An Actuarial Approach to Measuring Media Effectiveness

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Presentation Outline

- **The Media Market**
- **Case Study – MortgageCo**
  - **Approach**
  - **Modelling Results**
  - **Model Applications**
- **Conclusions**

Introduction

- **Financial results of advertising spend are rarely measured with the same degree of rigour and science as other lines of expenditure**

- **Quite often, very little science is applied to the planning of media investments going forward**
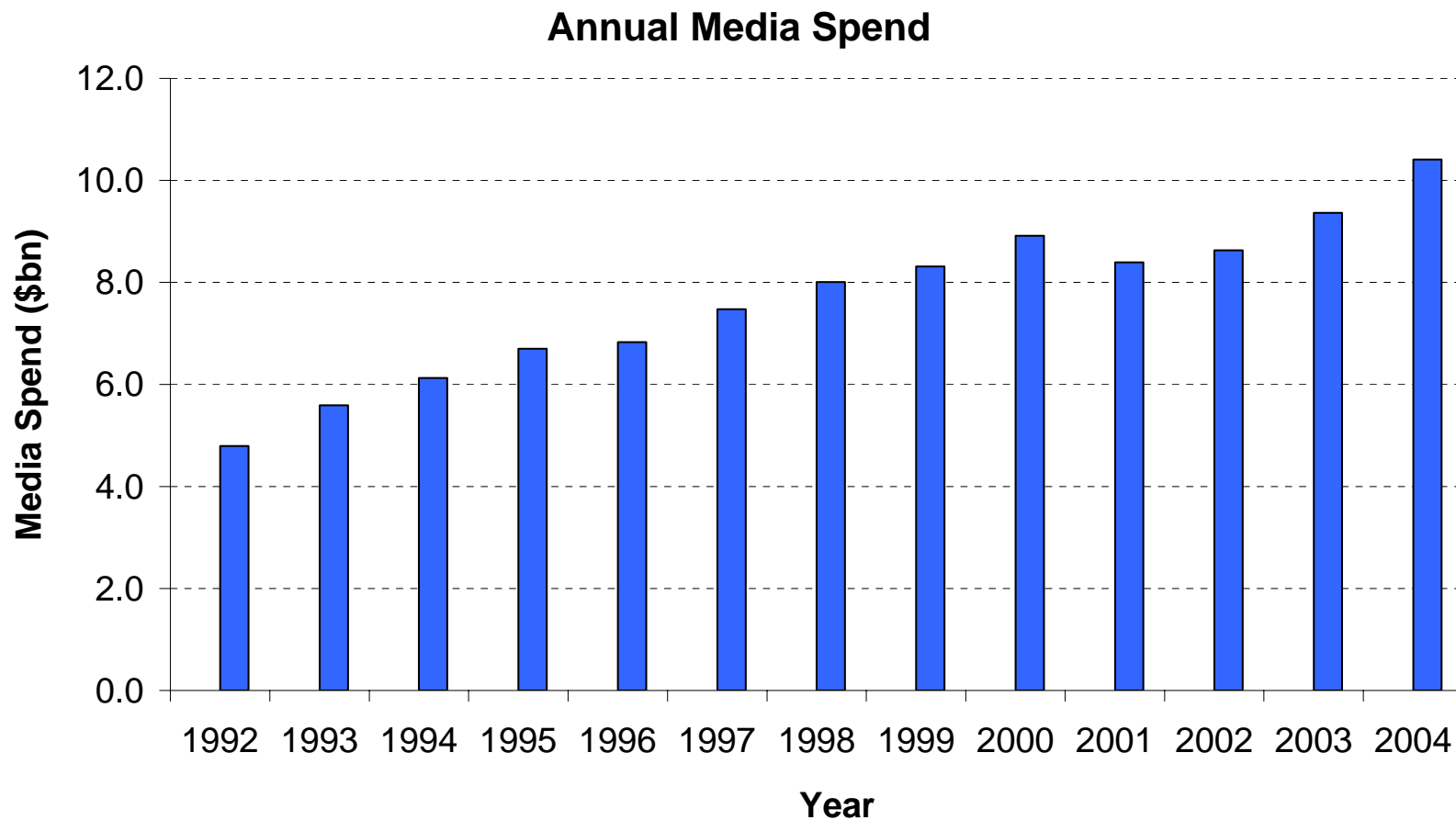
Introduction

"I know that half my advertising is wasted, I just don't know which half"
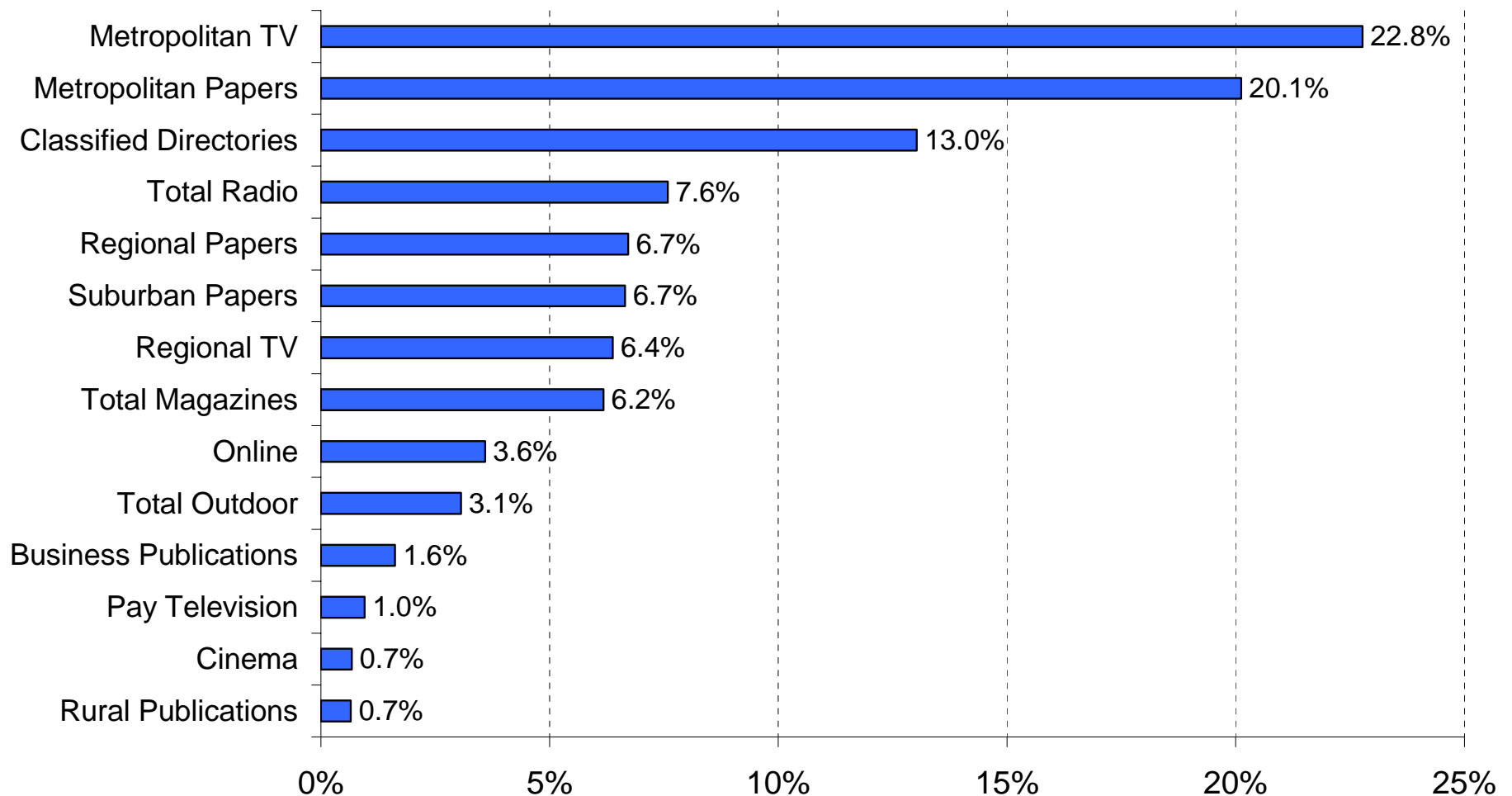
Lord Leverhulme

