



The Actuarial Profession

making financial sense of the future

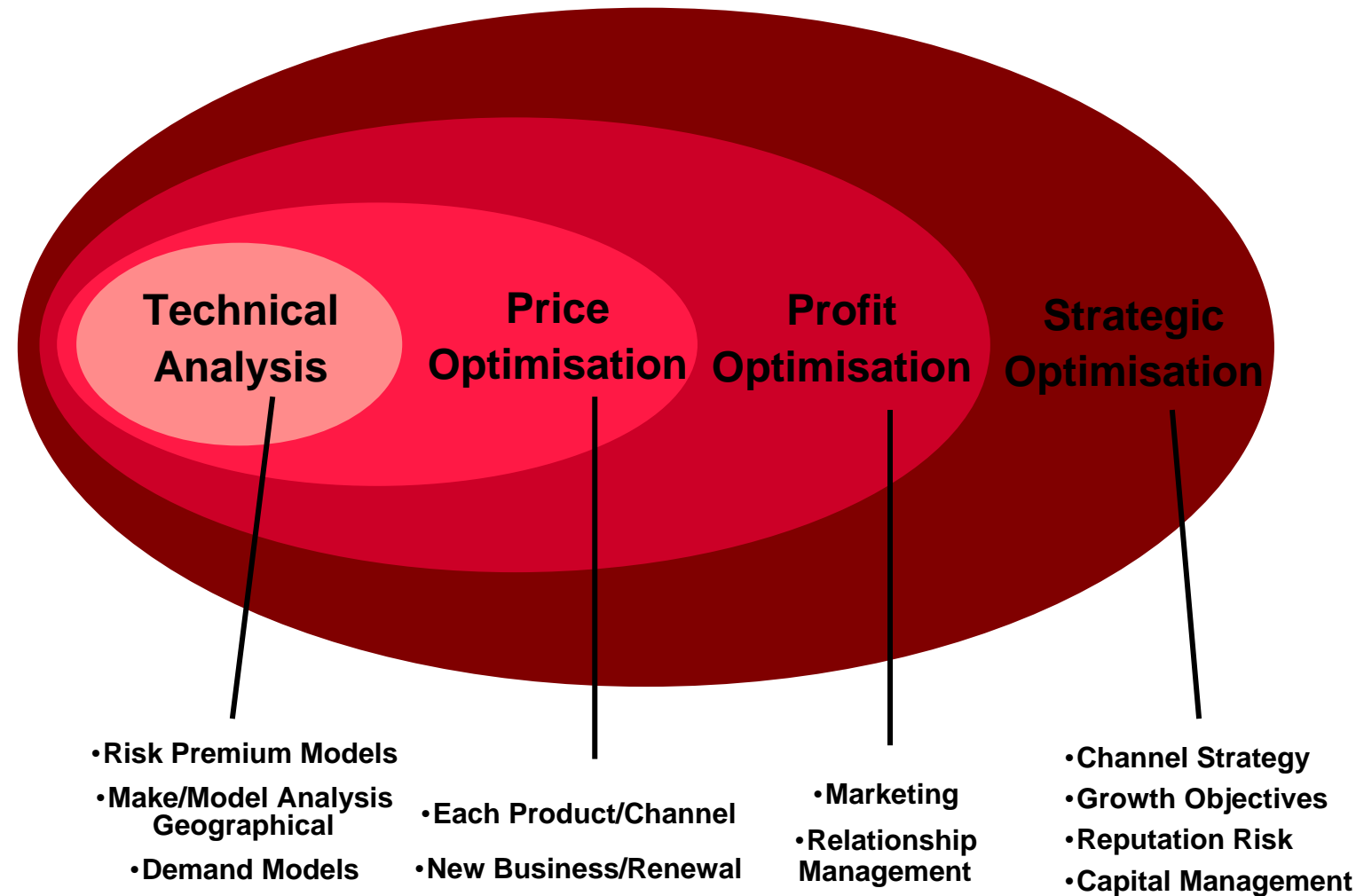
Understanding the Customer Value Chain

Building Evidence-Based Models

Michael J Brockman

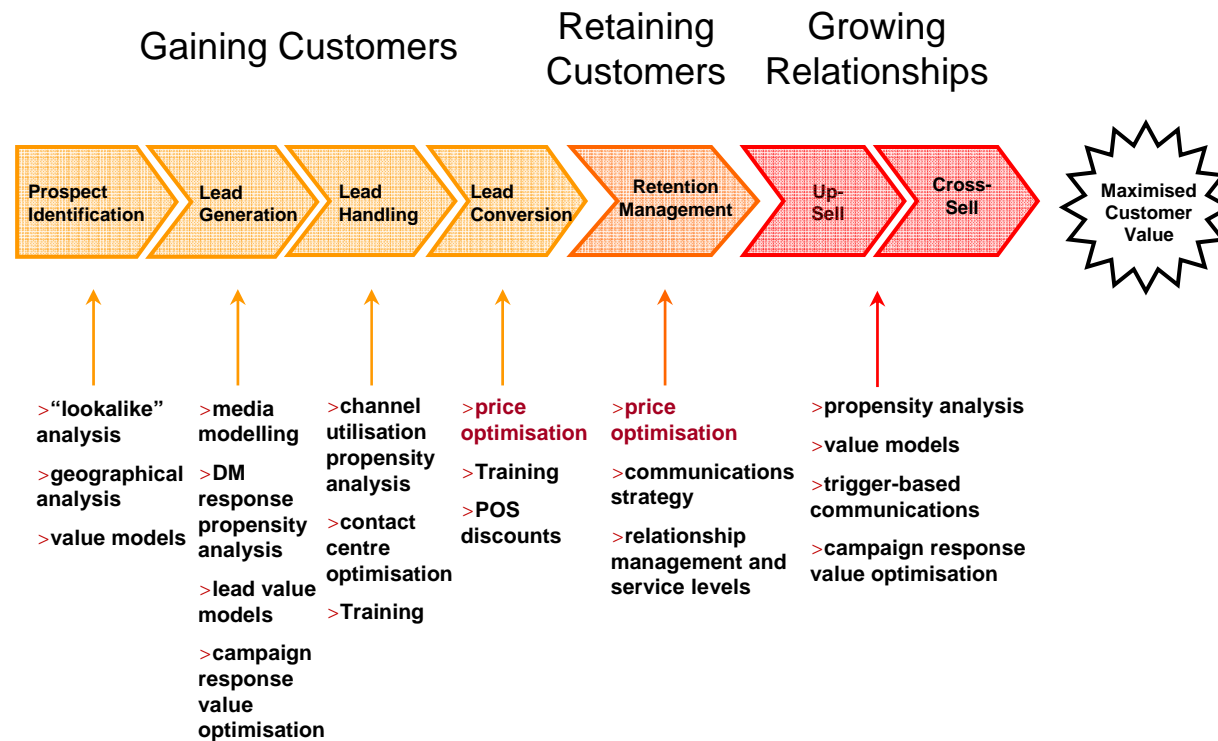
Pricing Seminar 13th June 2008

Improving Bottom Line Performance



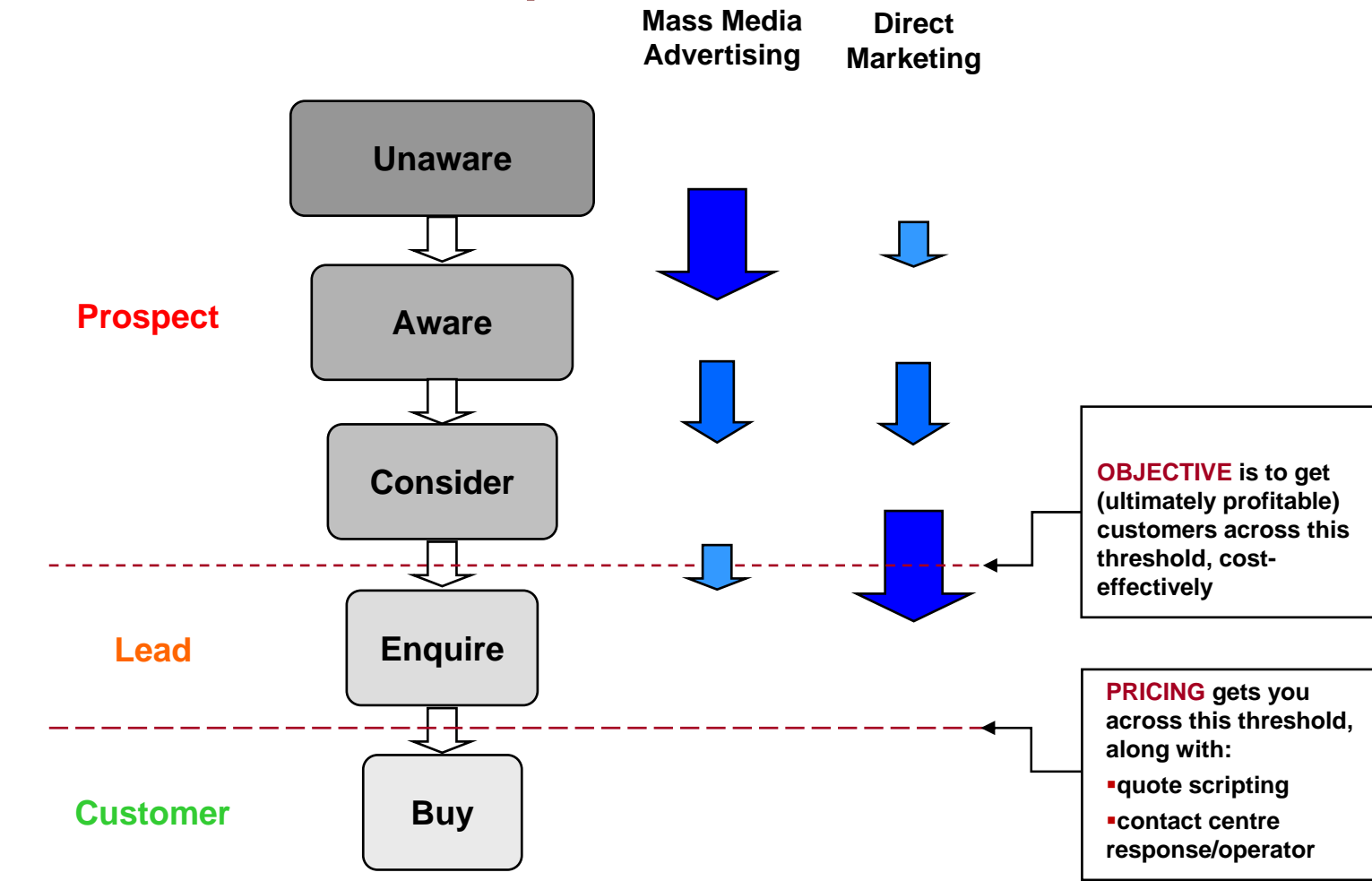
The Customer Value Chain

- Can apply statistical analysis to understand customer behaviour and value **at each stage** in the customer value chain. Each stage has a cost



- Different types of analyses are appropriate at different stages

