Statistics 149 – Assignment 4
Due: Thursday, April 20, 2006

1. Sleuth Chapter 22, # 16.
2. Sleuth Chapter 22, # 20.
3. Sleuth Chapter 22, # 24.
4. Sleuth Chapter 22, # 25.
5. In a study of the relationship between car size and accident injuries, accidents were classified according to the type of accident, severity of accident, and whether or not the driver as ejected from the vehicle.

Type	Car Weight	Driver Ejected	Not Severe	Severe
Collision	Small	No	350	150
		Yes	26	23
	Standard	No	1878	1022
		Yes	111	161
Rollover	Small	No	60	112
		Yes	19	80
	Standard	No	148	404
		Yes	22	265

(a) Fit the saturated model and estimate the λs and their standardized value (z statistics). Based on these values, investigate what appear to be a reasonable subset of models.

(b) Fit all models of uniform order. A model of uniform order k contains all k-way interactions, plus all lower order interactions and main effects. For example, the model of uniform order 3 for this problem contains 4 three-way interactions, 6 two-way interactions, and 4 main effects. Which of these models give adequate fit of the data.

(c) Starting from a model of uniform order that fits the data, use backward elimination, to find a more parsimonious model that still fits the data.

(d) Starting from a model of uniform order that provides inadequate fit to a more comprehensive model with provides an adequate fit.

(e) Compare the "best" models suggested by the different methods above. Try to resolve/explain any discrepancies, assuming there are some. Based on all of this work, which model would you choose as the best model? Interpret this model.