   |                       |           |                  |
|--|---|-----------------------|-----------|------------------|
| LS-means with the same letter are not significantly different.     |   |                       |           |                  |
|  |   | assessment7<br>LSMEAN | treatment | LSMEAN<br>Number |
|  | A | 85.00001              | 1         | 1                |
|  | B | 21.61667              | 2         | 2                |
|  | B |                       |           |                  |
| C  | B | 19.25000              | 4         | 4                |
| C  |   |                       |           |                  |
| C  | D | 17.25000              | 3         | 3                |
|  | D |                       |           |                  |
|  | D | 14.50000              | 6         | 6                |
|  | D |                       |           |                  |
|  | D | 13.75000              | 5         | 5                |

### Split Plot - Multivariate Repeated

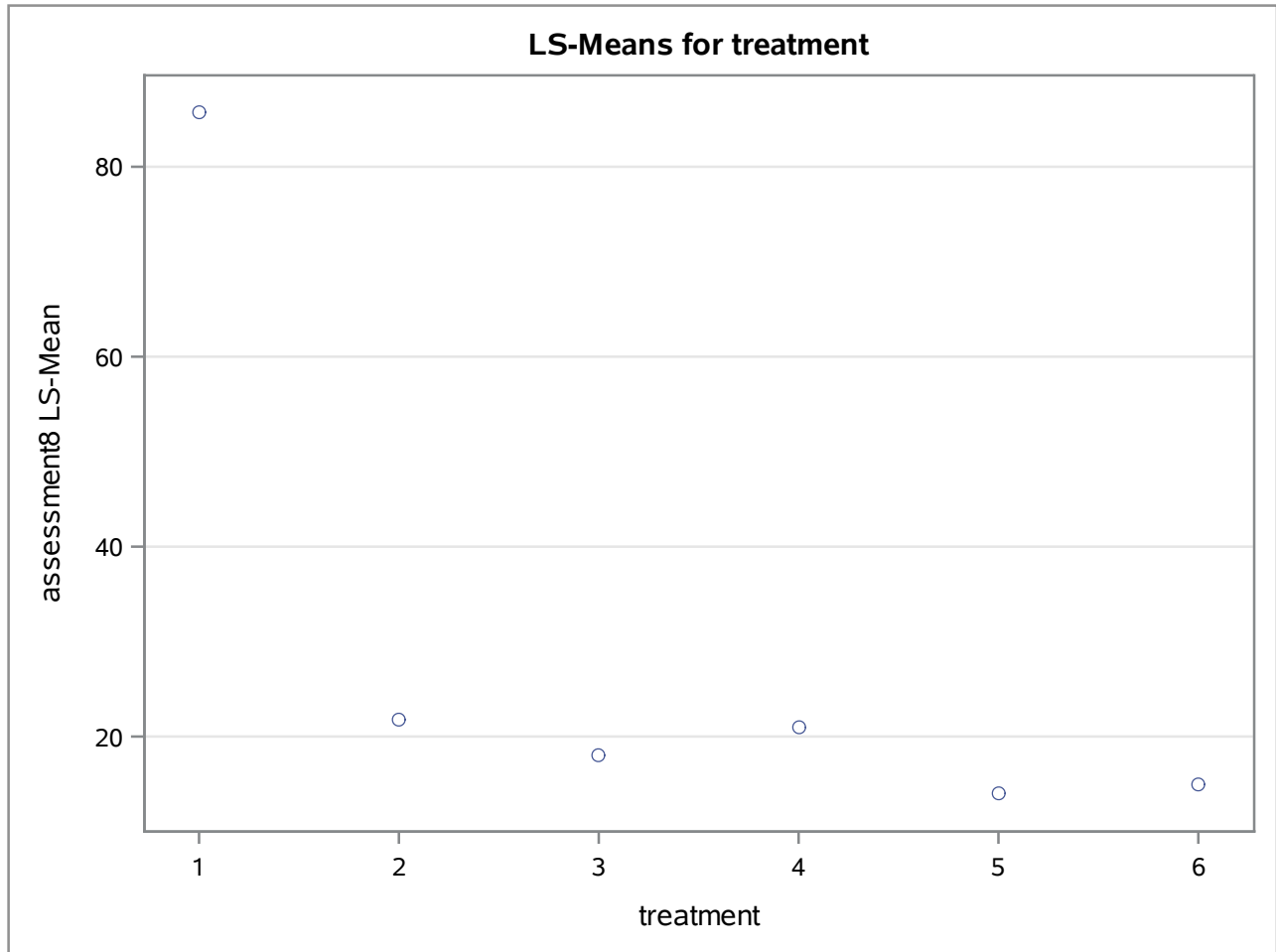
The GLM Procedure  
 Least Squares Means  
 Adjustment for Multiple Comparisons: Tukey-Kramer