The Leads Pipeline



An Age Old Challenge

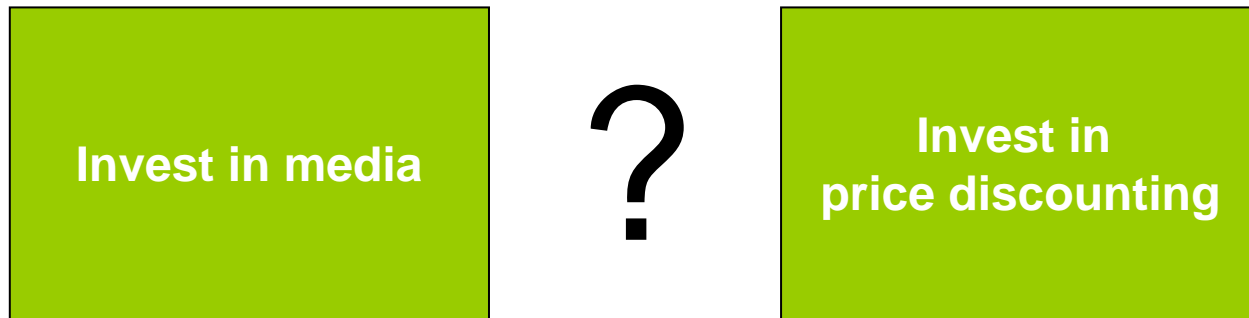
*“I know that half of my advertising is wasted
I just don’t know which half”*

Lord Leverhulme

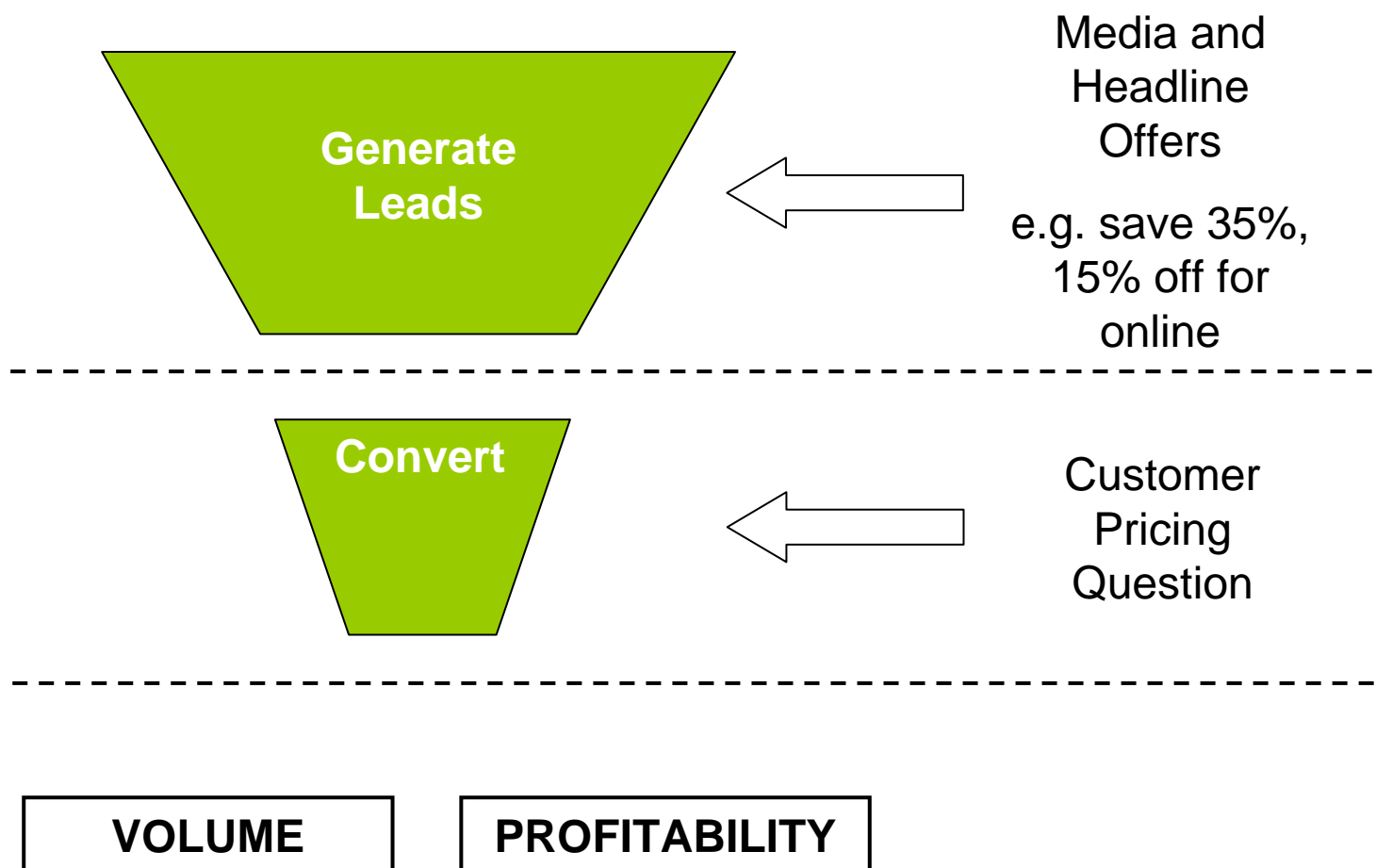
Still looking for answers in the current landscape

- An explosion of communication channels
- Businesses seeking robust measures to demonstrate accountability
- Fragmentation of strategic advice from numerous specialist agencies
- Need for an evidence based framework, delivered from a neutral perspective

