**Trend Lines Model**

A linear trend model is computed for sum of Actual (actual & forecast) given natural log of Surg Date Day. The model may be significant at p <= 0.05.

|  |  |
| --- | --- |
| **Model formula:** | Month of Surg Date\*Forecast indicator\*Quarter of Surg Date\*Year of Surg Date\*( ln(Day of Surg Date) + intercept ) |
| **Number of modeled observations:** | 270 |
| **Number of filtered observations:** | 100 |
| **Model degrees of freedom:** | 28 |
| **Residual degrees of freedom (DF):** | 242 |
| **SSE (sum squared error):** | 64384.7 |
| **MSE (mean squared error):** | 266.053 |
| **R-Squared:** | 0.166794 |
| **Standard error:** | 16.3111 |
| **p-value (significance):** | 0.011566 |

**Analysis of Variance:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Field** | **DF** | **SSE** | **MSE** | **F** | **p-value** |
| **Month of Surg Date** | 16 | 6643.3668 | 415.21 | 1.56063 | 0.0802895 |
| **Forecast indicator** | 2 | 92.690619 | 46.3453 | 0.174196 | 0.840237 |
| **Quarter of Surg Date** | 0 | -7.2759576e-12 | N/A | N/A | N/A |
| **Year of Surg Date** | 0 | 0 | N/A | N/A | N/A |

**Individual trend lines:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Panes** | | **Color** | **Line** | | **Coefficients** | | | | |
| **Row** | **Column** | **Forecast indicator** | **p-value** | **DF** | **Term** | **Value** | **StdErr** | **t-value** | **p-value** |
| Actual | 2011, Q4, October | Actual | 0.664298 | 14 | ln(Day of Surg Date) | -3.40578 | 7.6822 | -0.443334 | 0.664298 |
|  | | | | | intercept | 123.653 | 22.6348 | 5.46295 | < 0.0001 |
| Actual | 2011, Q4, November | Actual | 0.791687 | 19 | ln(Day of Surg Date) | -1.72301 | 6.43229 | -0.267869 | 0.791687 |
|  | | | | | intercept | 122.337 | 16.5483 | 7.39273 | < 0.0001 |
| Actual | 2011, Q4, December | Actual | 0.104929 | 20 | ln(Day of Surg Date) | -15.392 | 9.06243 | -1.69844 | 0.104929 |
|  | | | | | intercept | 143.363 | 24.1125 | 5.94559 | < 0.0001 |
| Actual | 2012, Q1, January | Actual | 0.0524839 | 20 | ln(Day of Surg Date) | 6.38584 | 3.09752 | 2.0616 | 0.0524839 |
|  | | | | | intercept | 98.5513 | 8.21881 | 11.9909 | < 0.0001 |
| Actual | 2012, Q1, February | Actual | 0.0584552 | 19 | ln(Day of Surg Date) | 4.37218 | 2.17151 | 2.01343 | 0.0584552 |
|  | | | | | intercept | 103.701 | 5.62209 | 18.4453 | < 0.0001 |
| Actual | 2012, Q1, March | Actual | 0.33422 | 20 | ln(Day of Surg Date) | -3.29 | 3.32477 | -0.989541 | 0.33422 |
|  | | | | | intercept | 124.778 | 8.84624 | 14.1052 | < 0.0001 |
| Actual | 2012, Q2, April | Actual | 0.856016 | 19 | ln(Day of Surg Date) | -0.716188 | 3.89378 | -0.183931 | 0.856016 |
|  | | | | | intercept | 120.36 | 10.1642 | 11.8416 | < 0.0001 |
| Actual | 2012, Q2, May | Actual | 0.574302 | 20 | ln(Day of Surg Date) | 1.84217 | 3.22573 | 0.571087 | 0.574302 |
|  | | | | | intercept | 113.085 | 8.41677 | 13.4356 | < 0.0001 |
| Actual | 2012, Q2, June | Actual | 0.340707 | 19 | ln(Day of Surg Date) | 3.13149 | 3.20427 | 0.977288 | 0.340707 |
|  | | | | | intercept | 116.185 | 8.49895 | 13.6705 | < 0.0001 |
| Actual | 2012, Q3, July | Actual | 0.351883 | 19 | ln(Day of Surg Date) | -1.98887 | 2.08397 | -0.954367 | 0.351883 |
|  | | | | | intercept | 119.638 | 5.62441 | 21.2711 | < 0.0001 |
| Actual | 2012, Q3, August | Actual | 0.921342 | 21 | ln(Day of Surg Date) | 0.195316 | 1.95439 | 0.099937 | 0.921342 |
|  | | | | | intercept | 123.856 | 5.22076 | 23.7238 | < 0.0001 |
| Actual | 2012, Q3, September | Estimate | 0.842703 | 15 | ln(Day of Surg Date) | 1.76777 | 8.7554 | 0.201906 | 0.842703 |
|  | | | | | intercept | 103.288 | 26.9119 | 3.83798 | 0.001613 |
| Actual | 2012, Q3, September | Actual | 0.648477 | 6 | ln(Day of Surg Date) | 3.63741 | 7.58387 | 0.479625 | 0.648477 |
|  | | | | | intercept | 105.88 | 15.9339 | 6.64495 | 0.0005609 |
| Actual | 2012, Q4, October | Estimate | 0.316114 | 11 | ln(Day of Surg Date) | -2.87829 | 2.74048 | -1.05029 | 0.316114 |
|  | | | | | intercept | 116.378 | 5.16367 | 22.5378 | < 0.0001 |

**Options Used to Create Forecasts**

|  |  |
| --- | --- |
| **Time series:** | Day of Surg Date |
| **Measures:** | Sum of Actual |
|  |  |
| **Forecast forward:** | 30 days (September 14, 2012 – October 13, 2012) |
| **Forecast based on:** | May 17, 2012 – September 13, 2012 |
| **Ignore last:** | 1 day (September 14, 2012) |
| **Seasonal pattern:** | 7 day cycle |

**Sum of Actual**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Initial** | | |  | **Change From Initial** |  | **Seasonal Effect** | | | |  | **Contribution** | |  |  |
| **September 14, 2012** | | |  | **September 14, 2012 – October 13, 2012** |  | **High** | | **Low** | |  | **Trend** | **Season** |  | **Quality** |
| 107 | ± | 20 |  | -7 |  | October 11, 2012 | 5 | October 7, 2012 | -15 |  | 0.1% | 99.9% |  | Ok |

All forecasts were computed using exponential smoothing.

**Sum of Actual**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model** | | |  | **Quality Metrics** | | | | |  | **Smoothing Coefficients** | | |
| **Level** | **Trend** | **Season** |  | **RMSE** | **MAE** | **MASE** | **MAPE** | **AIC** |  | **Alpha** | **Beta** | **Gamma** |
| Additive | Additive | Additive |  | 10 | 8 | 0.76 | 6.9% | 409 |  | 0.212 | 0.000 | 0.111 |

 