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| --- |
| The SAS System |

The GLIMMIX Procedure

| **Model Information** | |
| --- | --- |
| **Data Set** | WORK.DIFFERENCE |
| **Response Variable** | diff |
| **Response Distribution** | Shifted T(3) |
| **Link Function** | Identity |
| **Variance Function** | Default |
| **Variance Matrix** | Diagonal |
| **Estimation Technique** | Maximum Likelihood |
| **Degrees of Freedom Method** | Residual |

| **Class Level Information** | | |
| --- | --- | --- |
| **Class** | **Levels** | **Values** |
| **mort\_time** | 4 | control early late mort\_tim |
| **mort\_percent** | 7 | 0 10 25 50 75 90 mort\_per |
| **hatch\_interval** | 3 | asynch hatch\_in synch |
| **e\_stderr** | 4 | 1 3 e\_stderr uniform |

|  |  |
| --- | --- |
| **Number of Observations Read** | 1651 |
| **Number of Observations Used** | 1650 |

| **Dimensions** | |
| --- | --- |
| **Covariance Parameters** | 2 |
| **Columns in X** | 252 |
| **Columns in Z** | 0 |
| **Subjects (Blocks in V)** | 1 |
| **Max Obs per Subject** | 1650 |

| **Optimization Information** | |
| --- | --- |
| **Optimization Technique** | Newton-Raphson |
| **Parameters in Optimization** | 67 |
| **Lower Boundaries** | 1 |
| **Upper Boundaries** | 0 |
| **Fixed Effects** | Not Profiled |

| **Iteration History** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **Iteration** | **Restarts** | **Evaluations** | **Objective Function** | **Change** | **Max Gradient** |
| **0** | **0** | 4 | 7882.7414445 | . | 0.794497 |
| **1** | **0** | 3 | 7839.963689 | 42.77775554 | 0.797613 |
| **2** | **0** | 3 | 7821.3777522 | 18.58593673 | 0.155079 |
| **3** | **0** | 3 | 7820.2791897 | 1.09856256 | 0.005621 |
| **4** | **0** | 3 | 7820.2729004 | 0.00628931 | 0.000048 |
| **5** | **0** | 3 | 7820.2728999 | 0.00000046 | 3.656E-9 |

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| --- |
| Convergence criterion (GCONV=1E-8) satisfied. |

| **Fit Statistics** | |
| --- | --- |
| **-2 Log Likelihood** | 15640.55 |
| **AIC (smaller is better)** | 15774.55 |
| **AICC (smaller is better)** | 15780.31 |
| **BIC (smaller is better)** | 16136.92 |
| **CAIC (smaller is better)** | 16203.92 |
| **HQIC (smaller is better)** | 15908.90 |
| **Pearson Chi-Square** | 449999.2 |
| **Pearson Chi-Square / DF** | 272.73 |

| **Type III Tests of Fixed Effects** | | | | |
| --- | --- | --- | --- | --- |
| **Effect** | **Num DF** | **Den DF** | **F Value** | **Pr > F** |
| **e\_stderr** | 2 | 1584 | 167.84 | <.0001 |
| **mort\_time** | 1 | 1584 | 173.79 | <.0001 |
| **mort\_time\*e\_stderr** | 2 | 1584 | 41.32 | <.0001 |
| **mort\_percent** | 4 | 1584 | 67030.2 | <.0001 |
| **mort\_percen\*e\_stderr** | 8 | 1584 | 23.28 | <.0001 |
| **mort\_time\*mort\_perce** | 4 | 1584 | 16783.4 | <.0001 |
| **mort\_t\*mort\_p\*e\_stde** | 8 | 1584 | 5.25 | <.0001 |
| **hatch\_interval** | 1 | 1584 | 2786.88 | <.0001 |
| **hatch\_inter\*e\_stderr** | 2 | 1584 | 19.93 | <.0001 |
| **mort\_time\*hatch\_inte** | 1 | 1584 | 103.22 | <.0001 |
| **mort\_t\*hatch\_\*e\_stde** | 2 | 1584 | 6.51 | 0.0015 |
| **mort\_perc\*hatch\_inte** | 4 | 1584 | 157.15 | <.0001 |
| **mort\_p\*hatch\_\*e\_stde** | 8 | 1584 | 16.93 | <.0001 |
| **mort\_t\*mort\_p\*hatch\_** | 4 | 1584 | 266.41 | <.0001 |
| **mort\*mort\*hatc\*e\_std** | 8 | 1584 | 6.45 | <.0001 |