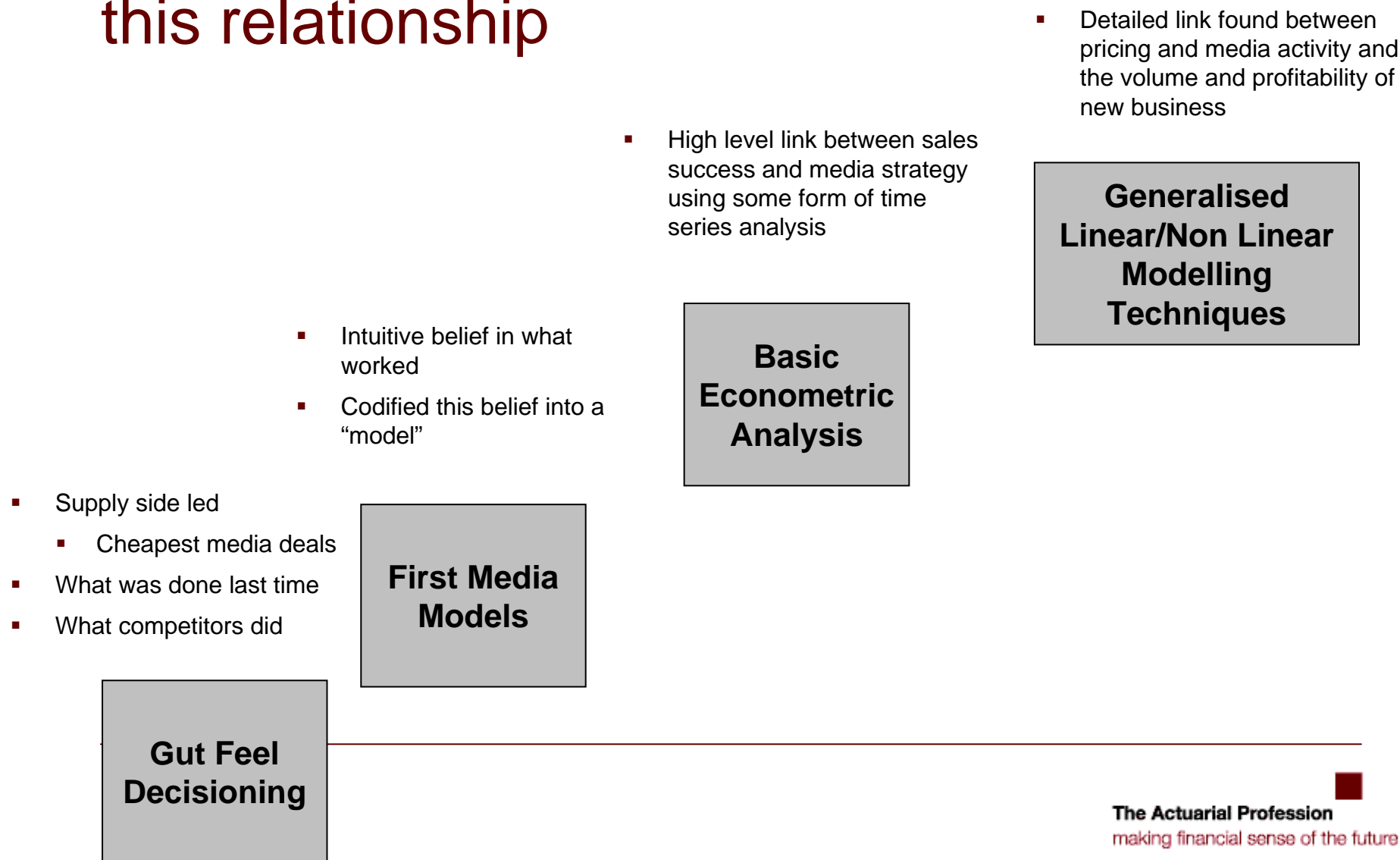
Strong relationship between media strategy and pricing strategy



In some industries media strategy and customer pricing fulfils two very different roles



Media modelling techniques recently developed now mean we can understand this relationship

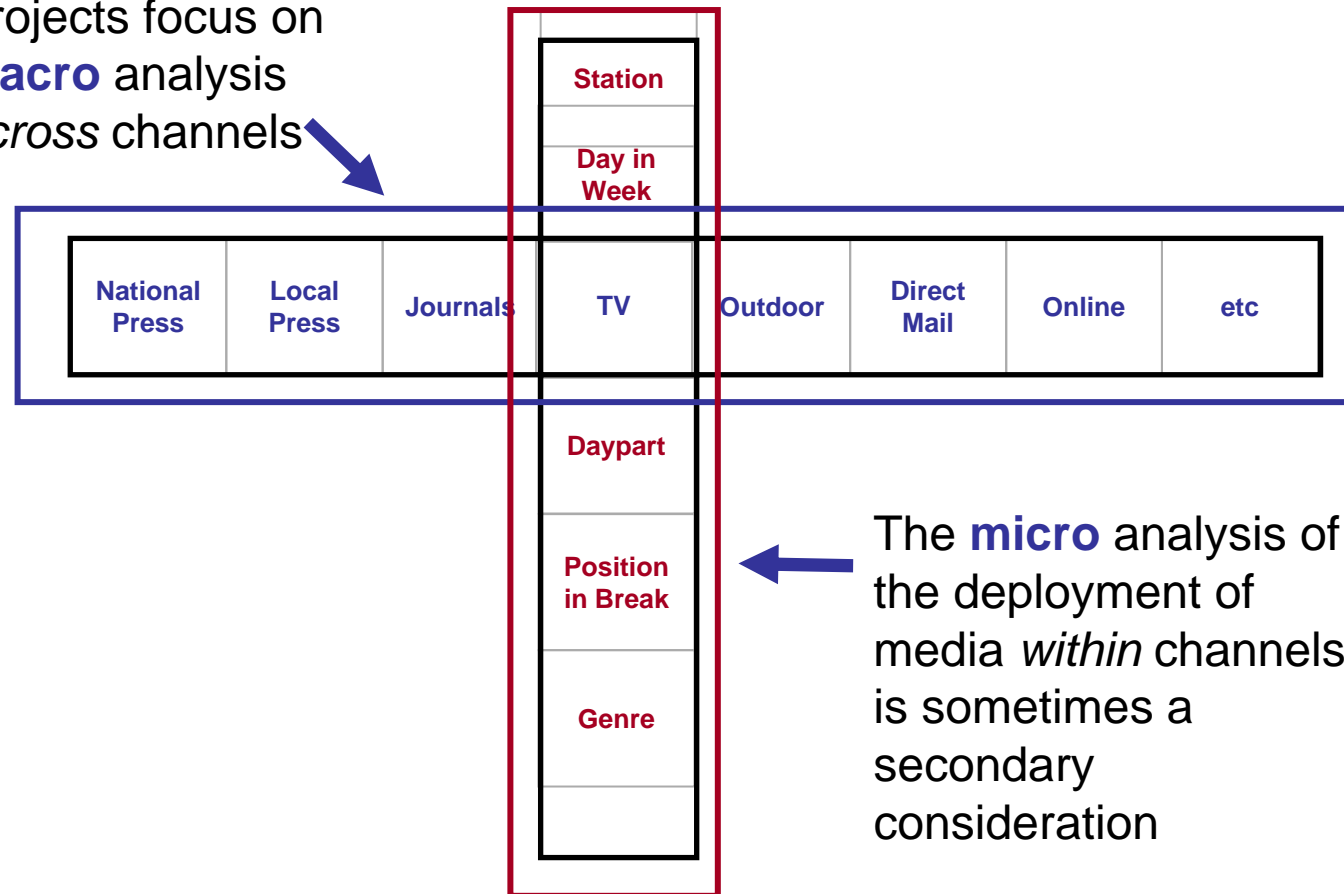


What is the Benefit?

- Performance **efficiencies of 10-30%** gained through more efficient decision making
 - Overall level of investment
 - Geographic allocation
 - Media Mix including BTL
 - Product mix (home/motor)
 - Which brands to support
 - Timing/phasing
 - Media costs per
 - Adapting to competitor activities