| treatment | assessment8<br>LSMEAN | Standard<br>Error | Pr >  t | LSMEAN<br>Number |
|-----------|-----------------------|-------------------|---------|------------------|
| 1         | 85.7500088            | 0.8625821         | <.0001  | 1                |
| 2         | 21.7500019            | 1.0206209         | <.0001  | 2                |
| 3         | 18.0000020            | 0.8625821         | <.0001  | 3                |
| 4         | 21.0000020            | 0.8625821         | <.0001  | 4                |
| 5         | 14.0000015            | 0.8625821         | <.0001  | 5                |
| 6         | 15.0000018            | 0.8625821         | <.0001  | 6                |

| Least Squares Means for effect treatment<br>Pr >  t  for H0: LSMean(i)=LSMean(j)<br>Dependent Variable: assessment8 |        |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|--------|
| i/j   | 1      | 2      | 3      | 4      | 5      | 6      |
| 1   |        | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 2   | <.0001 |        | 0.1145 | 0.9921 | 0.0005 | 0.0020 |
| 3   | <.0001 | 0.1145 |        | 0.2015 | 0.0501 | 0.2015 |
| 4   | <.0001 | 0.9921 | 0.2015 |        | 0.0006 | 0.0025 |
| 5   | <.0001 | 0.0005 | 0.0501 | 0.0006 |        | 0.9589 |
| 6   | <.0001 | 0.0020 | 0.2015 | 0.0025 | 0.9589 |        |