Australian companies spent over $10.4bn on advertising in 2004

Annual Media Spend

Dominated by television and press

Main Media Expenditure Share

Media	Share
Metropolitan TV	22.8%
Metropolitan Papers	20.1%
Classified Directories	13.0%
Total Radio	7.6%
Regional Papers	6.7%
Suburban Papers	6.7%
Regional TV	6.4%
Total Magazines	6.2%
Online	3.6%
Total Outdoor	3.1%
Business Publications	1.6%
Pay Television	1.0%
Cinema	0.7%
Rural Publications	0.7%

Highest spending advertisers in 2004

Rank	Advertiser	Spend ($m)	Key Products
1	Coles Myer	190-195	Myer, Coles, Kmart, Target, Officeworks, Liqourland
2	Nestle Australia / L'Oreal	100-105	Nescafe, L'Oreal, Garnier, Milo
3	Woolworths	95-100	Woolworths, Safeway, Big W, Dick Smith
4	Telstra	90-95	Telstra Shop, BigPond, Telstra Mobile
5	Commonwealth Government	90-95	Medicare, Violence Against Women, AEC, Medibank
6	Harvey Holdings	85-90	Harvey Norman, Domayne, Rebel Sports
7	Toyota	75-80	Toyota, Lexus, Daihatsu
8	Proctor & Gamble	60-65	Head & Shoulders, Pantene, Olay, Vicks
9	NSW Government	55-60	RTA, Tourism NSW, Lotteries, Water Corporation
10	General Motors Holden	55-60	Holden

Only 3 financial institutions make the Top 50…

$40-45m and 25th overall

$35-40m and 32nd overall

$25-30m and 43rd overall

It is estimated that consumers see 10,000 advertising messages per day

- 99% of Australian homes have television
- Newspapers reach 84% of population
- Commercial radio reaches 78% of Australians each week
- The reach of magazines as an industry continues to increase
- 75% of Australians have internet access

Increasingly, marketers are being held accountable for their investments

- **Advertisers across the board are seeking more robust data to support their spending decisions**
- **Numerous challenges involved for marketers**
- **Many existing media effectiveness models, however, suffer from a number of limitations**

Limitations of existing media models

- **Often based on subjective inputs**
- **Limited separation between brand building and response objectives**
- **Often no explicit relationship between cause and effect**
- **Many models focus predominantly on television**
- **Typically a limited feedback loop (or control cycle) to assess the on-going effectiveness of the model**
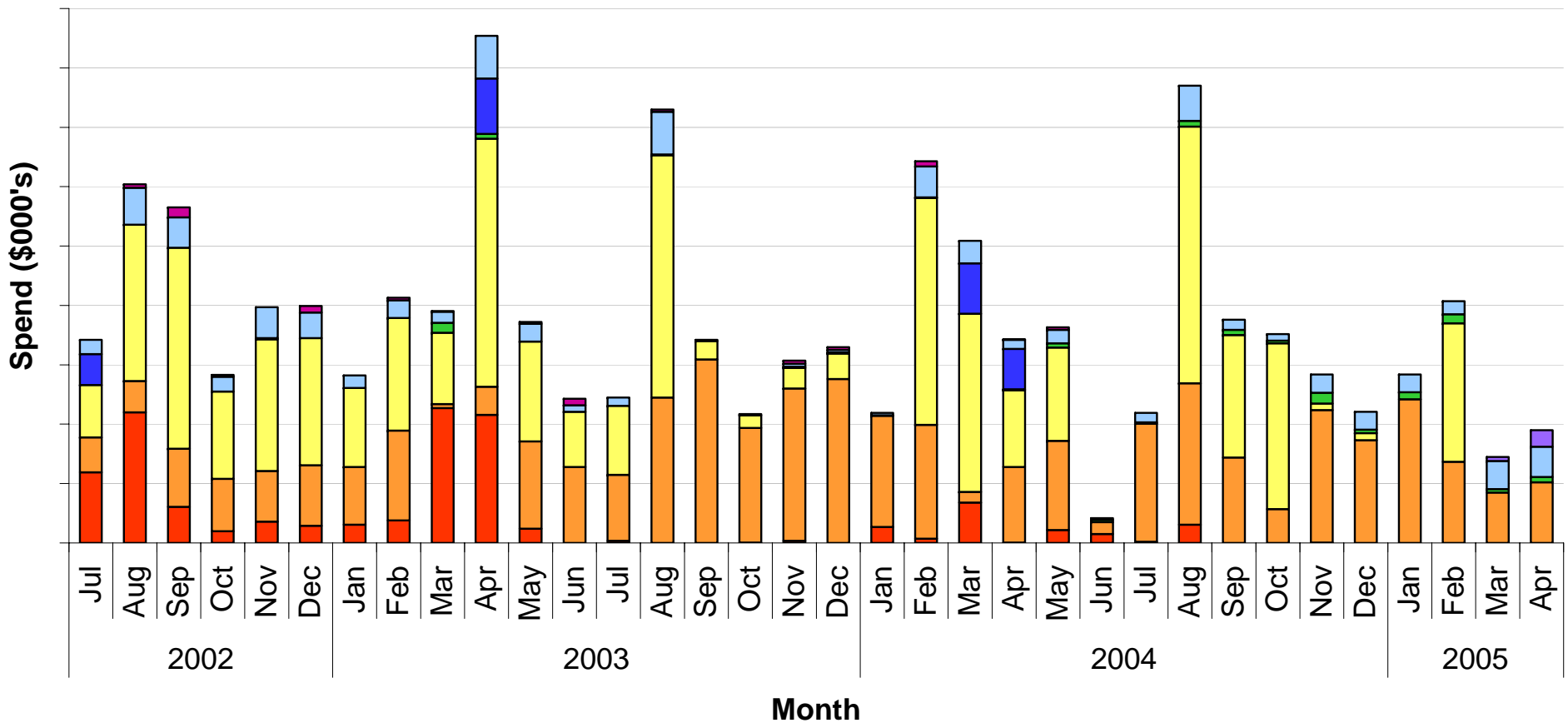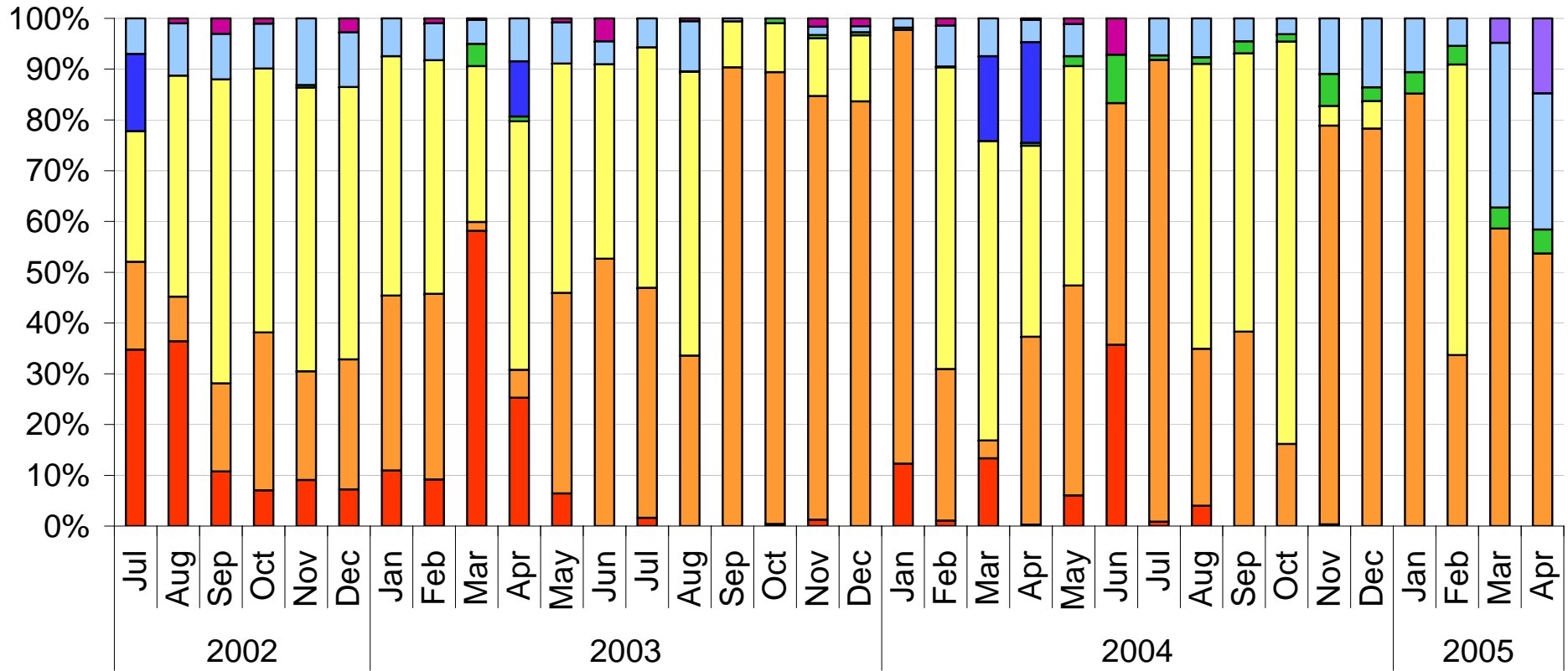- **Typically offered by media agencies who are incentivised to maintain and grow media expenditure!**