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The GLIMMIX Procedure

| **Model Information** | |
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| **Response Variable** | diff |
| **Response Distribution** | Shifted T(3) |
| **Link Function** | Identity |
| **Variance Function** | Default |
| **Variance Matrix** | Diagonal |
| **Estimation Technique** | Maximum Likelihood |
| **Degrees of Freedom Method** | Residual |

| **Class Level Information** | | |
| --- | --- | --- |
| **Class** | **Levels** | **Values** |
| **treatment** | 66 | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 |

|  |  |
| --- | --- |
| **Number of Observations Read** | 1651 |
| **Number of Observations Used** | 1650 |

| **Dimensions** | |
| --- | --- |
| **Covariance Parameters** | 2 |
| **Columns in X** | 67 |
| **Columns in Z** | 0 |
| **Subjects (Blocks in V)** | 1 |
| **Max Obs per Subject** | 1650 |

| **Optimization Information** | |
| --- | --- |
| **Optimization Technique** | Newton-Raphson |
| **Parameters in Optimization** | 67 |
| **Lower Boundaries** | 1 |
| **Upper Boundaries** | 0 |
| **Fixed Effects** | Not Profiled |

| **Iteration History** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **Iteration** | **Restarts** | **Evaluations** | **Objective Function** | **Change** | **Max Gradient** |
| **0** | **0** | 4 | 7882.7414445 | . | 0.794497 |
| **1** | **0** | 3 | 7839.963689 | 42.77775554 | 0.757789 |
| **2** | **0** | 3 | 7821.3777522 | 18.58593673 | 0.155079 |
| **3** | **0** | 3 | 7820.2791897 | 1.09856256 | 0.005621 |
| **4** | **0** | 3 | 7820.2729004 | 0.00628931 | 0.000048 |
| **5** | **0** | 3 | 7820.2728999 | 0.00000046 | 3.656E-9 |

|  |
| --- |
| Convergence criterion (GCONV=1E-8) satisfied. |

| **Fit Statistics** | |
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| **-2 Log Likelihood** | 15640.55 |
| **AIC (smaller is better)** | 15774.55 |
| **AICC (smaller is better)** | 15780.31 |
| **BIC (smaller is better)** | 16136.92 |
| **CAIC (smaller is better)** | 16203.92 |
| **HQIC (smaller is better)** | 15908.90 |
| **Pearson Chi-Square** | 449999.2 |
| **Pearson Chi-Square / DF** | 272.73 |

| **Type III Tests of Fixed Effects** | | | | |
| --- | --- | --- | --- | --- |
| **Effect** | **Num DF** | **Den DF** | **F Value** | **Pr > F** |
| **treatment** | 65 | 1584 | 5580.71 | <.0001 |