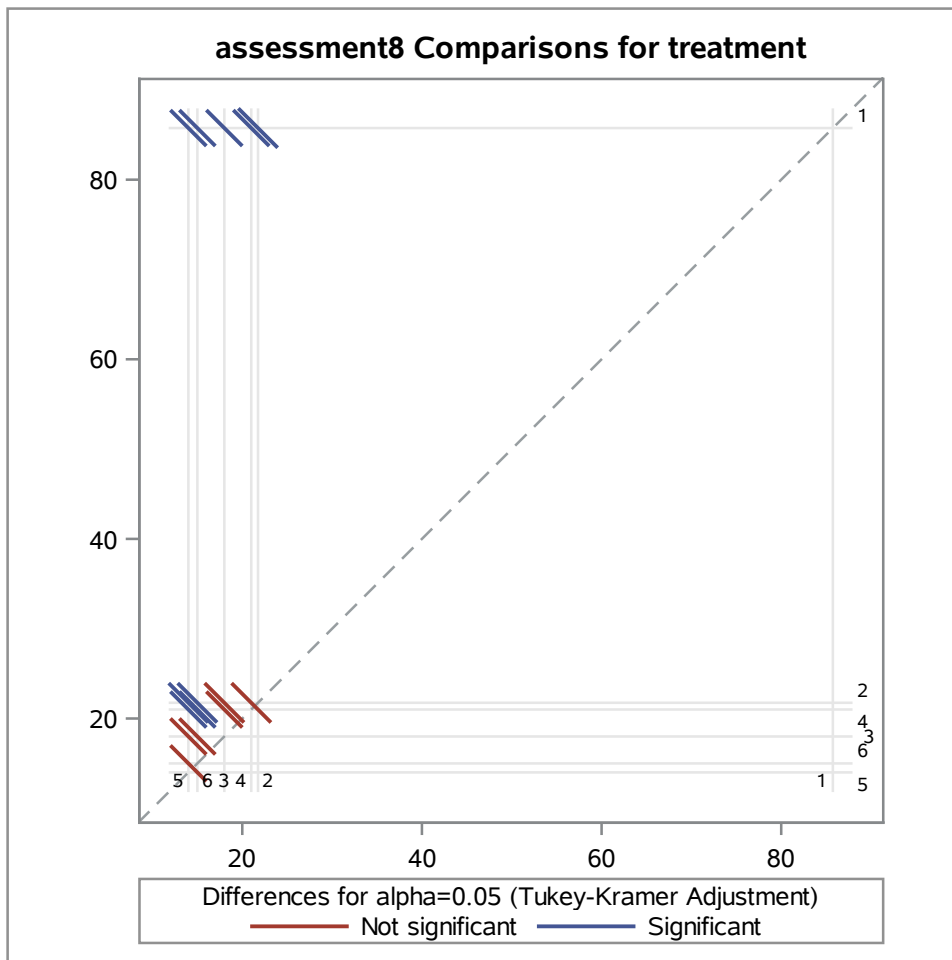
### Split Plot - Multivariate Repeated

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



### Split Plot - Multivariate Repeated

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



| Tukey-Kramer Comparison Lines for Least Squares Means of treatment |   |                       |           |                  |
|--|---|-----------------------|-----------|------------------|
| LS-means with the same letter are not significantly different.     |   |                       |           |                  |
|  |   | assessment8<br>LSMEAN | treatment | LSMEAN<br>Number |
|  | A | 85.75001              | 1         | 1                |
|  |   |                       |           |                  |
|  | B | 21.75000              | 2         | 2                |
|  | B |                       |           |                  |
|  | B | 21.00000              | 4         | 4                |
|  | B |                       |           |                  |
| C  | B | 18.00000              | 3         | 3                |
| C  |   |                       |           |                  |
| C  |   | 15.00000              | 6         | 6                |
| C  |   |                       |           |                  |
| C  |   | 14.00000              | 5         | 5                |

### Split Plot - Multivariate Repeated

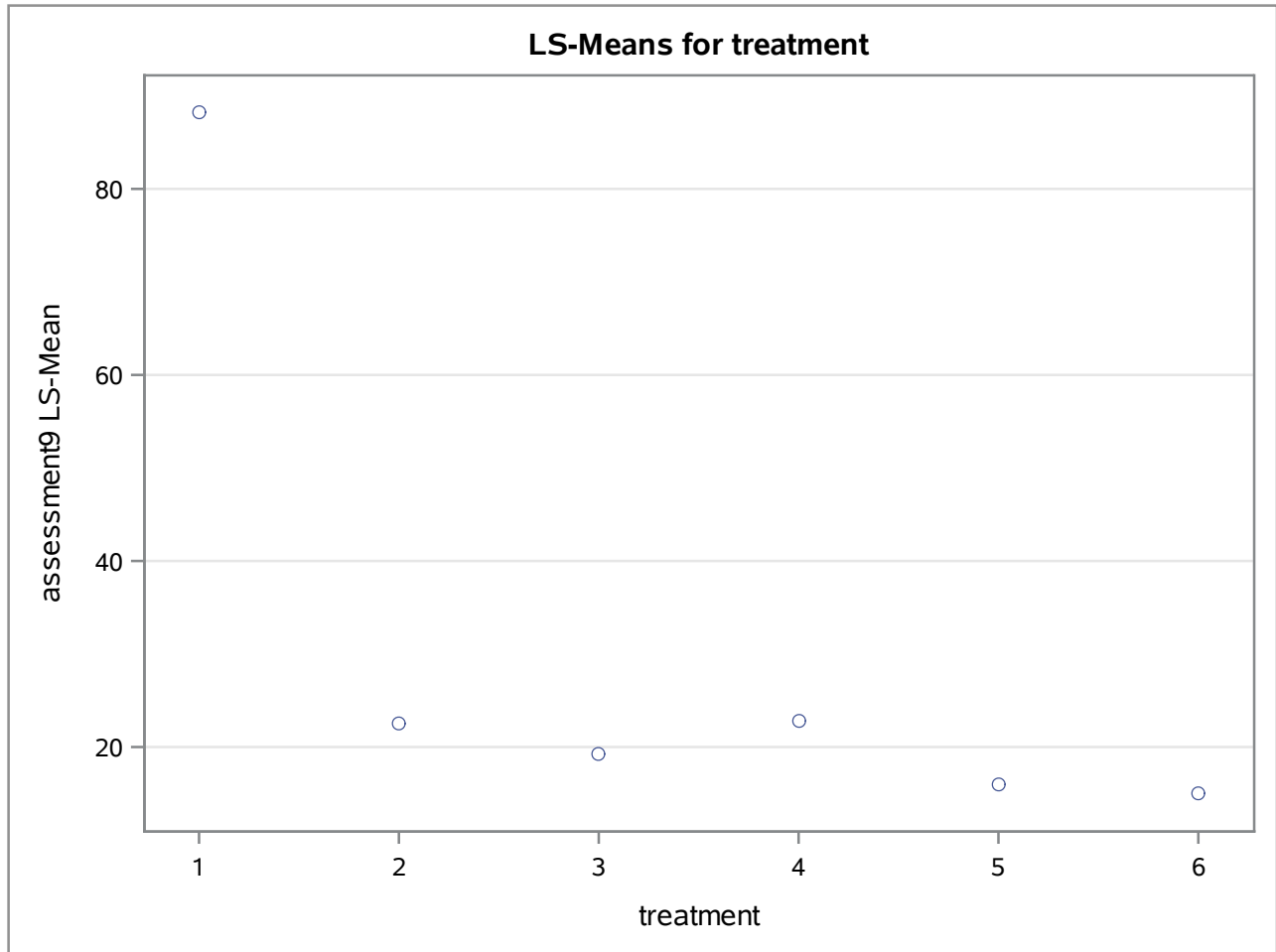
The GLM Procedure  
 Least Squares Means  
 Adjustment for Multiple Comparisons: Tukey-Kramer

