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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** | 3 | control early late |
| **mort\_percent** | 6 | 0 10 25 50 75 90 |
| **hatch\_interval** | 2 | asynch synch |
| **food\_r** | 3 | 0.5 1 2 |

|  |  |
| --- | --- |
| **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 | 8106.5658439 | . | 1.473999 |
| **1** | **0** | 3 | 8049.6070862 | 56.95875770 | 0.361471 |
| **2** | **0** | 3 | 8040.902154 | 8.70493215 | 0.043882 |
| **3** | **0** | 3 | 8040.3868371 | 0.51531695 | 0.002873 |
| **4** | **0** | 3 | 8040.3840928 | 0.00274425 | 0.000017 |
| **5** | **0** | 3 | 8040.3840927 | 0.00000009 | 5.61E-10 |

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

| **Fit Statistics** | |
| --- | --- |
| **-2 Log Likelihood** | 16080.77 |
| **AIC (smaller is better)** | 16214.77 |
| **AICC (smaller is better)** | 16220.53 |
| **BIC (smaller is better)** | 16577.14 |
| **CAIC (smaller is better)** | 16644.14 |
| **HQIC (smaller is better)** | 16349.12 |
| **Pearson Chi-Square** | 579285.1 |
| **Pearson Chi-Square / DF** | 351.08 |

| **Type III Tests of Fixed Effects** | | | | |
| --- | --- | --- | --- | --- |
| **Effect** | **Num DF** | **Den DF** | **F Value** | **Pr > F** |
| **mort\_time** | 1 | 1584 | 409.73 | <.0001 |
| **mort\_percent** | 4 | 1584 | 59238.9 | <.0001 |
| **mort\_time\*mort\_perce** | 4 | 1584 | 17735.0 | <.0001 |
| **hatch\_interval** | 1 | 1584 | 176.37 | <.0001 |
| **mort\_time\*hatch\_inte** | 1 | 1584 | 25.30 | <.0001 |
| **mort\_perc\*hatch\_inte** | 4 | 1584 | 89.92 | <.0001 |
| **mort\_t\*mort\_p\*hatch\_** | 4 | 1584 | 103.95 | <.0001 |
| **food\_r** | 2 | 1584 | 5895.94 | <.0001 |
| **mort\_time\*food\_r** | 2 | 1584 | 480.47 | <.0001 |
| **mort\_percent\*food\_r** | 8 | 1584 | 3794.26 | <.0001 |
| **mort\_t\*mort\_p\*food\_r** | 8 | 1584 | 1998.36 | <.0001 |
| **hatch\_interva\*food\_r** | 2 | 1584 | 791.43 | <.0001 |
| **mort\_t\*hatch\_\*food\_r** | 2 | 1584 | 124.46 | <.0001 |
| **mort\_p\*hatch\_\*food\_r** | 8 | 1584 | 464.46 | <.0001 |
| **mort\*mort\*hatc\*food\_** | 8 | 1584 | 258.15 | <.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 | 8106.5658439 | . | 1.473999 |
| **1** | **0** | 3 | 8049.6070862 | 56.95875770 | 0.361471 |
| **2** | **0** | 3 | 8040.902154 | 8.70493215 | 0.043882 |
| **3** | **0** | 3 | 8040.3868371 | 0.51531695 | 0.002873 |
| **4** | **0** | 3 | 8040.3840928 | 0.00274425 | 0.000017 |
| **5** | **0** | 3 | 8040.3840927 | 0.00000009 | 5.61E-10 |

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

| **Fit Statistics** | |
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| **-2 Log Likelihood** | 16080.77 |
| **AIC (smaller is better)** | 16214.77 |
| **AICC (smaller is better)** | 16220.53 |
| **BIC (smaller is better)** | 16577.14 |
| **CAIC (smaller is better)** | 16644.14 |
| **HQIC (smaller is better)** | 16349.12 |
| **Pearson Chi-Square** | 579285.1 |
| **Pearson Chi-Square / DF** | 351.08 |

| **Type III Tests of Fixed Effects** | | | | |
| --- | --- | --- | --- | --- |
| **Effect** | **Num DF** | **Den DF** | **F Value** | **Pr > F** |
| **treatment** | 65 | 1584 | 6427.72 | <.0001 |