Case Study: MortgageCo

Historical leads generated by week
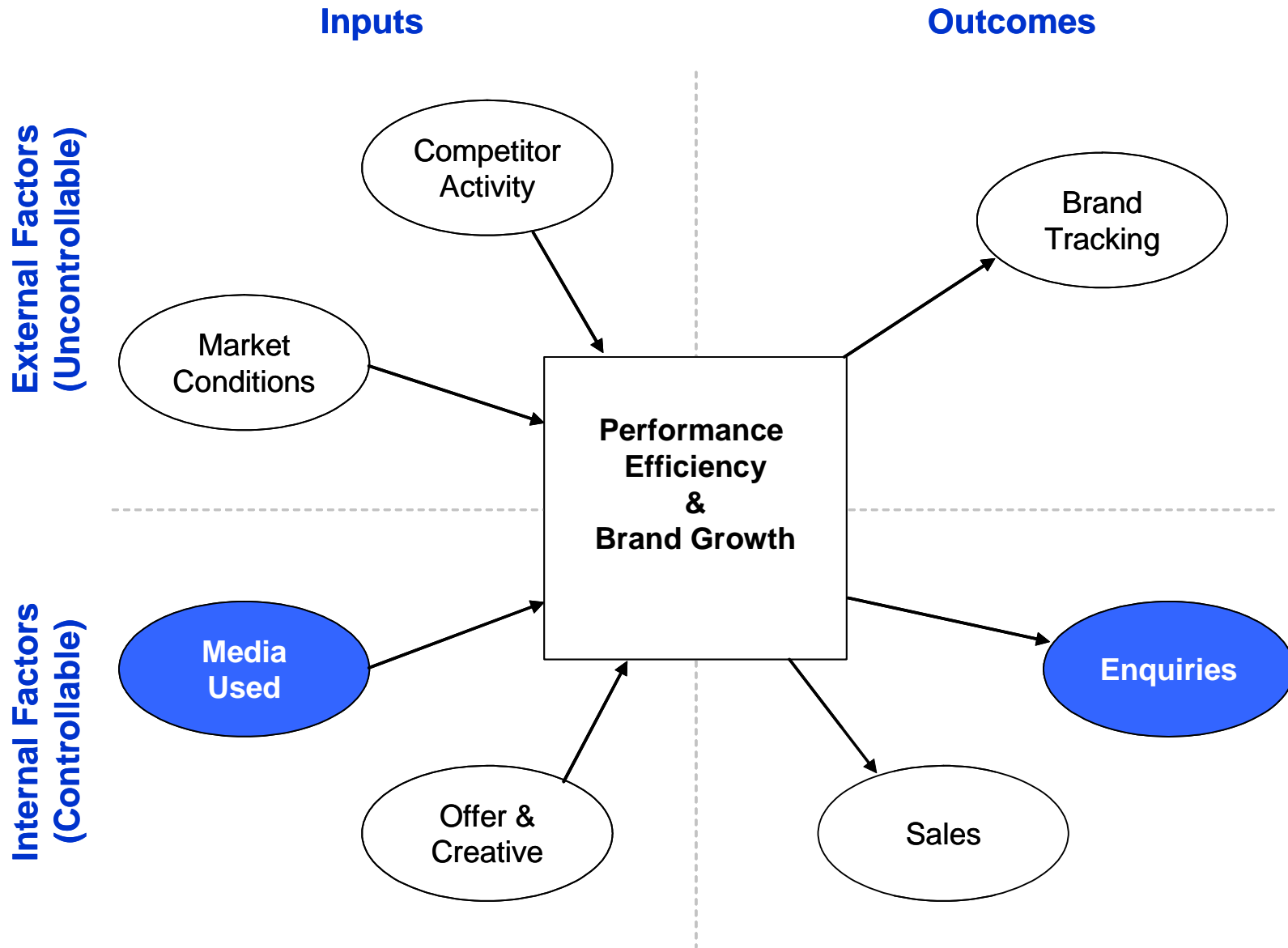
Historical media spend by category

Media spend mix by category

There are a range of other external factors which also need to be controlled for

- The level of activity in the market (i.e. market size)
- Seasonality
- Competitor activity

Approach

- **A wide range of factors were tested simultaneously for their impact on lead volumes, including many out of MortgageCo's control**

- **We extracted detailed information from MortgageCo's systems including particulars relating to MortgageCo's historic media schedule and to each lead generated**