Primary focus of Media Modelling is exposure across channels

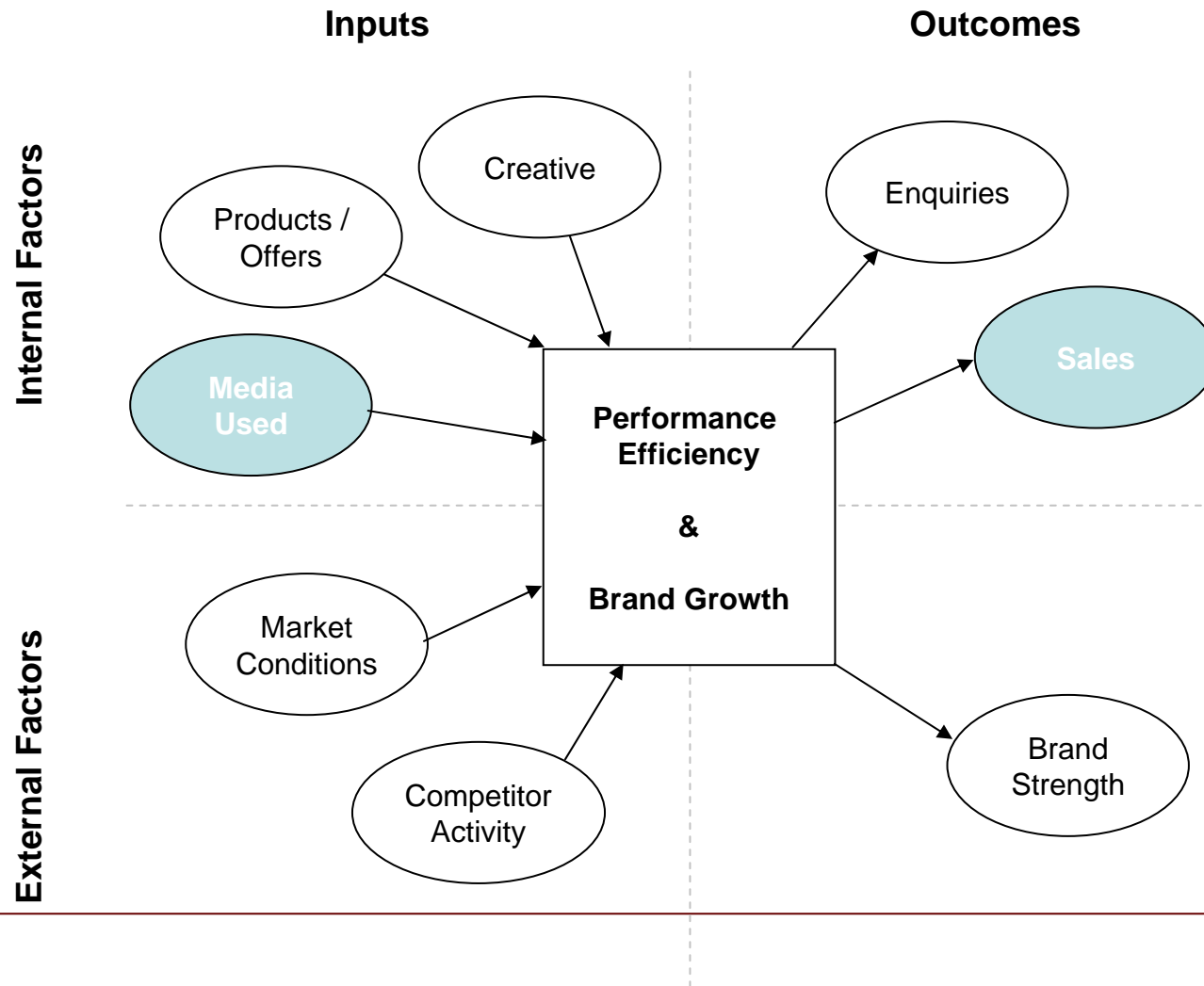
Projects focus on **macro** analysis across channels



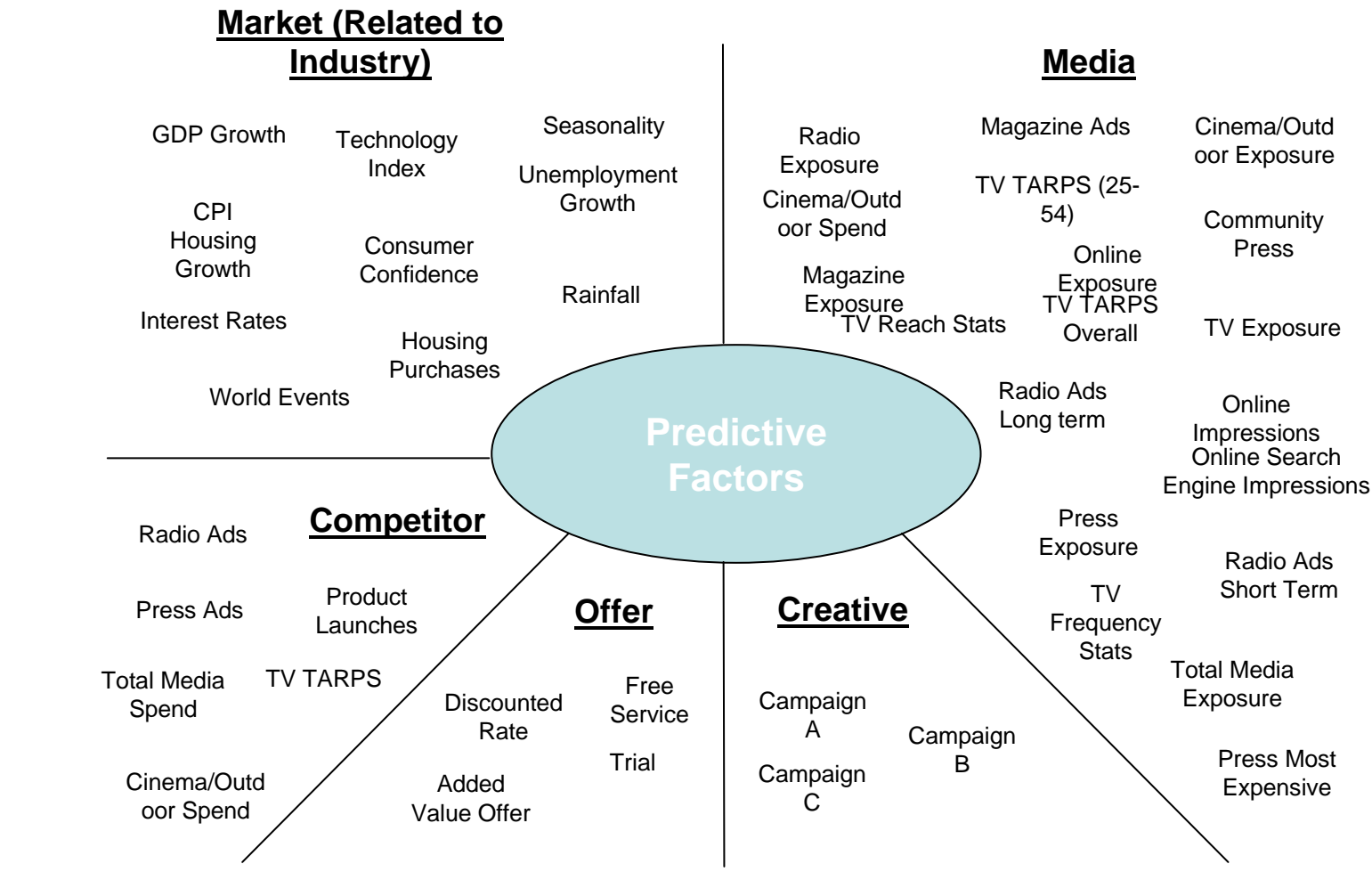
The **micro** analysis of the deployment of media *within* channels is sometimes a secondary consideration

- The focus is on the marketing mix rather than channel specific performance
- The process is independent of channel specific 'source code' analysis

