Logistic Regression & Summary

Your task for this project is to apply the tools we’ve learned in chapter 20 (Logistic Regression) to answer questions about the relationship between a binary response variable and multiple explanatory variables and then to summarize the entire project. The report should (perhaps a little artifically) speak first to the logistic regression, and then address the complete analysis with the most interesting / relevant findings.

Logistic Regression

- Introduction (Briefly refresh the reader’s mind as to the variables of interest)
- The logistic regression model you’ll be fitting. Use at least 4 explanatory variables. Just like with linear regression, if a factor variable has more than one level, it will need to be made into g-1 indicator variables, where g is the number of levels. Feel free to use quadratic or interaction terms.
- Use either the Wald criterion or the Likelihood Ratio criterion (or both) to choose a model which is a subset of the full model above.
- Interpret your $\beta$ coefficients. Are your coefficients significant? Use odds and odds ratios to give a full interpretation of at least one of the $\beta$ coefficients.
- Provide an ROC curve for the best model you fit. Describe the ROC curve to the reader as if they have never seen one before. Use this and the classification table to comment on the fit of the model.
- Give some summary thoughts on your logistic model.

Summary

- Report on the most interesting or significant findings in your data analysis this semester.
- If one (or more) of the methods we used didn’t give any interesting or applicable results, leave it out.
- Give some justification for why the method(s) worked well (for example, if you used ANOVA, comment on the fact that your 6 groups were very natural and led to an obvious choice of an ANOVA analysis.)
- Make some conclusions about the data overall. Did you see anything that should be further investigated? Do you think maybe the results are fascinating, but the sampling was poorly done and so the analysis should be re-done on a better sample?
- Give any final/concluding thoughts on the project and analysis. (Not whether you liked doing it... you can give me that feedback on the evaluation forms!)

Notes:

- Summarize any output from SPSS. Do not turn in the print outs, but make new tables and summarize so that it flows nicely in the text. I don’t need to see the technical calculations.
- I’ve asked you to do a series of things above, make sure the sections flow nicely into one another. This is a report on the data not a homework assignment. (Try to tell a good story.)
- Do not be tempted to turn in everything you do. Only turn in the interesting parts of the analysis. One of the hardest parts of being a consultant is figuring out what to tell the researcher.
- Computer output that is attached and not described will be ignored.