| treatment | assessment9<br>LSMEAN | Standard<br>Error | Pr >  t | LSMEAN<br>Number |
|-----------|-----------------------|-------------------|---------|------------------|
| 1         | 88.2500090            | 0.8631570         | <.0001  | 1                |
| 2         | 22.5833353            | 1.0213011         | <.0001  | 2                |
| 3         | 19.2500020            | 0.8631570         | <.0001  | 3                |
| 4         | 22.7500022            | 0.8631570         | <.0001  | 4                |
| 5         | 16.0000017            | 0.8631570         | <.0001  | 5                |
| 6         | 15.0000018            | 0.8631570         | <.0001  | 6                |

| Least Squares Means for effect treatment<br>Pr >  t  for H0: LSMean(i)=LSMean(j)<br>Dependent Variable: assessment9 |        |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|--------|
| i/j   | 1      | 2      | 3      | 4      | 5      | 6      |
| 1   |        | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 2   | <.0001 |        | 0.1912 | 1.0000 | 0.0025 | 0.0007 |
| 3   | <.0001 | 0.1912 |        | 0.1032 | 0.1455 | 0.0347 |
| 4   | <.0001 | 1.0000 | 0.1032 |        | 0.0008 | 0.0002 |
| 5   | <.0001 | 0.0025 | 0.1455 | 0.0008 |        | 0.9590 |
| 6   | <.0001 | 0.0007 | 0.0347 | 0.0002 | 0.9590 |        |