Identifying Cause and Effect Between Spend and Sales

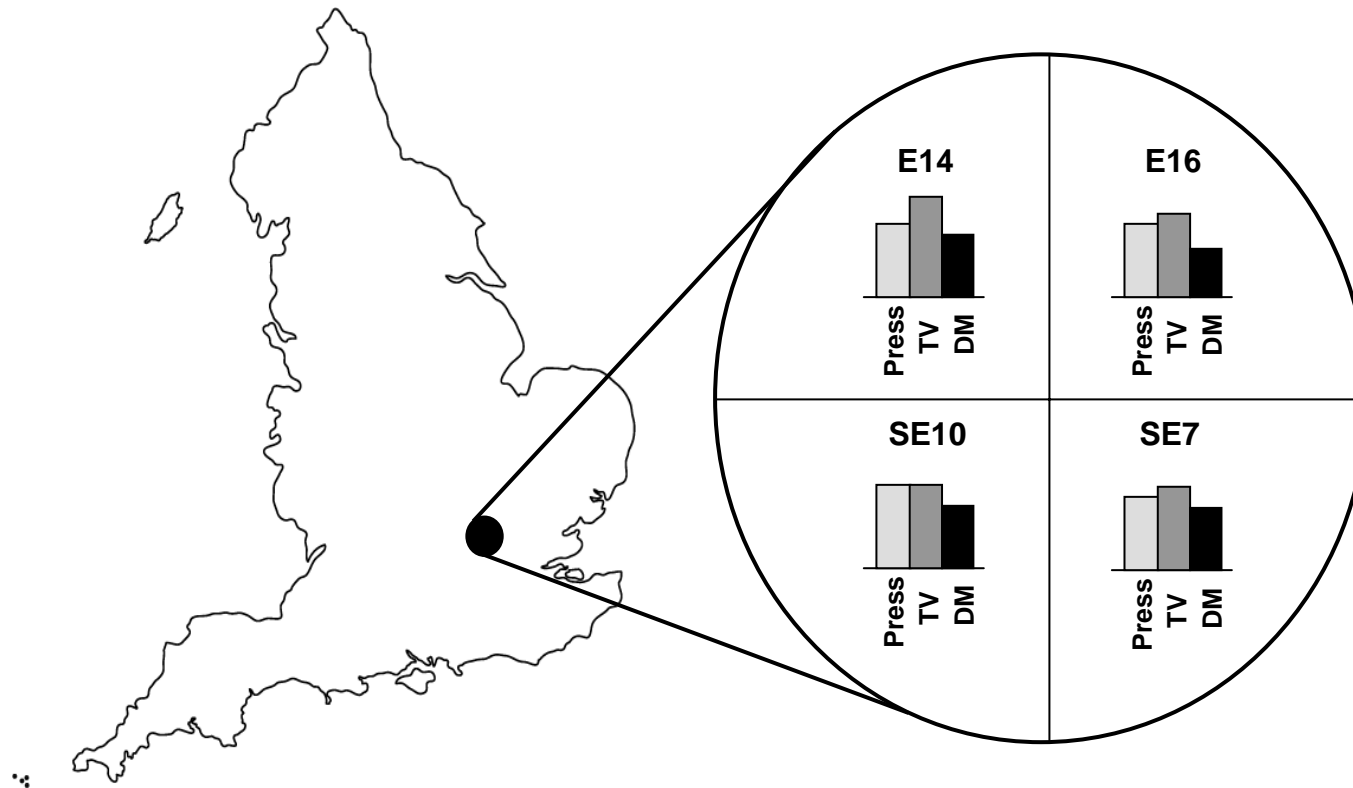


Many Variables Initially Considered (Between 400 and 500)



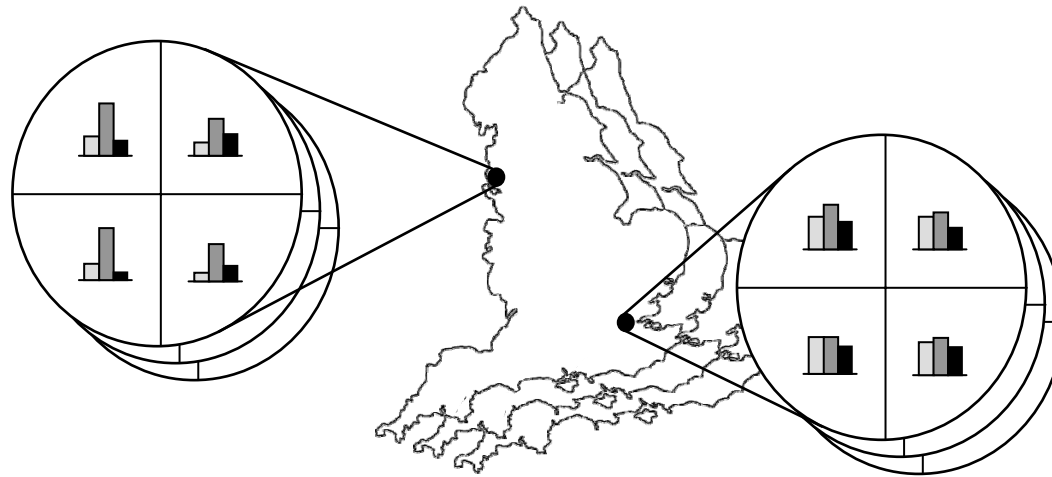
The modelling can be carried out at the postcode district level...

- Weekly media exposure for each channel is allocated at a postcode level



This Provides the Necessary Richness of Data

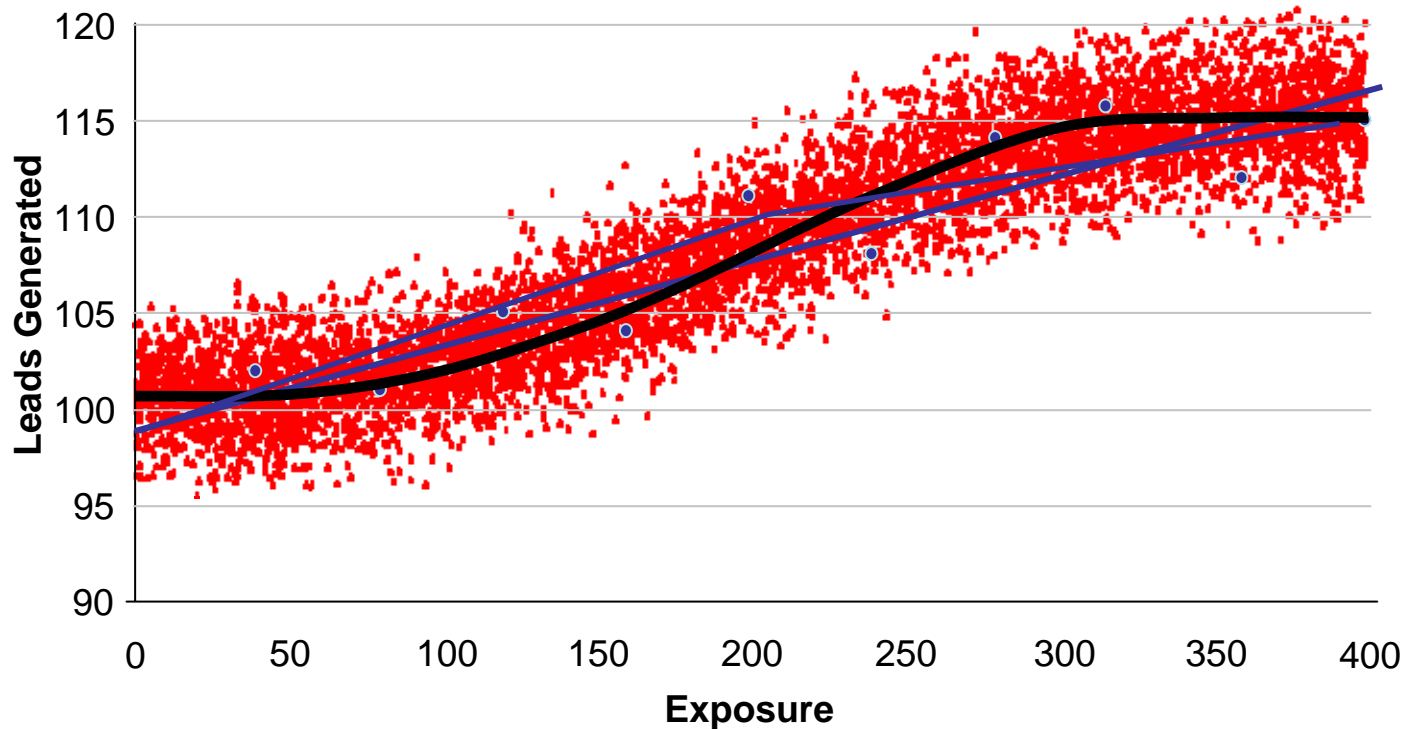
- Media exposure in adjacent postcodes in a given week may be quite similar
- However differences between weeks and geographies allow us to gain a true understanding of the impact of media exposure on customer behaviour



- By considering multiple years of data across all geographies, we have a large number of 'experiments' or data points on which to conduct the modelling

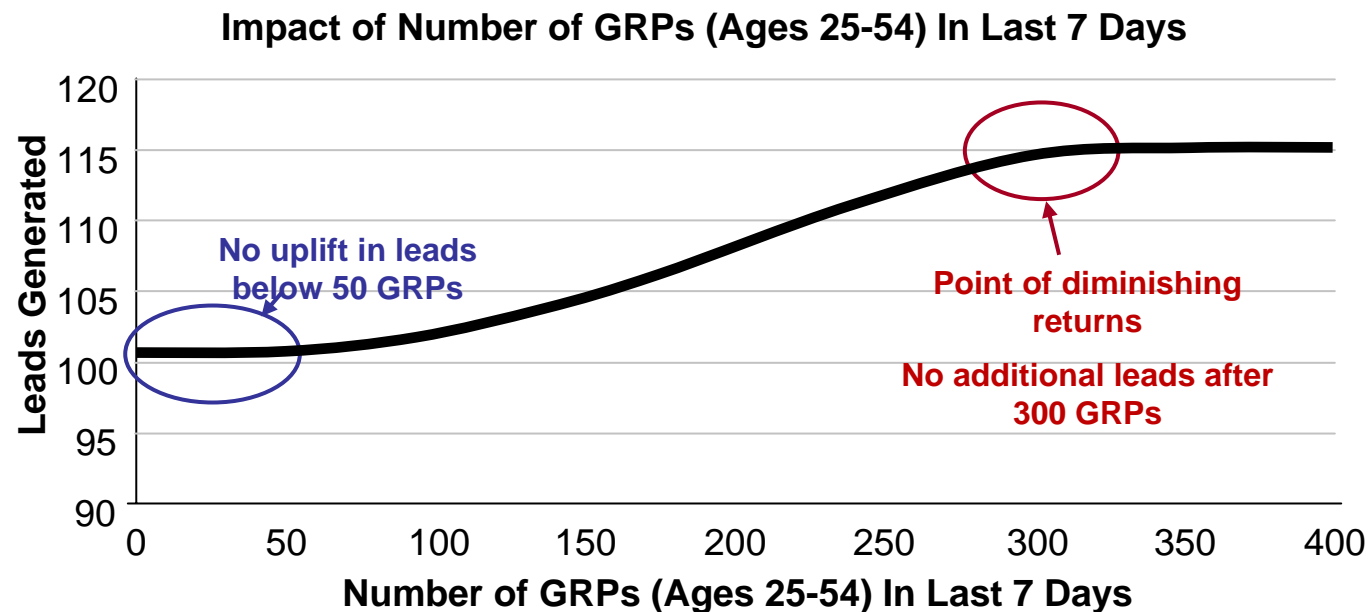
Modelling at the postcode level gives us greater certainty around the impact media has on enquiries/sales