| **Estimates** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **Label** | **Estimate** | **Standard Error** | **DF** | **t Value** | **Pr > |t|** |
| **stderr = 1 asynch 10% early** | 41.8944 | 6.1136 | 1584 | 6.85 | <.0001 |
| **stderr = 1 asynch 25% early** | 102.42 | 6.2760 | 1584 | 16.32 | <.0001 |
| **stderr = 1 asynch 50% early** | 227.05 | 6.1418 | 1584 | 36.97 | <.0001 |
| **stderr = 1 asynch 75% early** | -610.61 | 7.8666 | 1584 | -77.62 | <.0001 |
| **stderr = 1 asynch 90% early** | -785.04 | 5.6656 | 1584 | -138.56 | <.0001 |
| **stderr = 1 asynch 10% late** | -17.8828 | 6.0982 | 1584 | -2.93 | 0.0034 |
| **stderr = 1 asynch 25% late** | -81.0447 | 6.2888 | 1584 | -12.89 | <.0001 |
| **stderr = 1 asynch 50% late** | -207.83 | 5.8895 | 1584 | -35.29 | <.0001 |
| **stderr = 1 asynch 75% late** | -342.26 | 5.9679 | 1584 | -57.35 | <.0001 |
| **stderr = 1 asynch 90% late** | -434.76 | 5.7259 | 1584 | -75.93 | <.0001 |
| **stderr = 1 synch 10% early** | 82.5472 | 6.4911 | 1584 | 12.72 | <.0001 |
| **stderr = 1 synch 25% early** | 275.01 | 6.7684 | 1584 | 40.63 | <.0001 |
| **stderr = 1 synch 50% early** | 225.07 | 6.7782 | 1584 | 33.21 | <.0001 |
| **stderr = 1 synch 75% early** | -533.36 | 6.2039 | 1584 | -85.97 | <.0001 |
| **stderr = 1 synch 90% early** | -643.41 | 5.3071 | 1584 | -121.24 | <.0001 |
| **stderr = 1 synch 10% late** | -16.6275 | 5.7848 | 1584 | -2.87 | 0.0041 |
| **stderr = 1 synch 25% late** | -37.8107 | 5.9310 | 1584 | -6.38 | <.0001 |
| **stderr = 1 synch 50% late** | -79.7699 | 6.0428 | 1584 | -13.20 | <.0001 |
| **stderr = 1 synch 75% late** | -258.22 | 5.4338 | 1584 | -47.52 | <.0001 |
| **stderr = 1 synch 90% late** | -345.20 | 5.5252 | 1584 | -62.48 | <.0001 |
| **stderr = 3 asynch 10% early** | 46.5293 | 5.7356 | 1584 | 8.11 | <.0001 |
| **stderr = 3 asynch 25% early** | 96.9085 | 5.6248 | 1584 | 17.23 | <.0001 |
| **stderr = 3 asynch 50% early** | 220.00 | 5.6168 | 1584 | 39.17 | <.0001 |
| **stderr = 3 asynch 75% early** | -620.44 | 6.8124 | 1584 | -91.07 | <.0001 |
| **stderr = 3 asynch 90% early** | -800.60 | 5.4012 | 1584 | -148.23 | <.0001 |
| **stderr = 3 asynch 10% late** | -30.1127 | 5.9595 | 1584 | -5.05 | <.0001 |
| **stderr = 3 asynch 25% late** | -73.7794 | 5.6810 | 1584 | -12.99 | <.0001 |
| **stderr = 3 asynch 50% late** | -203.44 | 5.5750 | 1584 | -36.49 | <.0001 |
| **stderr = 3 asynch 75% late** | -342.38 | 5.4799 | 1584 | -62.48 | <.0001 |
| **stderr = 3 asynch 90% late** | -437.68 | 5.5916 | 1584 | -78.27 | <.0001 |
| **stderr = 3 synch 10% early** | 103.44 | 6.9315 | 1584 | 14.92 | <.0001 |
| **stderr = 3 synch 25% early** | 242.23 | 6.2045 | 1584 | 39.04 | <.0001 |
| **stderr = 3 synch 50% early** | 209.45 | 6.3615 | 1584 | 32.92 | <.0001 |
| **stderr = 3 synch 75% early** | -569.01 | 6.6038 | 1584 | -86.16 | <.0001 |
| **stderr = 3 synch 90% early** | -688.06 | 6.0622 | 1584 | -113.50 | <.0001 |
| **stderr = 3 synch 10% late** | -16.1855 | 6.1531 | 1584 | -2.63 | 0.0086 |
| **stderr = 3 synch 25% late** | -40.2480 | 6.8333 | 1584 | -5.89 | <.0001 |
| **stderr = 3 synch 50% late** | -130.61 | 6.4180 | 1584 | -20.35 | <.0001 |
| **stderr = 3 synch 75% late** | -310.48 | 5.8126 | 1584 | -53.42 | <.0001 |
| **stderr = 3 synch 90% late** | -402.01 | 6.0955 | 1584 | -65.95 | <.0001 |
| **stderr = uniform asynch 10% early** | 20.8731 | 6.0977 | 1584 | 3.42 | 0.0006 |
| **stderr = uniform asynch 25% early** | 91.8586 | 5.3232 | 1584 | 17.26 | <.0001 |
| **stderr = uniform asynch 50% early** | 179.41 | 5.8095 | 1584 | 30.88 | <.0001 |
| **stderr = uniform asynch 75% early** | -701.23 | 6.2058 | 1584 | -113.00 | <.0001 |
| **stderr = uniform asynch 90% early** | -831.41 | 5.3254 | 1584 | -156.12 | <.0001 |
| **stderr = uniform asynch 10% late** | -32.9923 | 5.3592 | 1584 | -6.16 | <.0001 |
| **stderr = uniform asynch 25% late** | -97.0338 | 5.3927 | 1584 | -17.99 | <.0001 |
| **stderr = uniform asynch 50% late** | -226.55 | 5.7248 | 1584 | -39.57 | <.0001 |
| **stderr = uniform asynch 75% late** | -376.48 | 5.2542 | 1584 | -71.65 | <.0001 |
| **stderr = uniform asynch 90% late** | -468.03 | 5.4790 | 1584 | -85.42 | <.0001 |
| **stderr = uniform synch 10% early** | 71.1109 | 6.6240 | 1584 | 10.74 | <.0001 |
| **stderr = uniform synch 25% early** | 195.87 | 5.7319 | 1584 | 34.17 | <.0001 |
| **stderr = uniform synch 50% early** | 140.08 | 6.7241 | 1584 | 20.83 | <.0001 |
| **stderr = uniform synch 75% early** | -596.65 | 5.8375 | 1584 | -102.21 | <.0001 |
| **stderr = uniform synch 90% early** | -700.85 | 5.4567 | 1584 | -128.44 | <.0001 |
| **stderr = uniform synch 10% late** | -19.8115 | 6.9080 | 1584 | -2.87 | 0.0042 |
| **stderr = uniform synch 25% late** | -58.4869 | 5.8343 | 1584 | -10.02 | <.0001 |
| **stderr = uniform synch 50% late** | -149.17 | 5.6649 | 1584 | -26.33 | <.0001 |
| **stderr = uniform synch 75% late** | -310.21 | 6.1175 | 1584 | -50.71 | <.0001 |
| **stderr = uniform synch 90% late** | -396.62 | 5.8131 | 1584 | -68.23 | <.0001 |