Final Consulting Presentation Outline

Slide 1: Title Slide

* Title: Comparing Accuracy
* Subtitle: Probabilistic Scoring vs Traditional Scoring
* Subtitle: A consulting project for Alan Malik, PhD, Patient Tools, Inc.
* Author: Lee Panter

Slide 2: Presentation Objectives

* What were the client’s questions?
* What analysis was performed?
* What results were obtained from the analysis?
* How (if at all) do these results answer the client’s questions?

Slide 3: Statement of Objectives

Slide 4: What questions/goals were originally provided?

* Q1:
  + First mathematically prove that probabilistic scoring is more accurate than conventional scoring.
* Q2:
  + Second mathematically prove that probabilistic scoring derived from a conventional scored validation dataset is essentially as accurate as using the original validation dataset and therefore still more accurate than conventional scoring.

Slide 5: What questions/goals were actually answered?

* Compare probabilistic scoring accuracy to conventional scoring accuracy, measured against simulated response values generated using information in Patient Health Questionnaire Nine (PHQ9) data. Determine how accuracy comparisons vary as a function of training sample size.
* RE-Q1
  + Mathematical proof not provided
  + Comparison of accuracy using sample-specific methods
* RE-Q2
  + Possibly missed due to Type III error
  + Possibly addressed serendipitously

Slide 6: Background

Slide 7: Patient Health Questionnaire-Nine (PHQ9)

* What is it?
  + Questionnaire “module”
  + Screening and monitoring mental disorders
  + Specific to 9 DSMV-IV depression criteria
  + Nine Questions
  + Responses: 0 - “not at all” to 3 - “nearly every day” [1]
* What’s wrong with it?
  + Traditional method of classification:
  + Sum of Responses (0-27) --> Three Depression Classes
  + [0, 7) Not Clinically Depressed, [7, 10) Sub-threshold Depression, [10, 27] Major Depression
  + 88% sensitive/specific
  + 12% of responses-False Negative/Positives
  + Cost to healthcare systems
  + Wasted time, effort, concern
  + Clinical fatigue [2]

NOTES:

* Statement of Objectives
  + What questions/goals were originally provided?
  + What questions/goals did I actually answer? (Type III error)
* Background
  + What is a PHQ9?
  + What is wrong with the current use of this test?
  + How can Probabilistic Scoring help the situation?
  + What needs to happen in order to demonstrate that Probabilistic Scoring is a better classifications approach?
* Data
  + What is in the data?
  + How was the data obtained?
  + What measures are missing, but needed?
  + What measures are present, but un-utilized?
* Solution Principles
  + How can we quantify accuracy?
  + How can we obtain the most useful, and consistent estimates of accuracy?
  + How do we interpret accuracy measurements?
* Results
  + Three approaches, general summaries provided
    - Charts that show how accuracies compare (probabilistic scoring vs Traditional Scoring) and how each varies with training sample size
* Conclusions & Discussion
  + Can anything be gained from this analysis?
  + What results are relevant?
  + How can the analysis be improved?
  + What is left outstanding? Were stated objectives addressed?