

FUTURE ANALYSES AND RESEARCH RELATED TO DIFFERENTIAL MONITORING, KEY INDICATORS, AND RISK ASSESSMENT METHODOLOGIES UTILIZING PREDICTIVE ANALYTICS

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This short paper addresses what I see as the key future analyses and research related to differential monitoring, key indicators, and risk assessment methodologies. Most of these analyses can most likely be performed via predictive analytics.

Research Questions:

1...There is the need to address the point system within the Differential Monitoring Scoring Protocol (DMSP©) by looking at the probability that the various key elements will occur based upon the research literature. For example, PC x PQ is .5 based upon NQI data because 50% of the states have QRIS systems. This is how all the algorithms would play out if a probability assessment is used rather than the scoring protocol I developed. The scoring protocol mirrors the probability figures as follows:

$$PC + PQ = .50P/4PTS$$

$$KI + RA \rightarrow DM = .50P/4PTS$$

$$PC + KI \rightarrow DM = .25P/2PTS$$

$$PC + RA \rightarrow DM = .25P/2PTS$$

2...There is the need to show how KI and RA are integrated mathematically or via an algorithm.

3...With the effectiveness and efficiency relationship curves (see my DMLMA Powerpoint slides). The effectiveness and efficiency lines are curvilinear rather than linear and cross each other at a substantial compliance level rather than earlier which is more typical with linear data.

4...HSKI as the best case example which incorporates all components. Full data sets, report, training slides, validation data, promotional slides, web site, most details and national DB. This needs to be documented fully and written up as a case study.

5...Run phi correlation against Logit regression, compare results.

6...2 x 2 phi to a 2 x 3 chi square. High/Low frequency matrix to Full/Substantial/Low frequency matrix.

7...ECPQIM/PAM/Measures = DM/Clustering/DMSPP//KI/Classification/Matrix//RA/clustering/Likert. There needs to be a paper written on the relationship between ECPQIM, predictive analytics modeling (PAM), and the actual measures used for each ECPQIM Key Element. I started this paper but it needs to be fully developed (see DATA File Folder).

8...Try different cut offs and see how results are impacted. I started to do this with the GA data base. The more the indicators, the higher the correlation between IC and CI. KI8 --> KI15. The question becomes what is the best level? KI10, KI9, KI13??? This analysis ties back to the efficiency and effectiveness relationship because as one increases the number of indicators, the effectiveness increases but the efficiency of the model drops off. The opposite is also true.

9...Use HS/KS/IL/GA data bases to run the various analyses. These data bases are available for doing all these analyses.

10...DM = YES OR NO, BASED UPON COMPLIANCE HISTORY; H = YES (100-98); L = NO (97-); YES = KI AND/OR RA (ABBREVIATED INSPECTION); NO = CI (FULL INSPECTION); CLUSTERING OR CLASSIFICATION. These are the various key elements of ECPQIM and the types of analyses within predictive analytics modeling (clustering or classification analysis).

11...DMSP – 0-10; CLUSTERING (0,2,4,6,8,10). DMSP – Differential Monitoring Scoring Protocol is an example of clustering analysis via predictive analytics modeling.

12...KI -- .25+; CLASSIFICATION; either it is included or not. KI – Key Indicators is an example of classification analysis via predictive analytics modeling.

13...RA – 9 OUT OF 10 (9+); HIGH RISK; CLASSIFICATION; either it is included or not. RA – Risk Assessment is an example of classification analysis via predictive analytics modeling.