### Split Plot - Multivariate Repeated

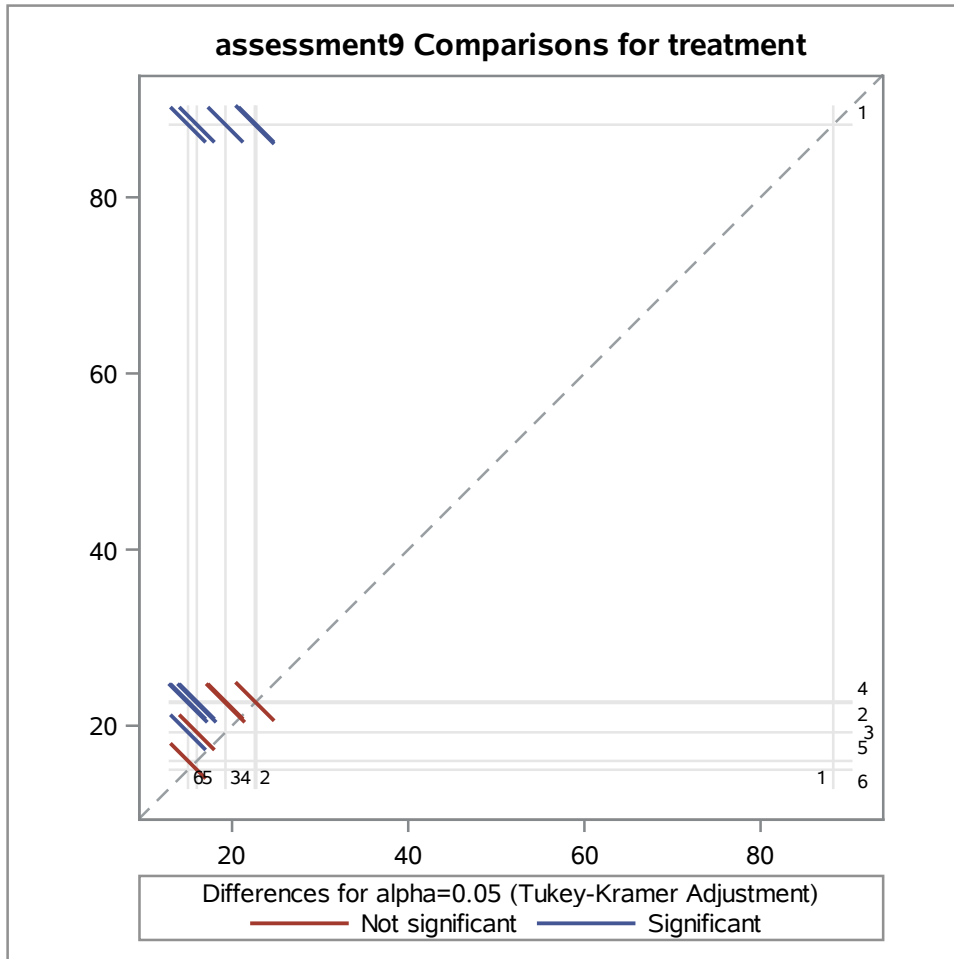
The GLM Procedure  
Least Squares Means  
Adjustment for Multiple Comparisons: Tukey-Kramer





### Split Plot - Multivariate Repeated

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



| Tukey-Kramer Comparison Lines for Least Squares Means of treatment |   |                       |           |                  |
|--|---|-----------------------|-----------|------------------|
| LS-means with the same letter are not significantly different.     |   |                       |           |                  |
|  |   | assessment9<br>LSMEAN | treatment | LSMEAN<br>Number |
|  | A | 88.25001              | 1         | 1                |
|  |   |                       |           |                  |
|  | B | 22.75000              | 4         | 4                |
|  | B |                       |           |                  |
|  | B | 22.58334              | 2         | 2                |
|  | B |                       |           |                  |
| C  | B | 19.25000              | 3         | 3                |
| C  |   |                       |           |                  |
| C  | D | 16.00000              | 5         | 5                |
|  | D |                       |           |                  |
|  | D | 15.00000              | 6         | 6                |