- By looking at the data in a more granular way, more understanding can be drawn about the relationship between exposure and response
- Identifying the slope and shape of the relationship offers significant benefits

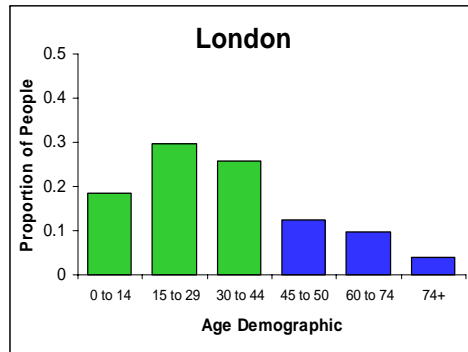


Pure Effects of Each Variable Modelled for Influence

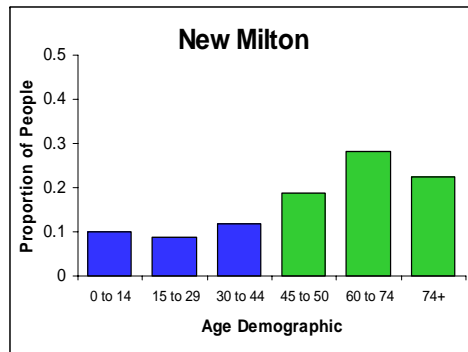
- The specific effect of each influence is isolated (Media and non media factors)
- These 'pure effects' can be used to guide each channel's optimal deployment



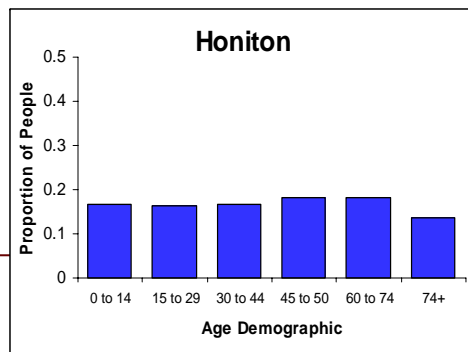
Not surprising because demographics vary so significantly by region – example age



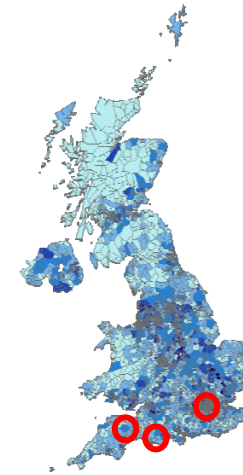
Populated
mainly by
younger
people



Populated
mainly by
older people



Evenly
populated



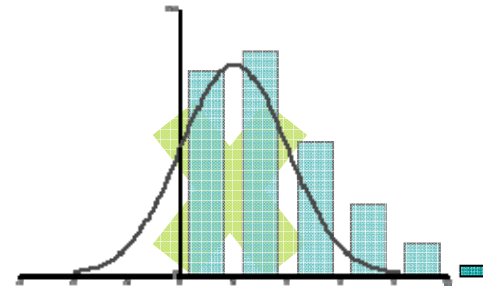
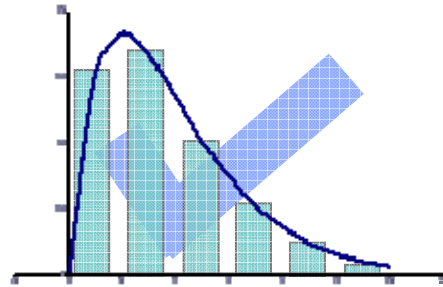
Demographics vary by postcode

Modelling at the postcode level allows for many different types of media

- Include above the line and below the line accurately
- Because different areas have different intrinsic value
 - In some areas you are more competitive
 - Have higher conversion rates
 - Have higher customer lifetime values

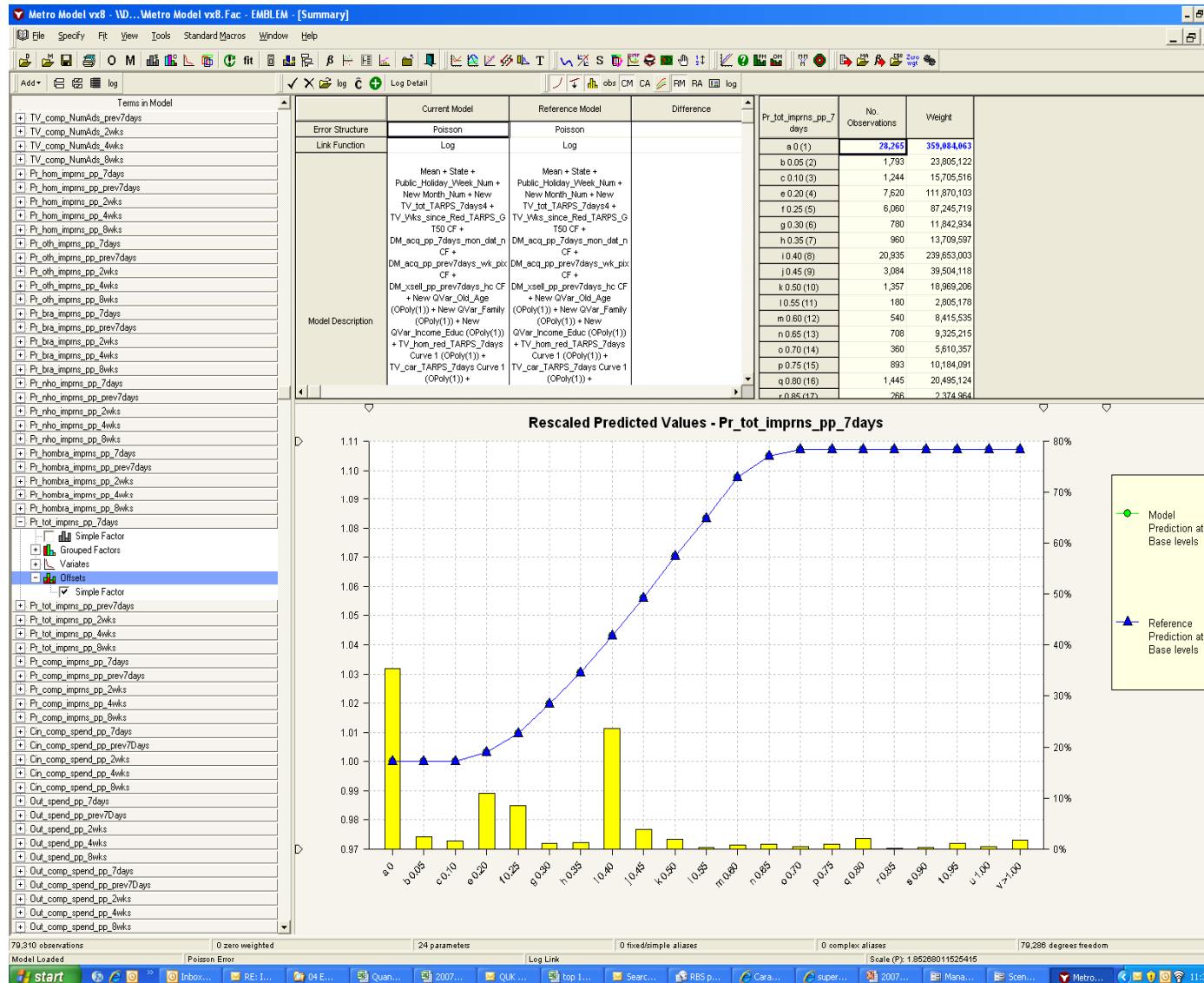
Modelling impact of media requires a specific approach

