SCM 651: Business Analytics

WEEK 9

Agenda

Overview of homework #4 (Logit, Probit, Neural networks: info in week 9 videos)

Review of hands-on exercises

Group discussion of articles

- An introduction to data mining and other techniques for advanced analytics

Homework #4

1. Logit and probit analysis (see week 9)
2. Moderating effects (week 7)
3. Final logit & probit models with interaction effects (moderating effects), prediction of outcome, sensitivity analysis
4. Neural network analysis
5. Neural network prediction model and sensitivity analysis (new material in handout in week 9)

Week 9 - Review

Logit & Probit

- Predict probabilities

Logit

- Logistic distribution
- More sensitive in detecting differences at extreme values of your variables

Probit

- Normal distribution
- More sensitive in detecting differences at values near the mean of your variables

Week 9 - Review

Neural networks

- Uses the logistic function to build relationships
- Also has three levels, the X input variables, the hidden layer of variables, and the Y output variables
- To predict the neural network outcome:
  - First, predict the hidden variables from the inputs, just like a logit prediction
  - Second, predict the Y output variables from the hidden variables, again like a logit prediction

Week 9 – Neural Network Prediction and Sensitivity Analysis

In-class example

- Logit analysis of Titanic survivor data
- Creation of prediction model of logit results
- Sensitivity analysis of logit results
- Neural network analysis of Titanic survivor data
- Creation of a prediction model of neural network results
- Sensitivity analysis of neural network results

Article #1: An Introduction to Data Mining and Other Techniques for Advanced Analytics

- An introduction to data mining and other techniques for advanced analytics
  - What are the key differences between statistical analysis and data mining? (page 140)
  - Describe tools for advanced analytics (page 149-151)
    - Data visualization
    - Text mining
    - Social network analysis
    - Contact optimization
  - How do you mitigate the risks of data mining? (page 152)

Article #1: An Introduction to Data Mining and Other Techniques for Advanced Analytics

- An introduction to data mining and other techniques for advanced analytics
  - What are the key differences between statistical analysis and data mining? (page 140)
    - Creation of a hold-out sample
    - Use the hold-out sample to test the model
  - Describe tools for advanced analytics (page 149-151)
    - Data visualization: scatter plots and heat maps, geographic data
    - Text mining: extract structure from unstructured text files
    - Social network analysis: identify networks of calling circles, influencers
    - Contact optimization: best solution for customers calling in and marketers calling out

Article #1: An Introduction to Data Mining and Other Techniques for Advanced Analytics

- An introduction to data mining and other techniques for advanced analytics
  - How do you mitigate the risks of data mining? (page 152)
    - Focus on good data quality, strong business focus, sound user training

Upcoming assignments

1. Homework –

Homework #4 due before live session #10

Submissions instructions:

a) Each team member submits the same team documents in the 2SU site: MS Word homework assignment

b) One team member emails a copy of the team assignment (MS Word and Excel document) to lflee100@syr.edu noting both the team name and day/time of class

2. Hands-on: Week 10 online materials

Tableau: Dashboards

Complete before our next live session