There are a variety of potential measures of exposure to measure media response

- Spend
- Opportunities to see/hear
- Impacts
- Reach
- Frequency

Each media channel has its own variation for determining impacts

- **Television – TARPs**

- **Radio – Listenership**

- **Press and Magazines – Readership**

- **Online – Impressions**

- **Cinema – Cinema audiences**

- **Billboards – RTA (and equivalent) traffic data**

- **Bus Panels – Traffic data and relevant bus routing maps are helpful in estimating impacts for bus panels.**
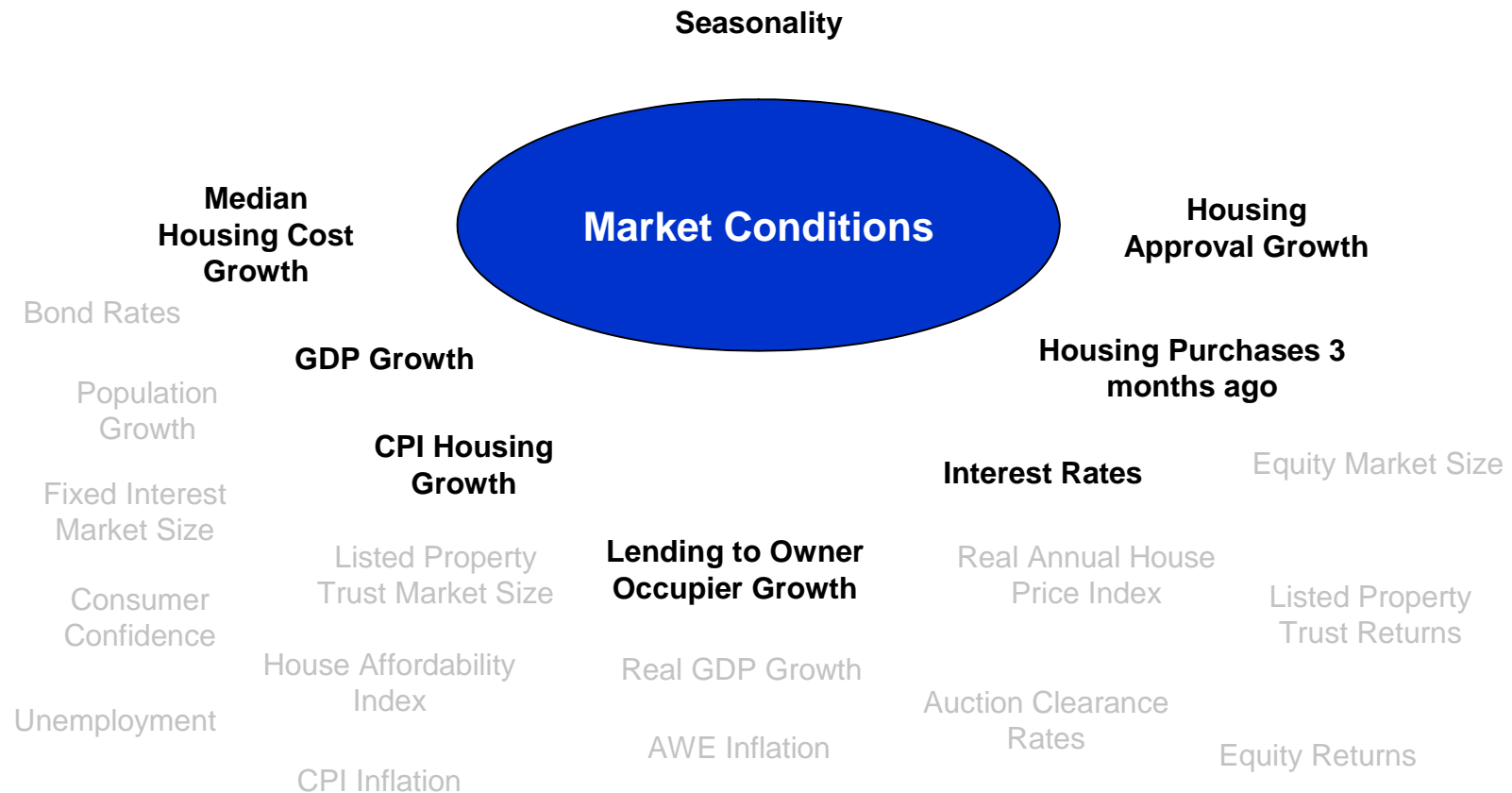
Media data collated for MortgageCo and each competitor

- **Television**
- **Radio**
- **Press**
- **Community Press**
- **Magazines**
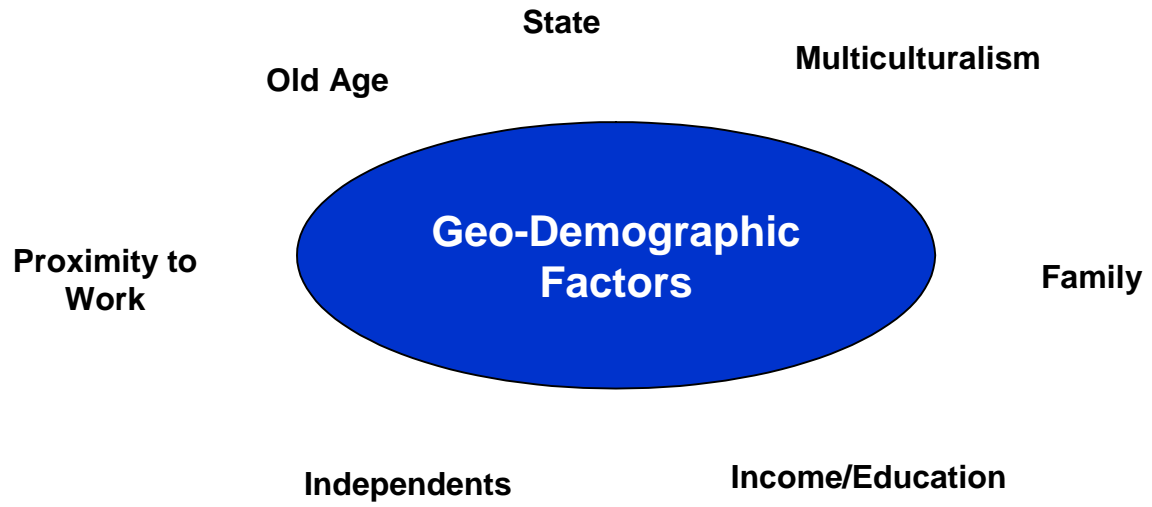- **Online**
- **Cinema**
- **Outdoor**
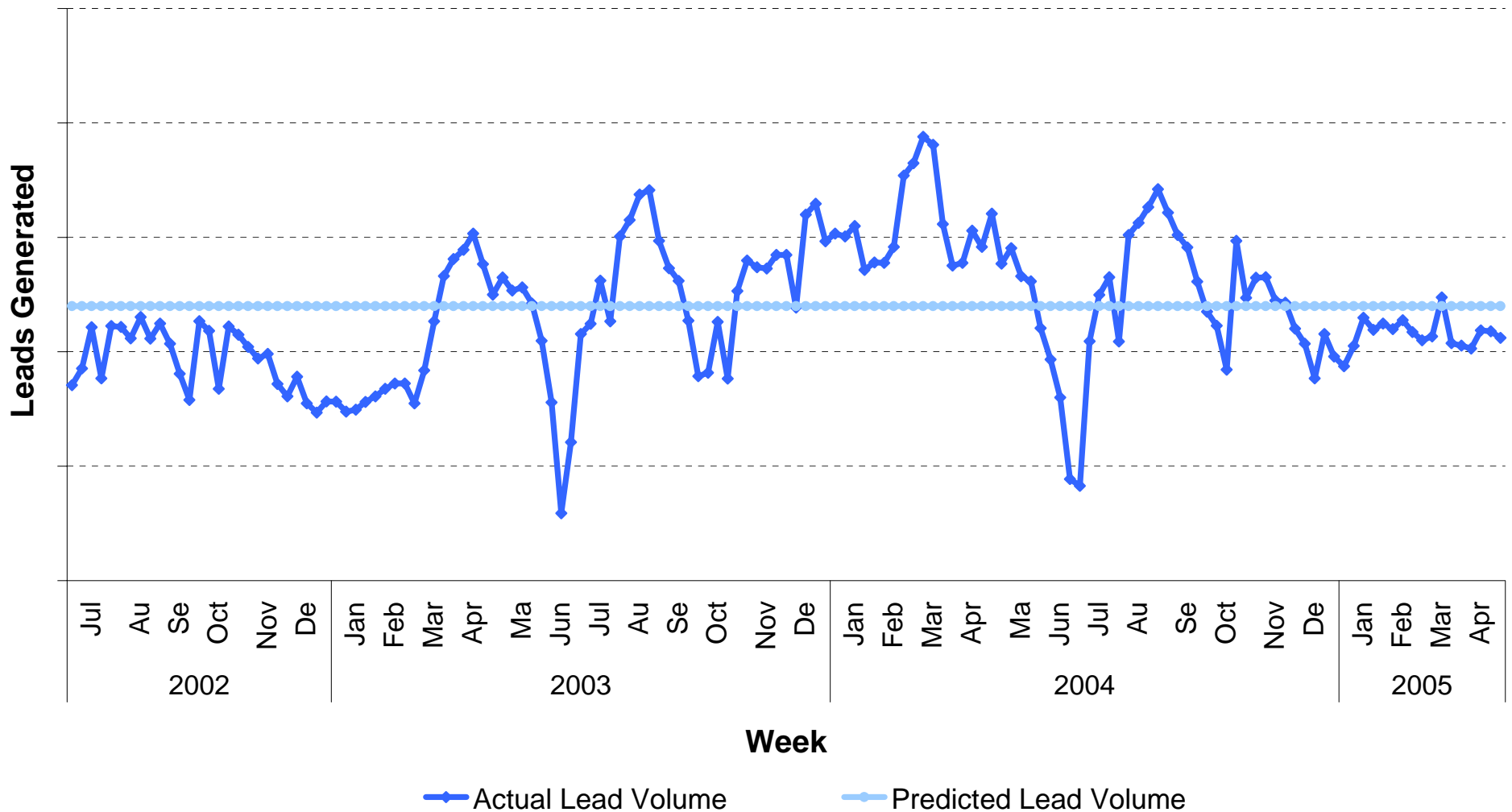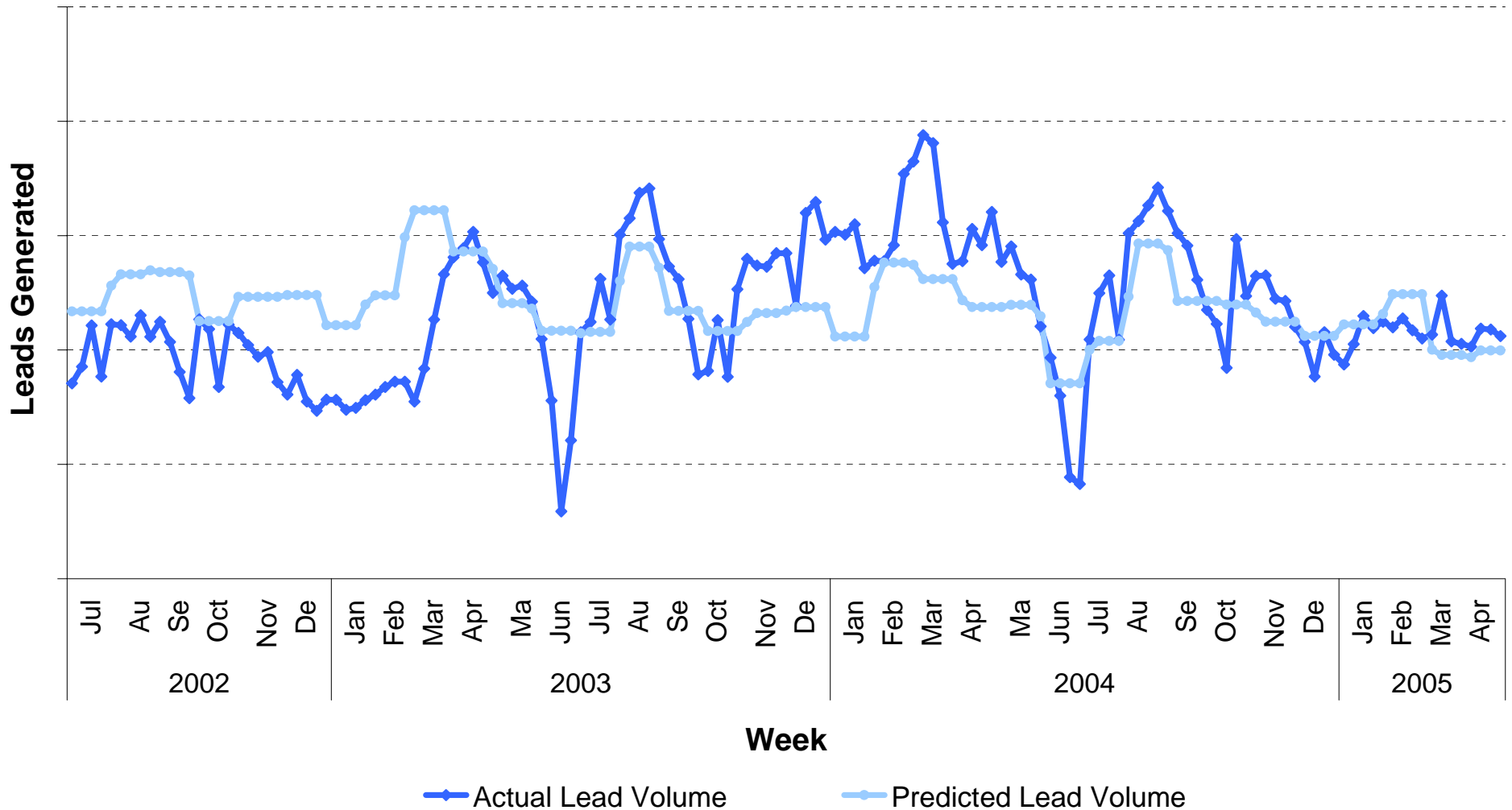
Market data – predicting market activity levels