- We employ generalised linear modelling (GLM) techniques, which are best practice within insurance pricing
- GLMs permit “error structures” which correctly describe the natural uncertainty in the data



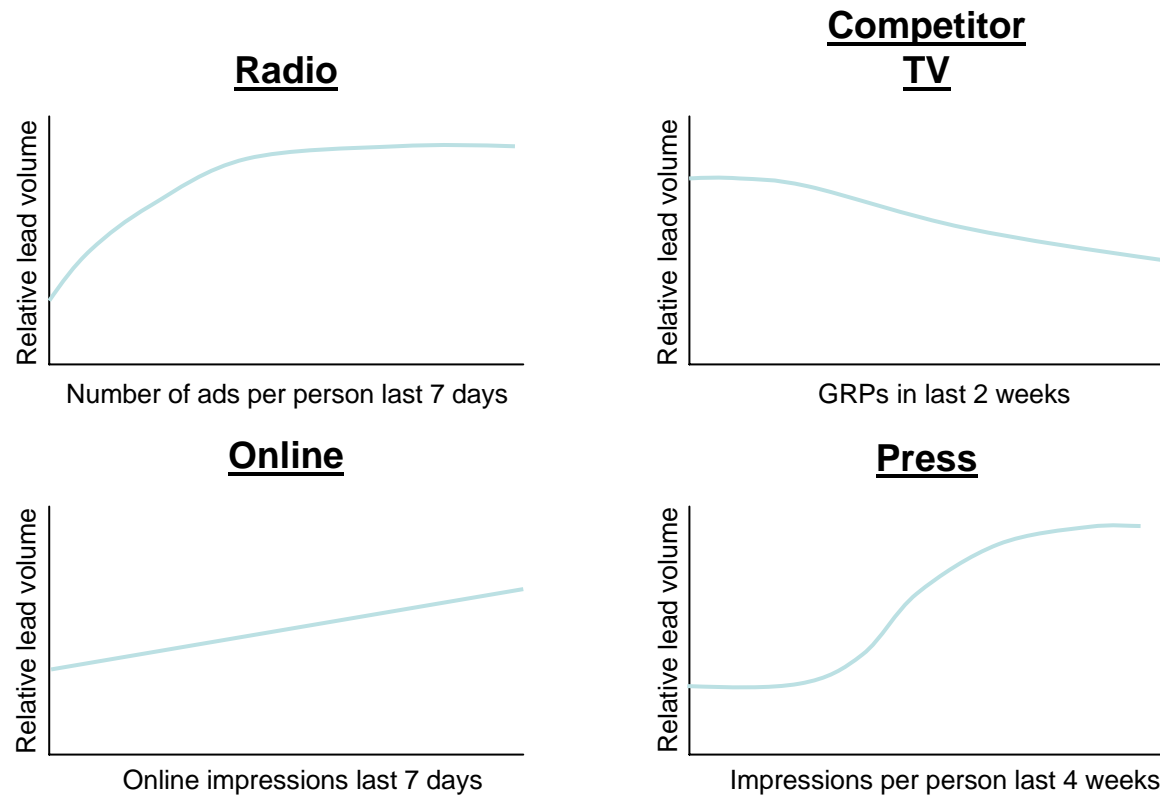
- GLM approach solves key challenges within “traditional” methods:
 - Multicollinearity of factors, appropriateness of fitting method, testing of residuals, heteroscedasticity, interaction searching and testing
- GLMs are:
 - Able to handle large quantities of data and sparse observations
 - Robust to changes in exposure mix and changes in the predicted response

GLM Modelling



Channel Performance

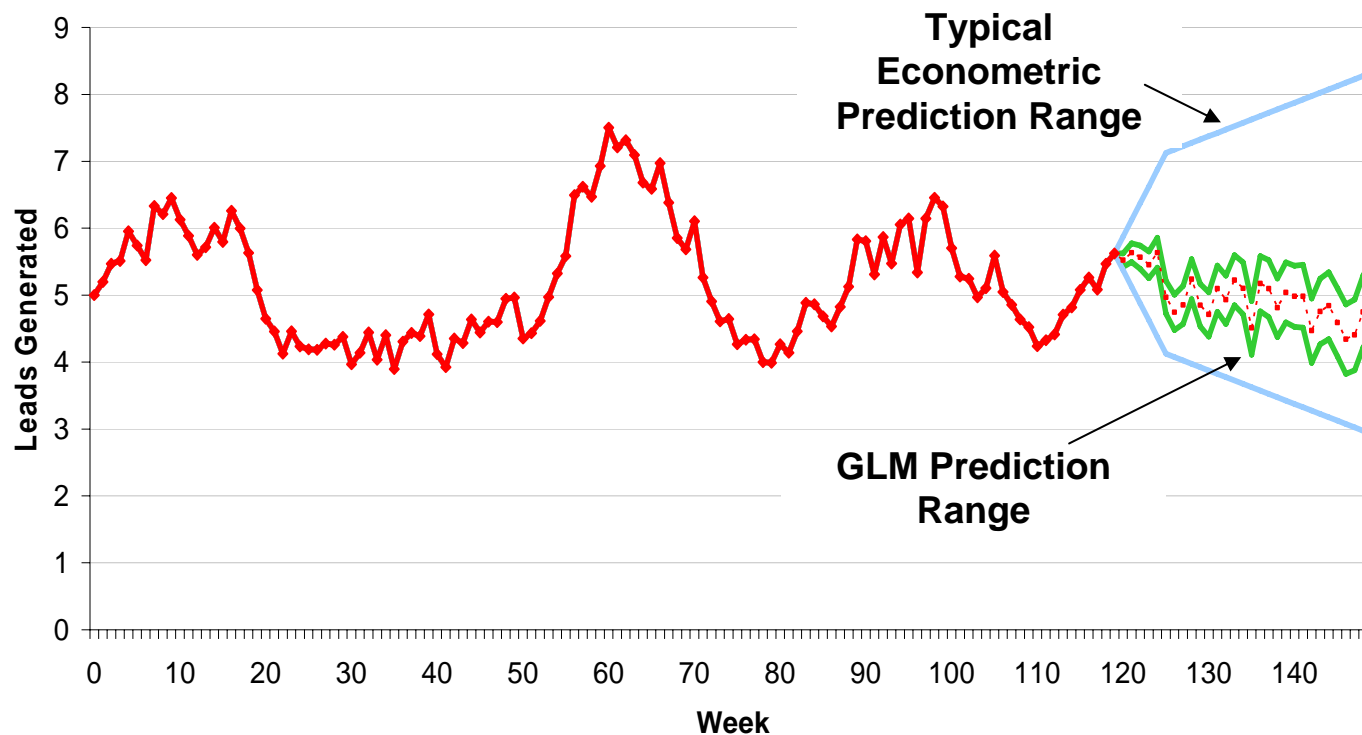
- Each channel's effect can be understood in isolation



Note: Illustrations only

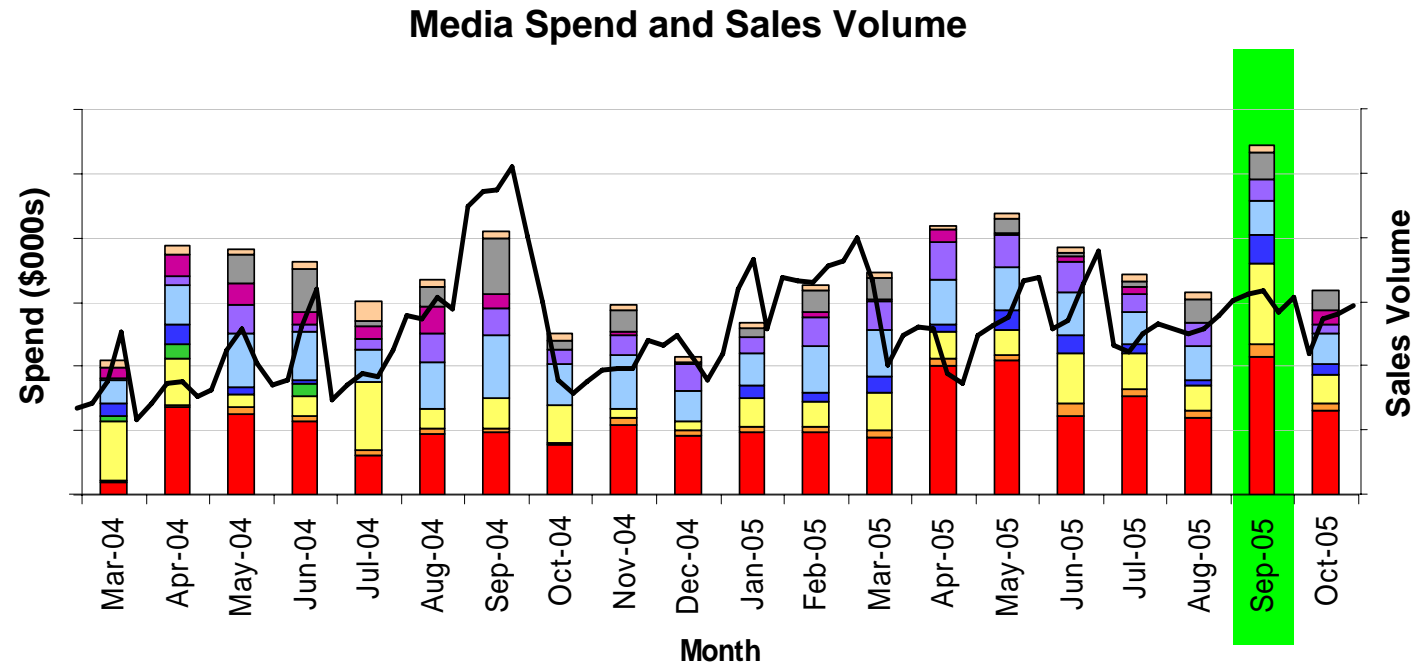
We have developed this approach so we are better at predicting future behaviour