### Split Plot - Multivariate Repeated

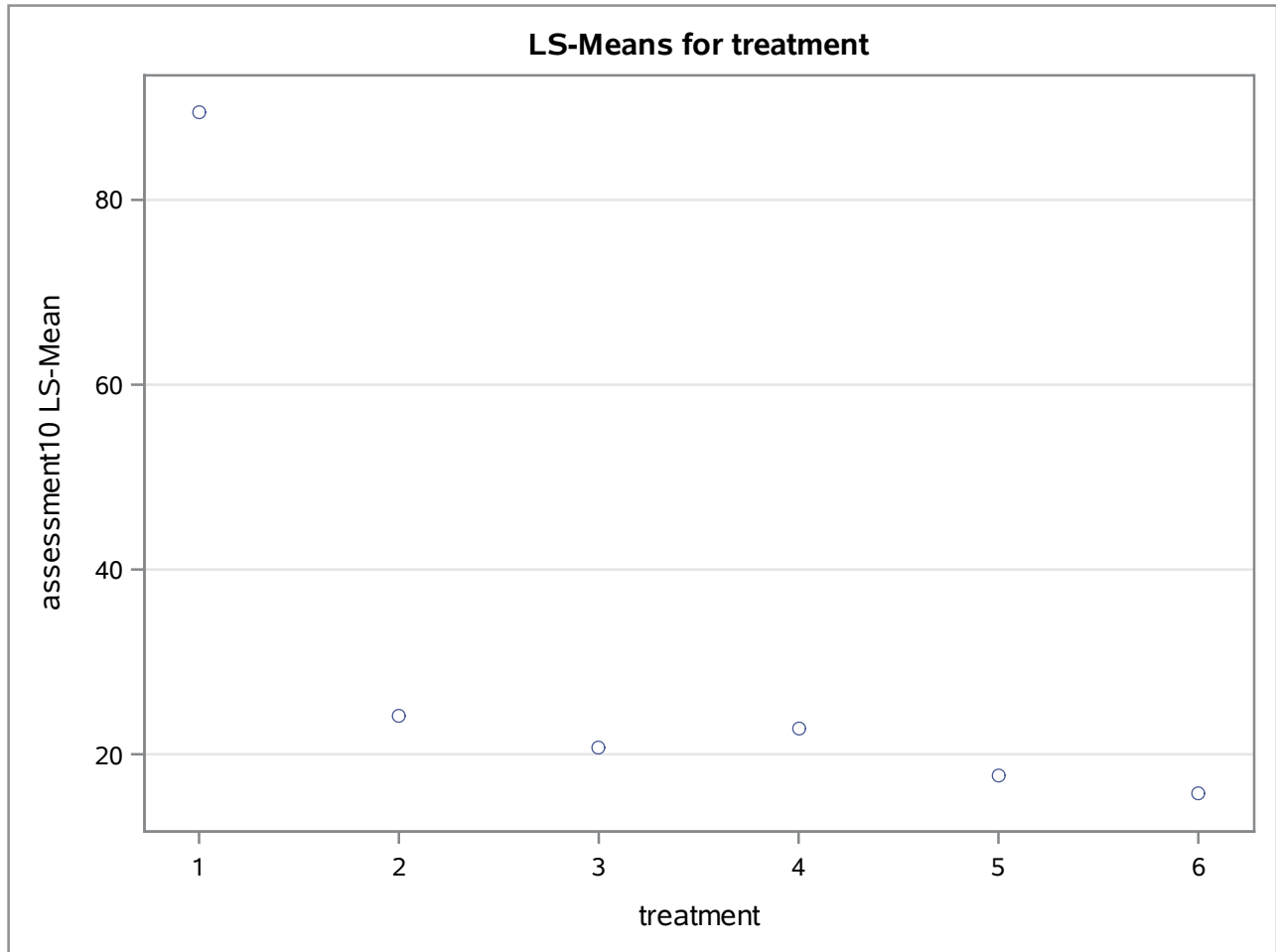
The GLM Procedure  
 Least Squares Means  
 Adjustment for Multiple Comparisons: Tukey-Kramer

| treatment | assessment10<br>LSMEAN | Standard<br>Error | Pr >  t | LSMEAN<br>Number |
|-----------|------------------------|-------------------|---------|------------------|
| 1         | 89.5000090             | 0.7488087         | <.0001  | 1                |
| 2         | 24.1000023             | 0.8860024         | <.0001  | 2                |
| 3         | 20.7500020             | 0.7488087         | <.0001  | 3                |
| 4         | 22.7500020             | 0.7488087         | <.0001  | 4                |
| 5         | 17.7500020             | 0.7488087         | <.0001  | 5                |
| 6         | 15.7500018             | 0.7488087         | <.0001  | 6                |

| Least Squares Means for effect treatment<br>Pr >  t  for H0: LSMean(i)=LSMean(j)<br>Dependent Variable: assessment10 |        |        |        |        |        |        |
|--|--------|--------|--------|--------|--------|--------|
| i/j  | 1      | 2      | 3      | 4      | 5      | 6      |
| 1  |        | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| 2  | <.0001 |        | 0.0997 | 0.8464 | 0.0009 | <.0001 |
| 3  | <.0001 | 0.0997 |        | 0.4470 | 0.1094 | 0.0036 |
| 4  | <.0001 | 0.8464 | 0.4470 |        | 0.0036 | 0.0001 |
| 5  | <.0001 | 0.0009 | 0.1094 | 0.0036 |        | 0.4470 |
| 6  | <.0001 | <.0001 | 0.0036 | 0.0001 | 0.4470 |        |