| **Estimates** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **Label** | **Estimate** | **Standard Error** | **DF** | **t Value** | **Pr > |t|** |
| **r= 0.5 asynch 10% early** | 23.3214 | 5.7759 | 1584 | 4.04 | <.0001 |
| **r= 0.5 asynch 25% early** | 57.7892 | 5.8371 | 1584 | 9.90 | <.0001 |
| **r= 0.5 asynch 50% early** | 108.01 | 5.8603 | 1584 | 18.43 | <.0001 |
| **r= 0.5 asynch 75% early** | -497.44 | 6.2489 | 1584 | -79.60 | <.0001 |
| **r= 0.5 asynch 90% early** | -576.37 | 5.7209 | 1584 | -100.75 | <.0001 |
| **r= 0.5 asynch 10% late** | -17.5771 | 6.0912 | 1584 | -2.89 | 0.0040 |
| **r= 0.5 asynch 25% late** | -64.6290 | 5.8877 | 1584 | -10.98 | <.0001 |
| **r= 0.5 asynch 50% late** | -175.46 | 5.7649 | 1584 | -30.44 | <.0001 |
| **r= 0.5 asynch 75% late** | -293.54 | 5.8366 | 1584 | -50.29 | <.0001 |
| **r= 0.5 asynch 90% late** | -323.25 | 5.7471 | 1584 | -56.25 | <.0001 |
| **r= 0.5 synch 10% early** | 44.8265 | 8.4043 | 1584 | 5.33 | <.0001 |
| **r= 0.5 synch 25% early** | 119.88 | 6.2591 | 1584 | 19.15 | <.0001 |
| **r= 0.5 synch 50% early** | 62.7745 | 6.5887 | 1584 | 9.53 | <.0001 |
| **r= 0.5 synch 75% early** | -317.01 | 6.4958 | 1584 | -48.80 | <.0001 |
| **r= 0.5 synch 90% early** | -366.65 | 6.6787 | 1584 | -54.90 | <.0001 |
| **r= 0.5 synch 10% late** | 2.4400 | 6.9134 | 1584 | 0.35 | 0.7242 |
| **r= 0.5 synch 25% late** | -3.5070 | 6.8398 | 1584 | -0.51 | 0.6082 |
| **r= 0.5 synch 50% late** | -90.2874 | 5.9658 | 1584 | -15.13 | <.0001 |
| **r= 0.5 synch 75% late** | -201.22 | 6.3523 | 1584 | -31.68 | <.0001 |
| **r= 0.5 synch 90% late** | -238.34 | 6.4963 | 1584 | -36.69 | <.0001 |
| **r= 1 asynch 10% early** | 20.9046 | 6.4872 | 1584 | 3.22 | 0.0013 |
| **r= 1 asynch 25% early** | 92.2871 | 5.7986 | 1584 | 15.92 | <.0001 |
| **r= 1 asynch 50% early** | 179.74 | 6.2306 | 1584 | 28.85 | <.0001 |
| **r= 1 asynch 75% early** | -701.54 | 6.6734 | 1584 | -105.12 | <.0001 |
| **r= 1 asynch 90% early** | -831.05 | 5.7639 | 1584 | -144.18 | <.0001 |
| **r= 1 asynch 10% late** | -33.0035 | 5.8046 | 1584 | -5.69 | <.0001 |
| **r= 1 asynch 25% late** | -97.0473 | 5.8468 | 1584 | -16.60 | <.0001 |
| **r= 1 asynch 50% late** | -226.61 | 6.1392 | 1584 | -36.91 | <.0001 |
| **r= 1 asynch 75% late** | -376.36 | 5.7181 | 1584 | -65.82 | <.0001 |
| **r= 1 asynch 90% late** | -467.93 | 5.9658 | 1584 | -78.44 | <.0001 |
| **r= 1 synch 10% early** | 71.5011 | 7.1287 | 1584 | 10.03 | <.0001 |
| **r= 1 synch 25% early** | 196.95 | 6.2470 | 1584 | 31.53 | <.0001 |
| **r= 1 synch 50% early** | 140.15 | 7.1963 | 1584 | 19.48 | <.0001 |
| **r= 1 synch 75% early** | -595.82 | 6.3584 | 1584 | -93.71 | <.0001 |
| **r= 1 synch 90% early** | -700.15 | 5.9828 | 1584 | -117.03 | <.0001 |
| **r= 1 synch 10% late** | -19.7727 | 7.3732 | 1584 | -2.68 | 0.0074 |
| **r= 1 synch 25% late** | -57.6614 | 6.3498 | 1584 | -9.08 | <.0001 |
| **r= 1 synch 50% late** | -148.33 | 6.2021 | 1584 | -23.92 | <.0001 |
| **r= 1 synch 75% late** | -309.48 | 6.5665 | 1584 | -47.13 | <.0001 |
| **r= 1 synch 90% late** | -396.07 | 6.3168 | 1584 | -62.70 | <.0001 |
| **r= 2 asynch 10% early** | 49.8083 | 6.9327 | 1584 | 7.18 | <.0001 |
| **r= 2 asynch 25% early** | 111.73 | 6.6371 | 1584 | 16.83 | <.0001 |
| **r= 2 asynch 50% early** | 244.35 | 7.0424 | 1584 | 34.70 | <.0001 |
| **r= 2 asynch 75% early** | -957.21 | 7.8856 | 1584 | -121.39 | <.0001 |
| **r= 2 asynch 90% early** | -1181.81 | 6.2173 | 1584 | -190.09 | <.0001 |
| **r= 2 asynch 10% late** | -37.3964 | 6.9979 | 1584 | -5.34 | <.0001 |
| **r= 2 asynch 25% late** | -129.82 | 6.6904 | 1584 | -19.40 | <.0001 |
| **r= 2 asynch 50% late** | -313.76 | 6.7648 | 1584 | -46.38 | <.0001 |
| **r= 2 asynch 75% late** | -481.68 | 6.6528 | 1584 | -72.40 | <.0001 |
| **r= 2 asynch 90% late** | -534.99 | 6.7516 | 1584 | -79.24 | <.0001 |
| **r= 2 synch 10% early** | 71.3059 | 9.1507 | 1584 | 7.79 | <.0001 |
| **r= 2 synch 25% early** | 205.75 | 8.8354 | 1584 | 23.29 | <.0001 |
| **r= 2 synch 50% early** | 314.68 | 9.2646 | 1584 | 33.97 | <.0001 |
| **r= 2 synch 75% early** | -1186.14 | 9.1571 | 1584 | -129.53 | <.0001 |
| **r= 2 synch 90% early** | -1650.69 | 8.5034 | 1584 | -194.12 | <.0001 |
| **r= 2 synch 10% late** | -46.5151 | 8.8882 | 1584 | -5.23 | <.0001 |
| **r= 2 synch 25% late** | -168.77 | 9.5678 | 1584 | -17.64 | <.0001 |
| **r= 2 synch 50% late** | -311.35 | 9.0492 | 1584 | -34.41 | <.0001 |
| **r= 2 synch 75% late** | -478.18 | 9.6342 | 1584 | -49.63 | <.0001 |
| **r= 2 synch 90% late** | -649.01 | 9.7778 | 1584 | -66.38 | <.0001 |