Estimation of the effects of predictor variables on the Boag parameters using GAMEL.xlsm

1) Click the "GAMEL" button. When you open the "GAMEL" program, GAMEL Menu appears on the screen. Click Step I and press the Browse button to indicate your data file.

2) Then click GAMEL Menu to go to the next step (Step II). Fill the first two blank colorless cells with the variable numbers of survival time and outcome, and another five colorless cells with the code numbers of the five outcome categories (If they have already been filled, proceed to the next step).

3) Return to GAMEL Menu and click Step III. The next question asked by the computer is whether you assume some patients are curable. If so, turn on the Yes button. Otherwise, turn on the No button. Select the independent (predictor) variables from the left variable list to solve the three regressions simultaneously. Regression c assesses the effects of the selected variables on the cure (Boag parameter c). Regression m assesses the effects of the variables on the failure time (Boag parameter m) and regression s assesses the effects of the variables on the failure time variability (Boag parameter s). For example, suppose that you wish to know the effects of tumor extension (T) and lymphnode involvement (N) on the cure and failure time in gastric cancer. Since the variable numbers of the T and N are respectively 9 and 14, in GC_TENRI data file, enter, from left to right, 9 and 14 in the blank colorless cells in regressions c and m. This enables estimation of regression coefficients for T and N, while the variable number of the regression constant is indicated by 0 in the left-most cell.

4) Return to GAMEL Menu and click Step IV. Usually, estimation converges.

5) If so, click Step V to see the results of the three regressions. Their interpretations are the same as in usual regression analyses. The T appears to have a significant effect on cure but only a marginal effect on failure time; the N has highly significant effects on both cure and failure time. This implies that lymph node involvement is very likely associated with reduced chance of cure and accelerated time to death.

6) After returning to GAMEL Menu, you have three options, to view the survival curves (Step VI), to perform a new regression analysis (Step III), or to exit (Step VII). Survival curves provide a picture of how the selected variables affect the disease-specific survival curve as they are increased or decreased within their ranges. If you choose to view survival curves, first, select the panel number (Panel 1 or Panel 2) where survival curves are plotted, then, adjust the maximal value of the X-axis and, if you prefer a log scale, click the check box for log transformation. Next, to create disease-specific curves, a single value is assigned to each selected variable, and entered in the corresponding colorless cell as shown below. For example, T is given a value of 1, and N is given a value of 0 so as to create Curve 1. If the set of values are assigned to the variables, click Plot. Pairs of survival curves are plotted including the Kaplan-Meier disease-specific curve and

Boag parametric curve. You can evaluate how the parametric curve fits the actual Kaplan-Meier curve. The same procedures can be repeated.

Table 1. Questions and Answers

Selected Variable		Number of Survival Curve				
		1	2	3	4	5
Selected Variable		**Value (cell's color = Line's color)**				
Name	Range	1	2	3	4	5
T	1 ~ 2	1	1	2	2	
N	0 ~ 1	0	1	0	1	

If a continuous variable is selected, the number of patients with the same value (e.g., age=30) may be too small. If the group size is less than 5, only the Boag parametric curve is displayed.

To copy the graph and paste it to another sheet or file, click the Copy button.