Tips, Tricks and Time-Savers: Features You May Not Yet Have Discovered

Presented by Dr. Neil W. Polhemus
Outline

- Setting and saving preferences.
- Recoding data.
- Making predictions from fitted models.
- Copying output to other applications.
- Overlaying graphs in the StatGallery.
- Using a “BY” variable to replicate an analysis.
- Using value labels.
#1: System Preferences

• Accessed from the *Edit* menu.
1. System Preferences

• Accessed from the *Edit* menu.
Summary Statistics

Preferences window showing options for summary statistics. The selected options include:
- Average
- Median
- Mode
- Geometric Mean
- Harmonic Mean
- Trimmed Mean 5%
- Winsorized Mean
- Variance
- Std. Deviation
- Coeff. of Variation
- Gini Coefficient
- Std. Error
- Geometric Std. Dev.
- Winsorized Sigma
- Minimum
- Maximum
- Range
- Lower Quartile
- Upper Quartile
- Interquartile Range
- Lower Quartile Range
- Interquartile Range
- Skewness
- Std. Skewness

Other options available but not selected include:
- Mean Absolute Dev.
- MAD
- Sbi
- Kurtosis
- Std. Kurtosis
- Sum
- Sum of Squares

The window also includes buttons for OK, Cancel, Show XML, and Help.
Text

Preferences

- General
- EDA
- ANOVA/Regression
- Control Charts
- Runs Tests
- Crosstabs
- Forecasting
- Stats
- Dist. Fit
- Capability
- Text
- Graphics
- Gage Studies
- Language

StatAdvisor
- Add to Text Panes
- Highlight References in:
  - Red

Analysis Headers
- Display in:
  - Blue

Tables
- Max. rows to display:
  - 1000
- Max. width:
  - 30 inches
- Split wide tables
- Replace row numbers with labels

OK  Cancel  Show XML  Help
Graphics Preferences

- Statgraphics maintains a set of default attributes that are applied to newly created graphs.

- You may use the Profile tab on the Graphics Options dialog box to save and apply other sets of attributes.

- You can also import and export these settings to move them from one computer to another.
Example

Holt's exponential smoothing with alpha = 0.92 and beta = 0.25 Limits: 95%
RMSE: 0.148467, MAE: 0.119612, MAPE: 1.89203%, ME: -0.00417413, MPE: -0.00919219%

Month: 7/15
Upper: 6.00831
Smooth: 5.07875
Lower: 4.1492
Saving Desired Tables and Graphs

- You may save the default tables and graphs for any procedure. (Use the Store button).
Import/Export Settings

Graphics profiles and other system settings may be imported and exported as a group.

This lets you:

- Move settings from one computer to another.
- Establish an organizational standard and apply it to everyone’s computer.
Export Settings

Include:
- Graphics Profiles
- Interface Options
- Page Setup Options
- Preferences
- Procedure Pane Selections
- StatPublish Options
- Text Fonts
- Toolbar Shortcuts

- Export only non-default values

Buttons:
- OK
- Cancel
- Help
- Show XML
Import Settings
#2. Recoding Data

- The Statgraphics DataBook provides the ability to recode data in a column.
#3. Predictions from Fitted Models

- Many procedures in Statgraphics create statistical models for data.

- Those procedures fit the models to a set of observations which is sometimes called a “training set”.

- They can then make predictions for other observations that were not used to fit the model.

- This is done by adding rows in which values of the predictor variables are entered but the value of the dependent variable is left blank.
## Example – Designed Experiment