Seasonality

Market Conditions

Median Housing Cost Growth

Bond Rates

GDP Growth

Population Growth

CPI Housing Growth

Fixed Interest Market Size

Listed Property Trust Market Size

Lending to Owner Occupier Growth

Consumer Confidence

House Affordability Index

Real GDP Growth

Unemployment

AWE Inflation

CPI Inflation

Housing Approval Growth

Housing Purchases 3 months ago

Interest Rates

Equity Market Size

Real Annual House Price Index

Listed Property Trust Returns

Auction Clearance Rates

Equity Returns

Geo-demographic data

State

Multiculturalism

Old Age

Geo-Demographic Factors

Proximity to Work

Family

Independents

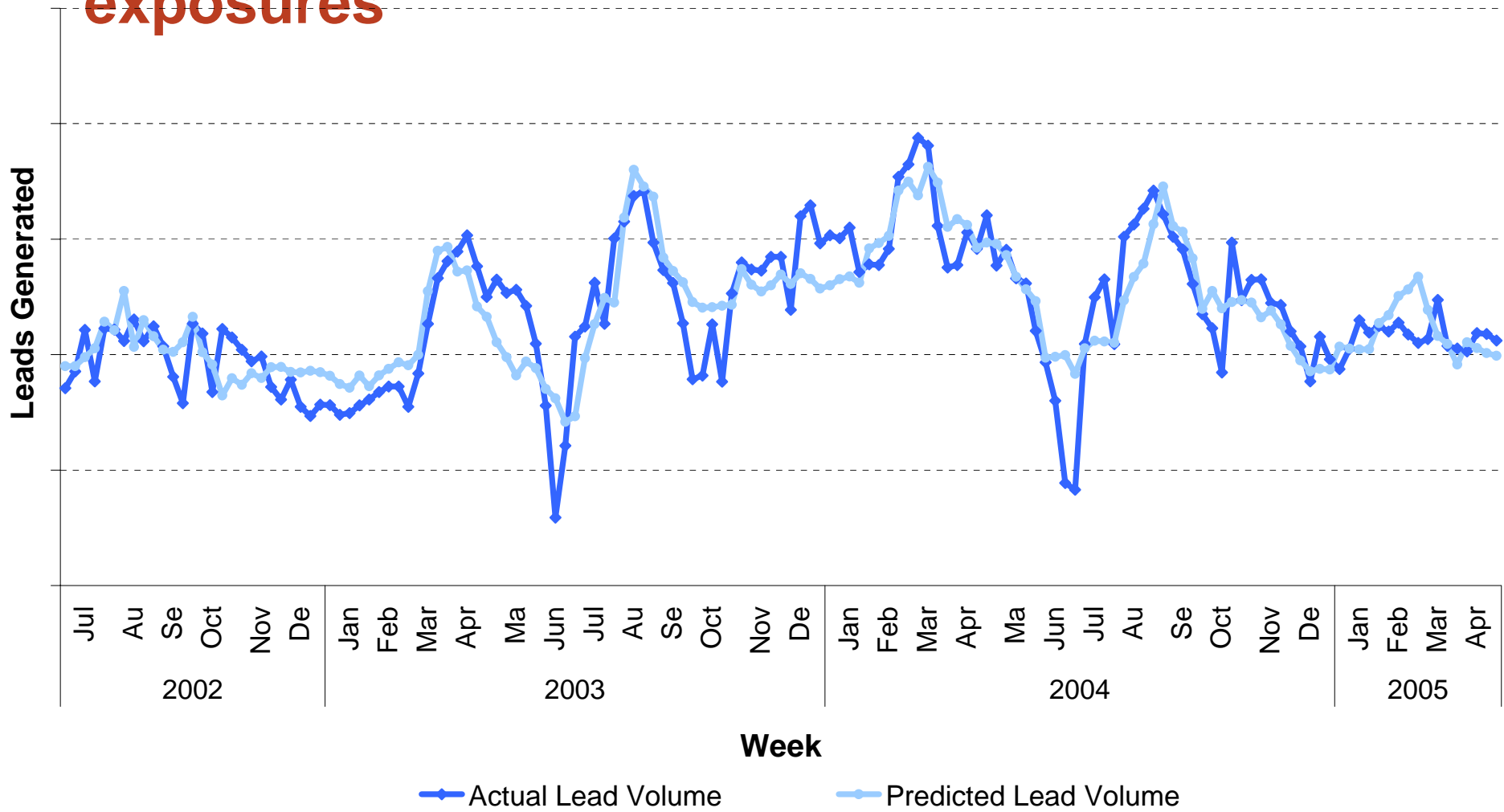Income/Education

Model fitting – long term average

Model fitting – MortgageCo's spend only

Model fitting – MortgageCo and competitor exposures

Model testing

- **The models developed were then tested rigorously against various hold-out samples and new data periods to ensure their predictive power**

