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Propensity Modelling

With SAS Enterprise Guide

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Overview

- Definition
- Different contexts
- Basic method
- Eguide demo
 - Point-and-click
 - “Stereo-Pensity” using SAS programming



Key takeaway points

- Propensity modelling is fun
- EGuide is great
 - Point and click produces good results
 - SAS coding can provide incremental benefits
- Find a good modeller and pay them lots
 - They can make a big difference!



Definition

- Propensity

- “A natural inclination or tendency”
- “A disposition to behave in a certain way”

- Synonyms

- bent, leaning, disposition, proclivity
- penchant

Definition

- Distinguish between
 - Entities looking like “this” ... and ...
 - Entities looking like “that”



Different Contexts

- Acquisition
- Churn
- Up Sell
- Cross Sell
- Fraudulent transactions
- Credit risk
- No shows
- Terrorists



Basic Method

- Data
 - RTM of responders (1) and non responders (0)
- Sample
 - training and validation datasets
- Fit
 - model using training dataset
- Evaluate
 - model using validation dataset
- Score
 - use model to score prospect data
- Apply
 - use model score to determine contact order/cutoff point



Ready to Model (RTM) Data

- Response / Non Response ratio of 1:3 or 1:4
- No missing values
- One record per entity (e.g. customer, transaction)
- Explanatory variables transformed appropriately
- RTM is usually 80% of effort



Enterprise Guide demo

- AFL Player Stats 14 yrs 1993 - 2006
 - kicks, marks, handballs, goals, points, etc
- AFL ranking scheme
 - Combines player stats into single score
- Rank Order – top 50



AFL “Top 50 Players” campaign

- Model training dataset 1993 - 2005
 - 80% sample for training
 - 20% sample for validation
- Model scoring dataset 2006
 - Identify top 50 in 2006
 - Revenue \$2,000 per top 50 player identified
 - Cost \$100 per player contacted



AFL “Top 50 Players” campaign

- 571 players in 2006
- Revenue from top 50 - \$100,000
- Cost to call all - \$57,100
- Profit from calling entire list - \$42,900
- Return on Investment – 75%



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EGuide Point and Click

- Capture all top 50 players in 161 records
- Cost to call all - \$16,100
- Revenue from top 50 - \$100,000
- Profit from calling entire list - \$83,900
- Return on Investment – 521%

Stereo-Pensity

- Capture all top 50 players in 119 records
- Cost to call all - \$11,900
- Revenue from top 50 - \$100,000
- Profit from calling entire list - \$88,100
- Return on Investment – 740%

Stereo-Pensity Method

- Training vs Validation datasets
 - Random sample 80%/20%
- Repeated Sampling
- Each sample yields a new model
- Each model represents a slightly different view
- Combine individual model scores to produce single, aggregate score



Stereo-Pensity Benefits

- Risk mitigation
- Maximise use of available information
- Incremental “lift”



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