<table>
<thead>
<tr>
<th>BLOCK</th>
<th>feed rate</th>
<th>catalyst</th>
<th>agitation</th>
<th>temperature</th>
<th>concentration</th>
<th>reacted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>liters/min</td>
<td>%</td>
<td>rpm</td>
<td>degrees</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>12.5</td>
<td>1.5</td>
<td>110.0</td>
<td>160.0</td>
<td>4.5</td>
<td>65</td>
</tr>
<tr>
<td>2</td>
<td>10.0</td>
<td>1.0</td>
<td>100.0</td>
<td>140.0</td>
<td>6.0</td>
<td>56</td>
</tr>
<tr>
<td>3</td>
<td>15.0</td>
<td>1.0</td>
<td>100.0</td>
<td>140.0</td>
<td>3.0</td>
<td>53</td>
</tr>
<tr>
<td>4</td>
<td>10.0</td>
<td>2.0</td>
<td>100.0</td>
<td>140.0</td>
<td>3.0</td>
<td>63</td>
</tr>
<tr>
<td>5</td>
<td>15.0</td>
<td>2.0</td>
<td>100.0</td>
<td>140.0</td>
<td>6.0</td>
<td>65</td>
</tr>
<tr>
<td>6</td>
<td>10.0</td>
<td>1.0</td>
<td>120.0</td>
<td>140.0</td>
<td>3.0</td>
<td>53</td>
</tr>
<tr>
<td>7</td>
<td>15.0</td>
<td>1.0</td>
<td>120.0</td>
<td>140.0</td>
<td>6.0</td>
<td>55</td>
</tr>
<tr>
<td>8</td>
<td>10.0</td>
<td>2.0</td>
<td>120.0</td>
<td>140.0</td>
<td>6.0</td>
<td>67</td>
</tr>
<tr>
<td>9</td>
<td>15.0</td>
<td>2.0</td>
<td>120.0</td>
<td>140.0</td>
<td>3.0</td>
<td>61</td>
</tr>
<tr>
<td>10</td>
<td>12.5</td>
<td>1.5</td>
<td>110.0</td>
<td>160.0</td>
<td>4.5</td>
<td>67</td>
</tr>
<tr>
<td>11</td>
<td>10.0</td>
<td>1.0</td>
<td>100.0</td>
<td>180.0</td>
<td>3.0</td>
<td>69</td>
</tr>
<tr>
<td>12</td>
<td>15.0</td>
<td>1.0</td>
<td>100.0</td>
<td>180.0</td>
<td>6.0</td>
<td>45</td>
</tr>
<tr>
<td>13</td>
<td>10.0</td>
<td>2.0</td>
<td>100.0</td>
<td>180.0</td>
<td>6.0</td>
<td>78</td>
</tr>
<tr>
<td>14</td>
<td>15.0</td>
<td>2.0</td>
<td>100.0</td>
<td>180.0</td>
<td>3.0</td>
<td>93</td>
</tr>
<tr>
<td>15</td>
<td>10.0</td>
<td>1.0</td>
<td>120.0</td>
<td>180.0</td>
<td>6.0</td>
<td>49</td>
</tr>
<tr>
<td>16</td>
<td>15.0</td>
<td>1.0</td>
<td>120.0</td>
<td>180.0</td>
<td>3.0</td>
<td>60</td>
</tr>
<tr>
<td>17</td>
<td>10.0</td>
<td>2.0</td>
<td>120.0</td>
<td>180.0</td>
<td>3.0</td>
<td>95</td>
</tr>
<tr>
<td>18</td>
<td>15.0</td>
<td>2.0</td>
<td>120.0</td>
<td>180.0</td>
<td>6.0</td>
<td>82</td>
</tr>
<tr>
<td>19</td>
<td>12.5</td>
<td>1.5</td>
<td>110.0</td>
<td>160.0</td>
<td>4.5</td>
<td>63</td>
</tr>
<tr>
<td>20</td>
<td>14</td>
<td>1.8</td>
<td>115</td>
<td>155</td>
<td>5.5</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The table above represents a designed experiment with various parameters such as feed rate, catalyst concentration, agitation, temperature, and concentration, all measured in different units.*
Save Results

Save Results Options

Save
- Predicted Values
- Standard Errors of Predictions
- Lower Limits for Predictions
- Upper Limits for Predictions
- Standard Errors of Means
- Lower Limits for Forecast Means
- Upper Limits for Forecast Means
- Residuals
- Studentized Residuals
- Leverages
- DFITS Statistics
- Mahalanobis Distances

Target Variables
- PREDICTED
- PSTDERRORS
- LOWERPLIMS
- UPPERPLIMS
- CSTDERRORS
- LOWERCLIMS
- UPPERCLIMS
- RESIDUALS
- SRESIDUALS
- LEVERAGE
- DFITS
- MDISTS

Autosave
- Save comments

Datasheet

OK
Cancel
Help
#4. Copying Output to Other Applications

- Tables
- Graphs
- Numerical results

Methods:

- Copy and paste
- Save graphs as image files
- Using the StatReporter
Copy and Paste
<table>
<thead>
<tr>
<th>Row</th>
<th>Observed Value</th>
<th>Fitted Value</th>
<th>Lower 95.0% for Forecast</th>
<th>Upper 95.0% for Forecast</th>
<th>Lower 95.0% for Mean</th>
<th>Upper 95.0% for Mean</th>
<th>Lower 95.0% CL</th>
<th>Upper 95.0% CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>65</td>
<td>59.8262</td>
<td>70.5948</td>
<td>64.0066</td>
<td>66.4145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>66</td>
<td>55.9605</td>
<td>63.3639</td>
<td>50.7385</td>
<td>61.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>53</td>
<td>52.9605</td>
<td>60.3639</td>
<td>47.7385</td>
<td>58.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>63</td>
<td>62.9605</td>
<td>70.3639</td>
<td>57.7385</td>
<td>68.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>65</td>
<td>64.9605</td>
<td>72.3639</td>
<td>59.7385</td>
<td>70.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>53</td>
<td>52.9605</td>
<td>60.3639</td>
<td>47.7385</td>
<td>58.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>55</td>
<td>54.9605</td>
<td>62.3639</td>
<td>49.7385</td>
<td>60.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>67</td>
<td>66.9605</td>
<td>74.3639</td>
<td>61.7385</td>
<td>72.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>9</td>
<td>61</td>
<td>60.9605</td>
<td>68.3639</td>
<td>55.7385</td>
<td>66.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>67</td>
<td>65.2105</td>
<td>70.5948</td>
<td>64.0066</td>
<td>66.4145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>11</td>
<td>69</td>
<td>68.9605</td>
<td>76.3639</td>
<td>63.7385</td>
<td>74.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>12</td>
<td>45</td>
<td>44.9605</td>
<td>52.3639</td>
<td>39.7385</td>
<td>50.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>13</td>
<td>78</td>
<td>77.9605</td>
<td>85.3639</td>
<td>72.7385</td>
<td>83.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>14</td>
<td>93</td>
<td>92.9605</td>
<td>100.364</td>
<td>87.7385</td>
<td>98.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>15</td>
<td>49</td>
<td>48.9605</td>
<td>56.3639</td>
<td>43.7385</td>
<td>54.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>16</td>
<td>60</td>
<td>59.9605</td>
<td>67.3639</td>
<td>54.7385</td>
<td>65.1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>17</td>
<td>95</td>
<td>94.9605</td>
<td>102.364</td>
<td>89.7385</td>
<td>100.183</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>18</td>
<td>82</td>
<td>81.9605</td>
<td>89.3639</td>
<td>76.7385</td>
<td>87.1825</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Image Files
Using the StatReporter

### Analyze Experiment - reacted

File name: C:\DocData17\chemical reaction2.sgx

#### Estimated effects for reacted (%)

<table>
<thead>
<tr>
<th>Effect</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>V.I.F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>average</td>
<td>65.2105</td>
<td>0.378313</td>
<td>1.0</td>
</tr>
<tr>
<td>A:feed rate</td>
<td>-2.0</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>B:catalyst</td>
<td>20.5</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>C:agitation</td>
<td>0.0</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>D:temperature</td>
<td>12.25</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>E:concentration</td>
<td>-6.25</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>AB</td>
<td>1.5</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>AC</td>
<td>0.5</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>AD</td>
<td>-0.75</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>AE</td>
<td>1.25</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>BC</td>
<td>1.5</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>BD</td>
<td>10.75</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>BE</td>
<td>1.25</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>CD</td>
<td>0.25</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>CE</td>
<td>2.25</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
<tr>
<td>DE</td>
<td>-9.5</td>
<td>0.824515</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Standard errors are based on total error with 3 d.f.

#### The StatAdvisor

This table shows each of the estimated effects and interactions. Also shown is the standard error of each of the effects, which measures their sampling error. Note also that the largest variance inflation factor (V.I.F.) equals 1.0. For a perfectly orthogonal design, all of the factors would...
#5. The StatGallery

- Used to place more than one graph on a single printed page.

- Also used to overlay a graph on top of another.
Example – Nonlinear Regression
#6. Repeat Analysis By…
#7. Value Labels

- *Value labels* are strings assigned to each value in a numeric data column.

- Allow entry of numeric values which are replaced by labels on output.

- Very helpful for entering survey data.
Example

• Suppose you ask 500 people to taste a new type of ice cream and rate it as:
  • Excellent
  • Very good
  • Good
  • Mediocre
  • Poor
  • Horrible
Column Definition
Output
More Information

- Go to www.statgraphics.com
- Click on “Watch a Video”.
- Complete the form and press “Go to Video”.
- Click on “Watch another video”.