- Since we now have sufficient data to incorporate all of the factors which influence lead outcomes and the right shape and slope for each factor



The benefits of analysis beyond straight lines

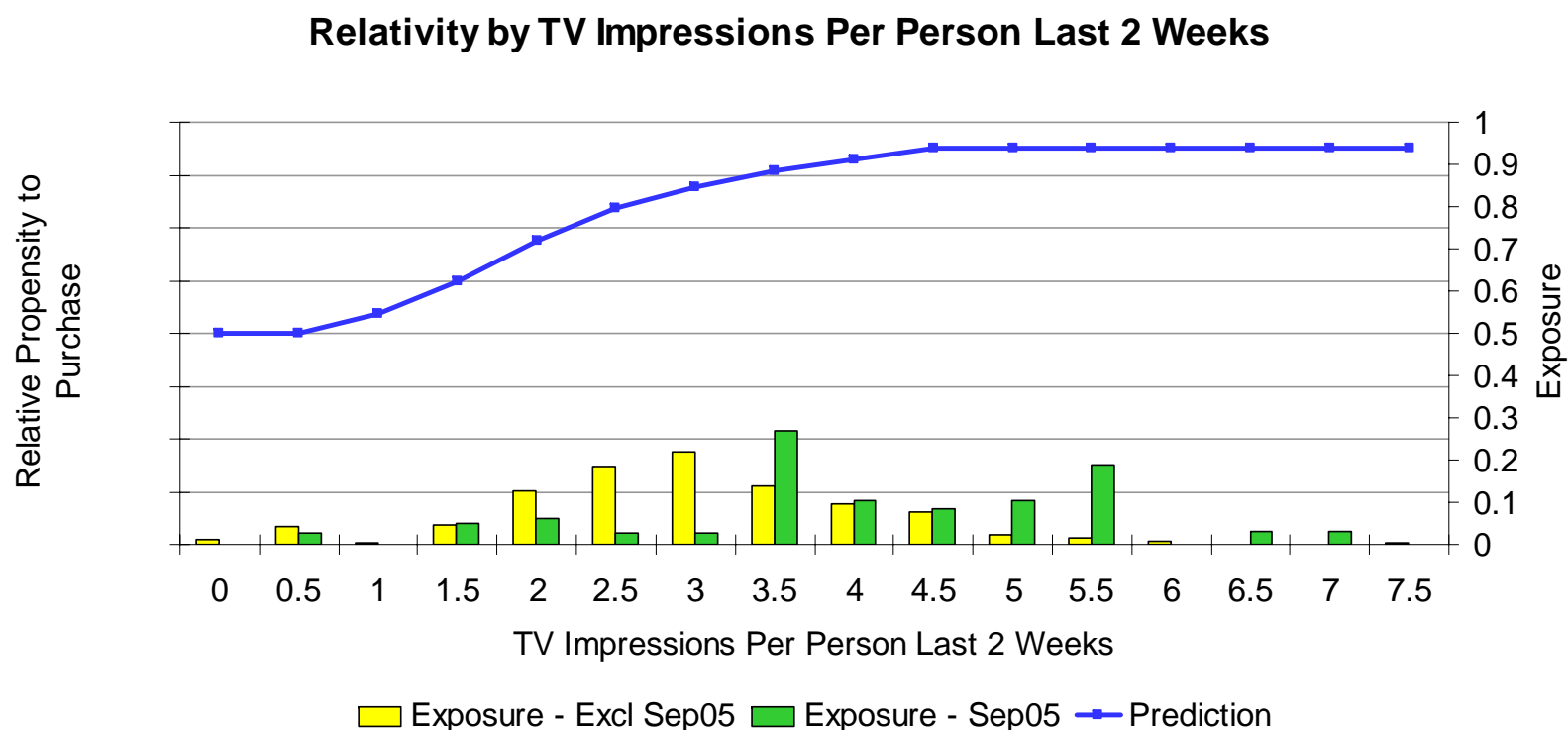
- Consider September 2005
 - a high level of media spend was not met with a peak in sales



■ TV ■ Info ■ Pr - OTP ■ CPr - OTP ■ Mag - OTP ■ Pr - Ins ■ CPr - Ins ■ Mag - Ins ■ Doordrops ■ Online

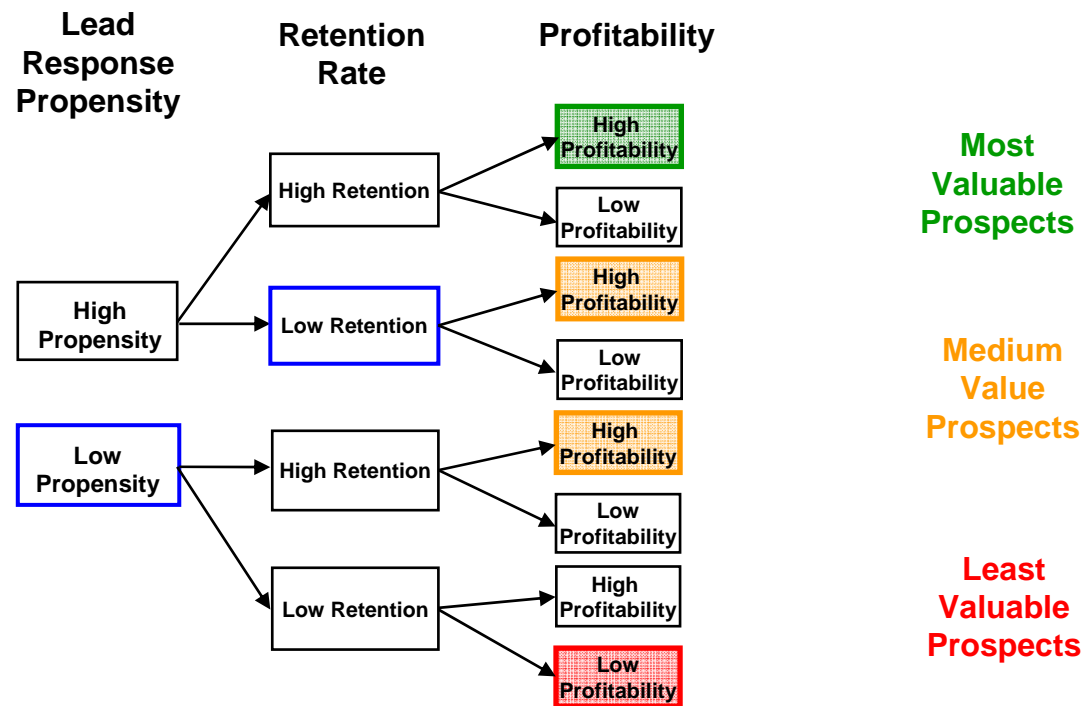
September 2005 was Particularly Heavy in OTP Press and TV Exposure

- Almost £1m was spent in the month beyond the point of zero marginal returns as identified in our modelling



Allowing for Customer Value

- Allowing for Propensity AND Value
- Wish to direct marketing spend towards the most valuable prospects



- ...or towards those who can be influenced to increase value.

Segment Characterisation – The Customer DNA

- Can characterise segments, and identify segment-specific levers of influence, and trigger events – and so frame targeted activities.