Scenario testing, simulation and optimisation

- Once the models proved to be predictive we were able to test a range of alternative media strategies prior to implementation

- The natural extension of scenario testing was to find the scenario which provided the optimal outcome for a given set of objectives and constraints

Modelling results

- **Tested over 400 factors – final models incl approx 30**
- **For commercial reasons will only show a subset of factors identified**
- **Results relate specifically to MortgageCo and will be different for other advertisers, products and industries**

Television

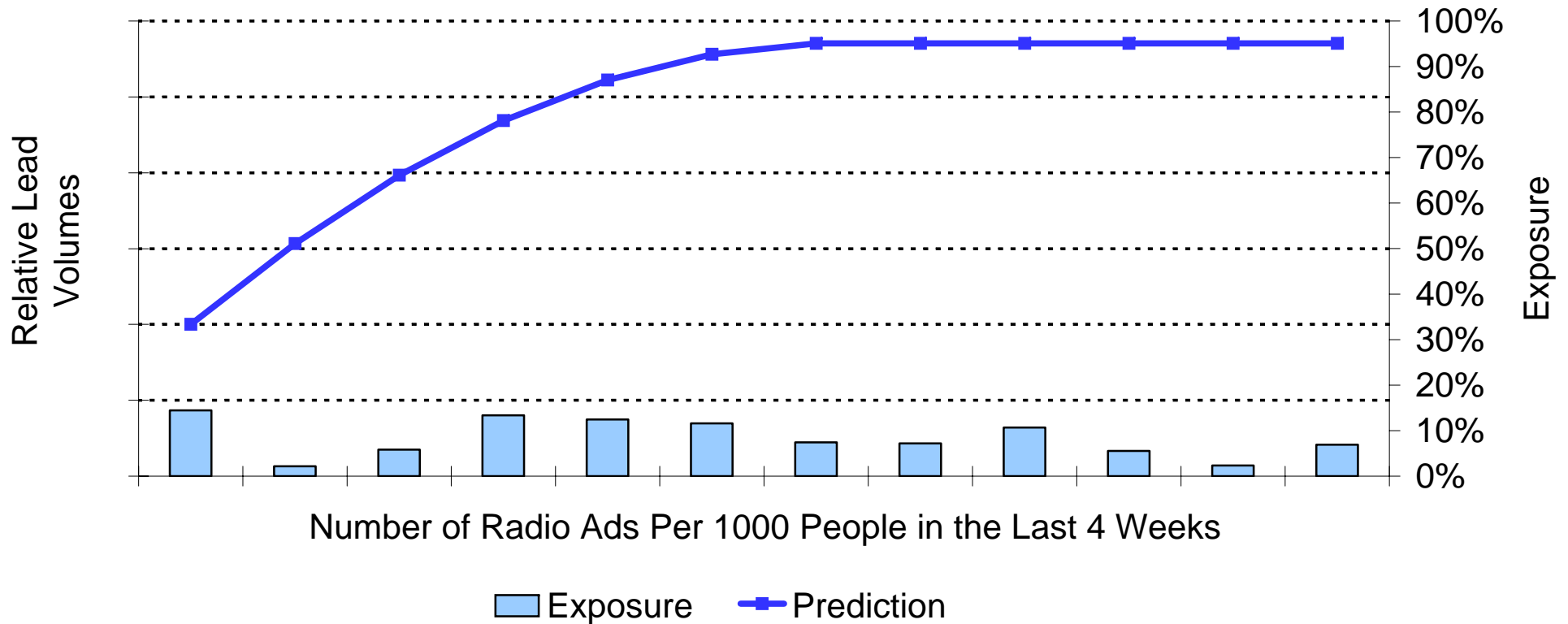Impact of Number of TARPs (Ages 25-54) in Last 8 Weeks
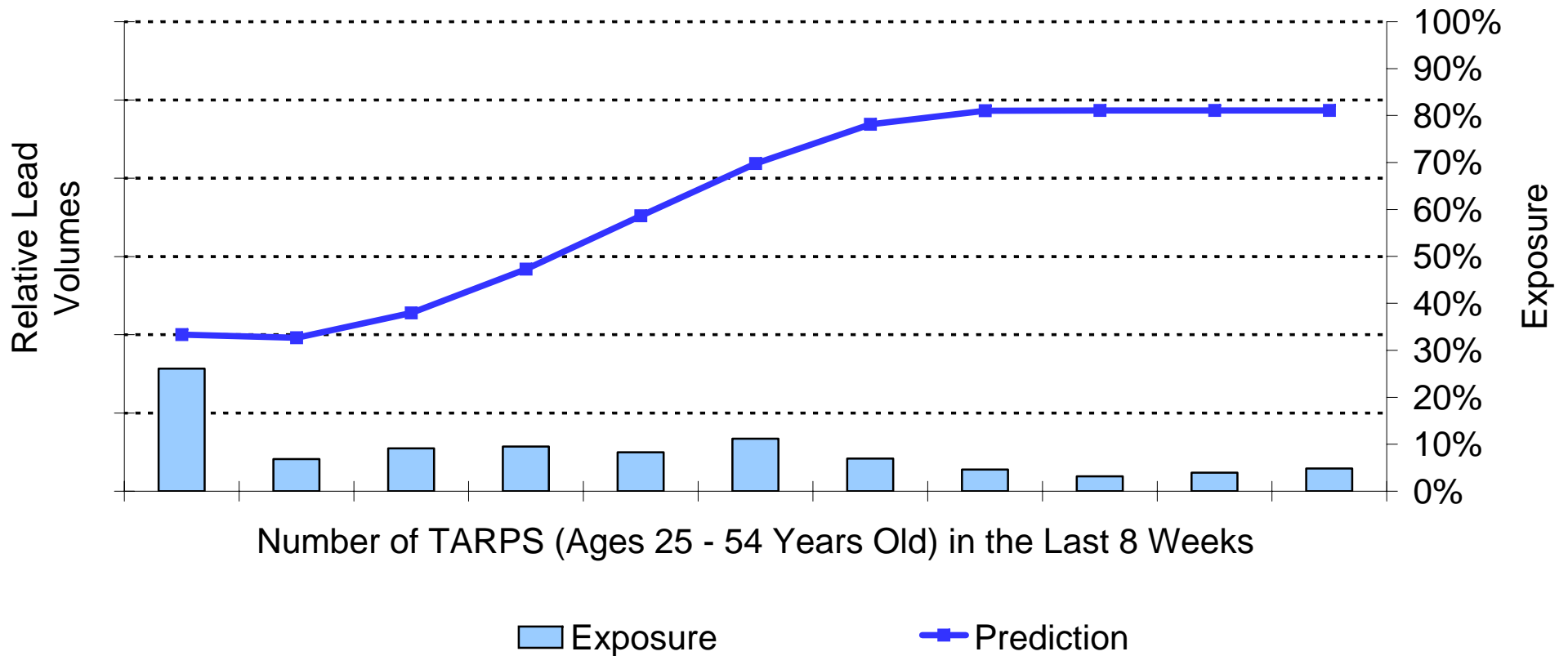
Plus a wide range of factors within television…