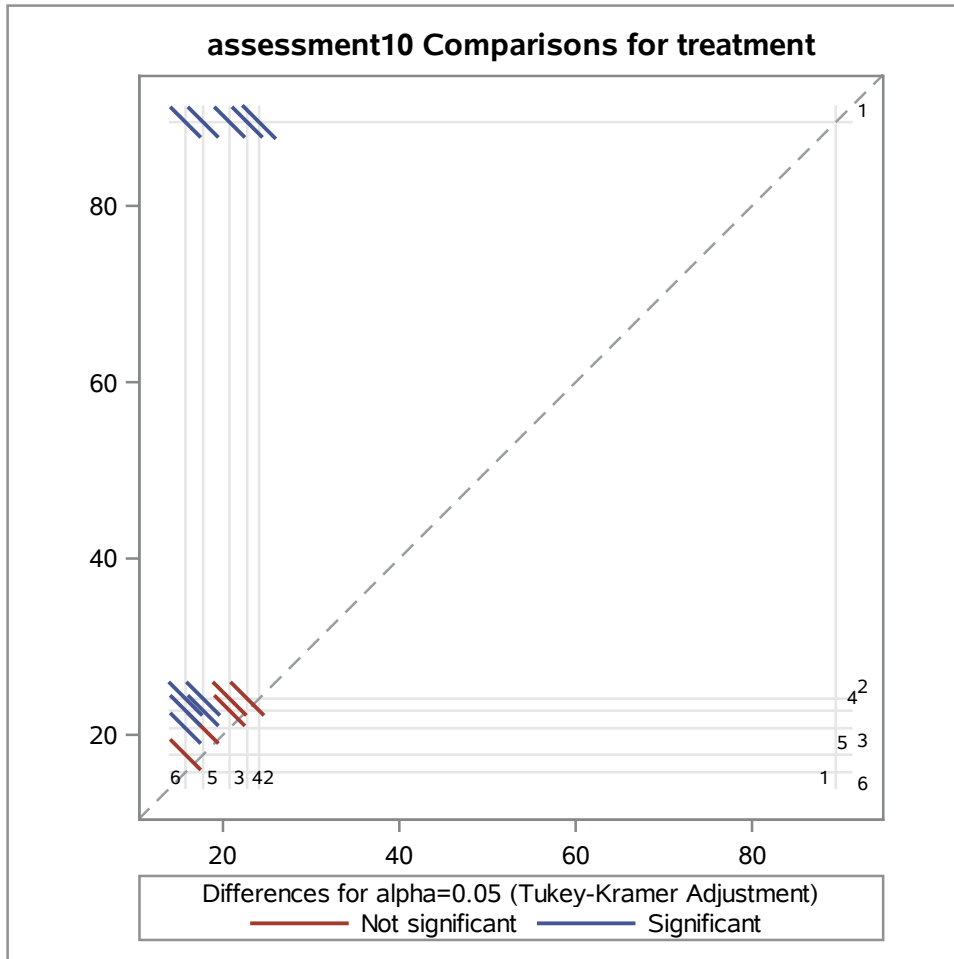
### Split Plot - Multivariate Repeated

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



### Split Plot - Multivariate Repeated

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



| Tukey-Kramer Comparison Lines for Least Squares Means of treatment |   |                        |           |                  |
|--|---|------------------------|-----------|------------------|
| LS-means with the same letter are not significantly different.     |   |                        |           |                  |
|  |   | assessment10<br>LSMEAN | treatment | LSMEAN<br>Number |
|  | A | 89.50001               | 1         | 1                |
|  |   |                        |           |                  |
|  | B | 24.10000               | 2         | 2                |
|  | B |                        |           |                  |
|  | B | 22.75000               | 4         | 4                |
|  | B |                        |           |                  |
| C  | B | 20.75000               | 3         | 3                |
| C  |   |                        |           |                  |
| C  | D | 17.75000               | 5         | 5                |
|  | D |                        |           |                  |
|  | D | 15.75000               | 6         | 6                |