

## 17. Writing about Event History Analysis

### PROBLEM SET

1. Tammemagi et al. (2005) conducted an analysis of racial disparities in breast cancer survival. Based on figure 17.1 from their study (see p. 371 of *Writing about Multivariate Analysis, 2nd Edition*), write sentences to describe
  - a. Sample sizes at baseline for black and white women
  - b. Direction and magnitude of racial differences in
    - i. median survival time
    - ii. the proportion surviving until at least 5 years after baseline
2. Based on the information in table 17.1 from Valiyeva et al. (2006) (p. 372 of *Writing about Multivariate Analysis, 2nd Edition*), write a short paragraph for the methods section, reporting the sample size, number of spells, and number of admissions, following the guidelines in chapter 17.
3. Smith et al. (2005) conducted an event history analysis of relationships between managed care and rehospitalization among stroke patients. Write the following materials based on the information from their study shown in figure 17.2 (p. 374):
  - a. For the methods section, describe
    - i. The types of events they modeled subsequent to discharge from the index admission.
    - ii. The total number of persons “at risk” in their competing risks model of outcomes in the 30 days after discharge from index admission.
    - iii. The events they modeled subsequent to discharge after first rehospitalization.
    - iv. The number of persons “at risk” in their competing risks model subsequent to rehospitalization.
    - v. The total number of deaths observed during the study period.
  - b. For the results section, report and interpret the direction, magnitude, and statistical significance of the following associations for HMO compared to fee-for-service clients:
    - i. rehospitalization following index admission
    - ii. death following index admission
    - iii. a second rehospitalization

4. Based on table 17.2 from Valiyeva et al. (2006) (p. 380 of *Writing about Multivariate Analysis, 2nd Edition*), use the GEE approach to summarize the direction, magnitude, and statistical significance of the associations between each of the following risk factors and nursing home admission across the two age groups studied:
  - a. Systolic blood pressure of 140+ mmHg
  - b. Cholesterol of 240+ mg/dL
  - c. Diabetes
  
5. DesJardins et al. (2002) analyzed how financial aid affects chances of a first “stopout” (temporary or permanent leave from college). Write the following materials based on information from their study shown in figure 17.5 on p. 379 of *Writing about Multivariate Analysis, 2nd Edition* and table 17A:
  - a. Write a paragraph for the data and methods section defining how the independent variable financial aid is measured and specified in the analysis of college stopout.
  - b. Write an equation to convey the specification between the financial aid measures and college stopout, using subscripts to convey which variables and parameters are time-varying.
  - c. Use the GEE technique to write a paragraph for the results section describing the time-dependent pattern of amount of financial aid by type shown in figure 17.5.

**TABLE 17A.** Relative risk of first stopout from college, by number of years of enrollment and type of financial aid,<sup>a</sup> Minnesota, 1986–1994

# years of enrollment	Loans	Earnings	Scholarship	Grants	Work/study
1	0.78	1.03	0.28	1.03	0.50
2	0.93	0.83	0.38	1.03	0.75
3	0.99	0.73	0.45	1.04	0.92
4	0.97	0.68	0.49	1.06	0.96
5	0.90	0.66	0.51	1.09	0.92
6	0.82	0.67	0.52	1.11	0.84
7	0.75	0.69	0.52	1.12	0.77

Excerpted from DesJardins et al. 2002, table 4.

<sup>a</sup> Per \$1,000 in aid. Compared to no aid. Aid measures are time-varying. Model also controls for race/ethnicity, gender, age, disability, type of college, in- versus out-of-state residence, ACT score, high school class rank, college grade point average, transfer credits, and type of college.

6. Write sentences interpreting the effects of each of the following amounts, types, and timing of financial aid on chances of dropping out of college, based on the results in table 17A.
  - a. A \$1,000 increase in the amount of scholarship aid in the first year of enrollment;
  - b. A \$1,000 increase in the amount of scholarship aid in the fourth year of enrollment;

- c. A \$1,000 increase in the amount of grant aid in the first year of enrollment;
  - d. A \$1,000 increase in the amount of grant aid in the fourth year of enrollment;
  - e. A \$500 increase in the amount of earnings in the first year of enrollment;
  - f. A \$2,000 increase in the amount of earnings in the fourth year of enrollment.
7. Perform the following tasks based on table 17A from DesJardins et al.:
- a. Create a chart to show how the relative risks of first stopout vary by time and type of financial aid.
  - b. Use the GEE technique to write a paragraph describing the time-dependent effects of on college stopout of financial aid by type, following the guidelines in chapters 9, 14, and 17 of *The Chicago Guide to Writing about Multivariate Analysis, 2nd Edition*. Mention which types of financial aid have the largest effect on risk of dropout and whether those patterns are consistent across time.