- **Television Network**
- **Region**
- **Day Part**
- **Genre**
- **Day of the Week**
- **Duration of Advertisement**
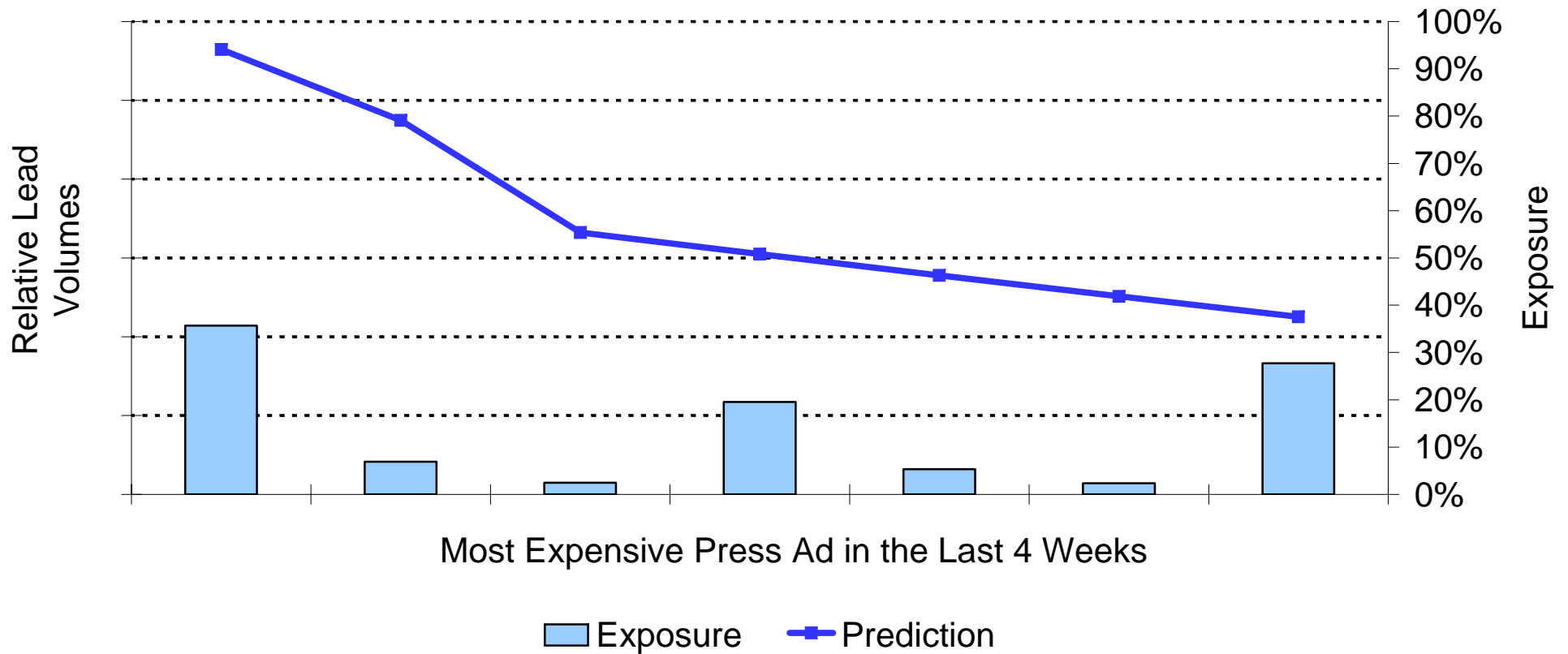- **Position in Break**

Radio

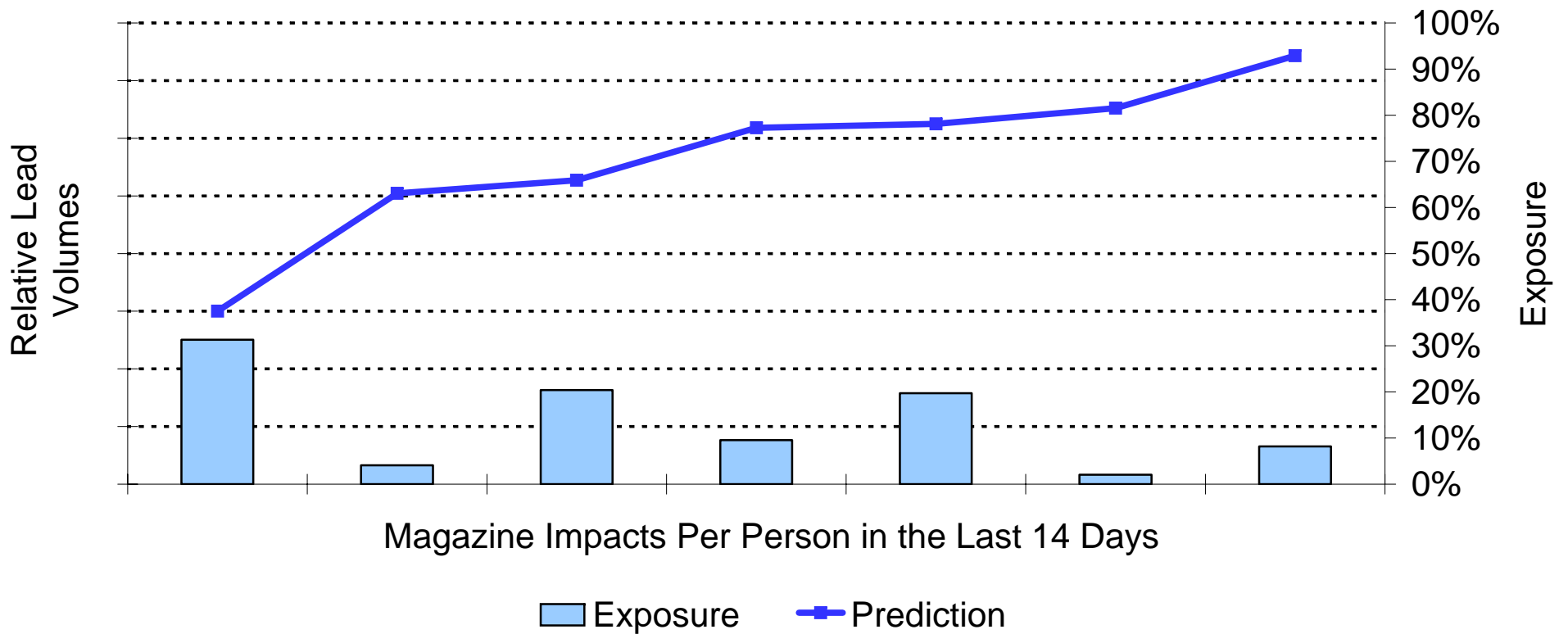Impact of # Radio Ads per 1,000 People in the Last 4 Weeks

Press Ads

Impact of Most Expensive Press Ad in the Last 4 Weeks
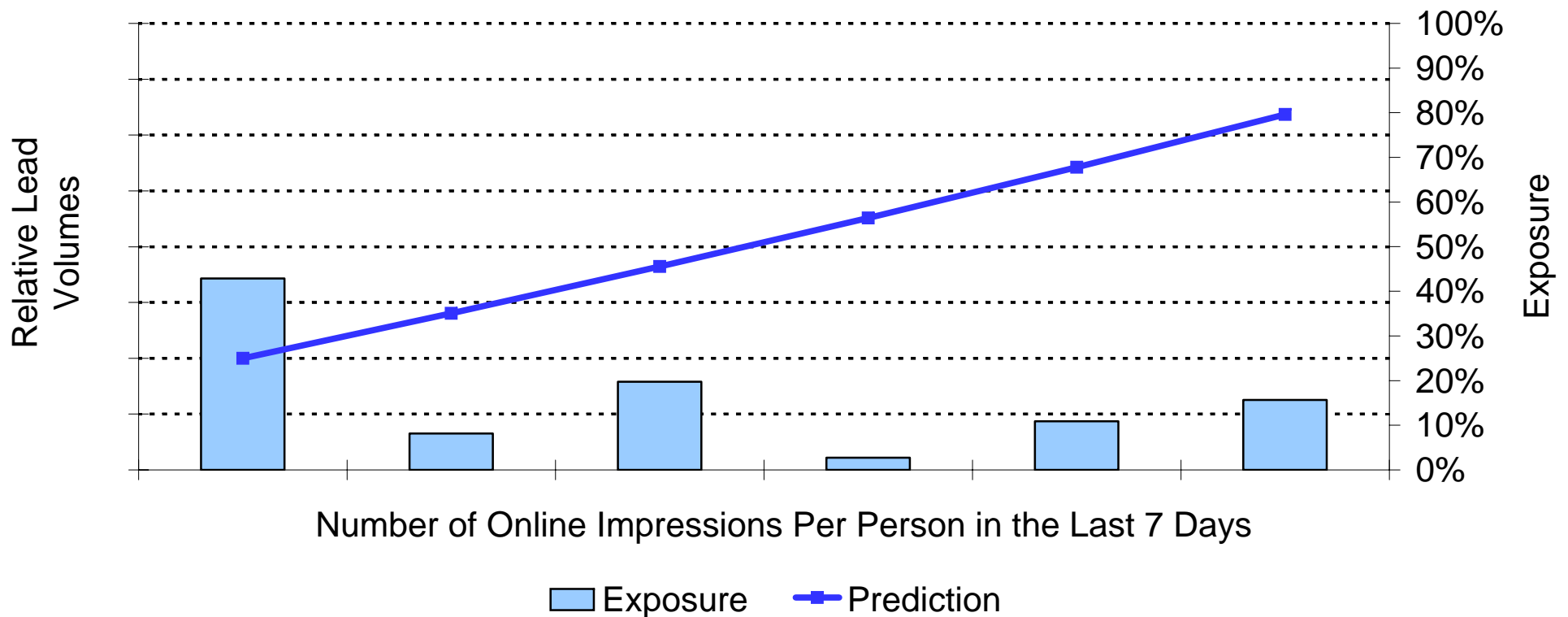
Magazines

Impact of Magazine Impacts per Person in the Last 14 Days

Online

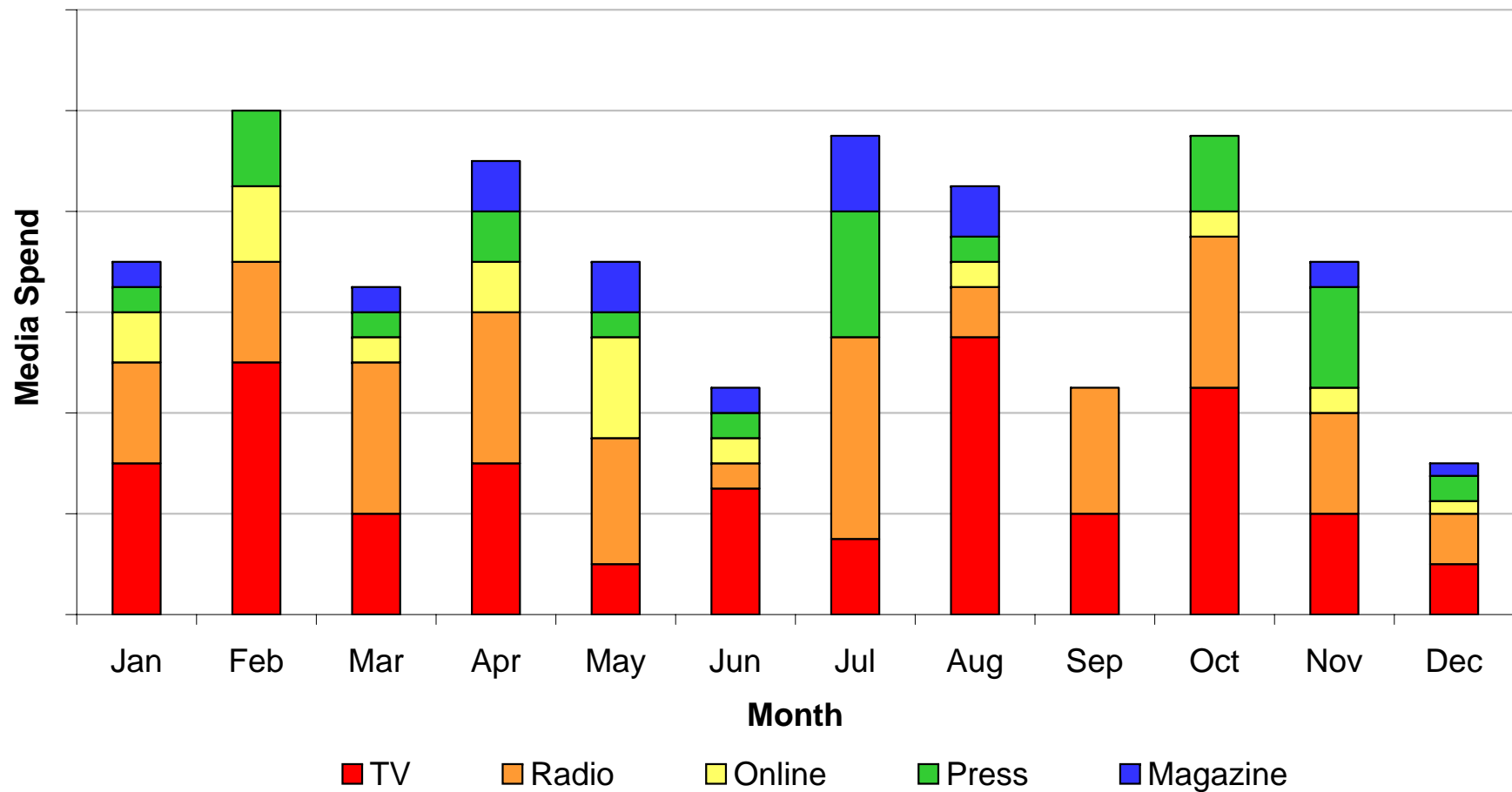Impact of Online Impressions per Person in the Last 7 Days

Model applications

- **Strategic media allocation**
- **Tactical media allocation**
- **Optimising flighting patterns**
- **Negotiating media placements**
- **Determining supply-side strategies**
- **Measuring sales driven by brand**

Strategic media allocation

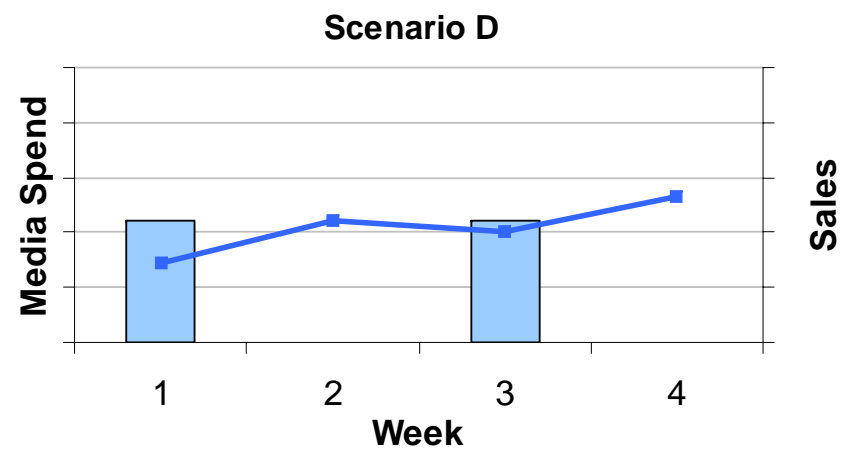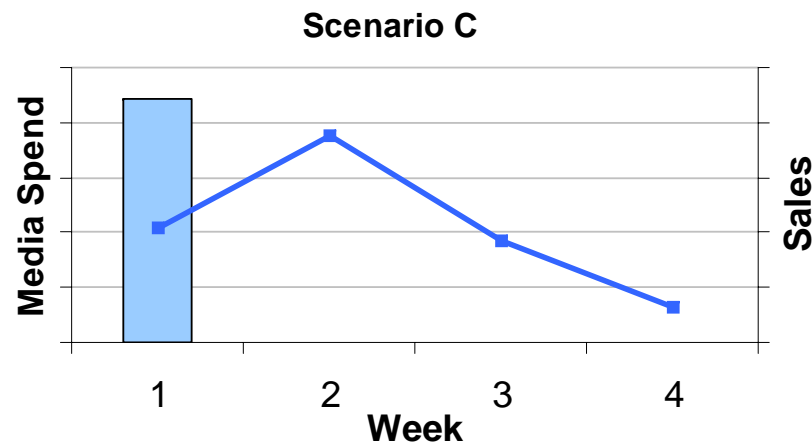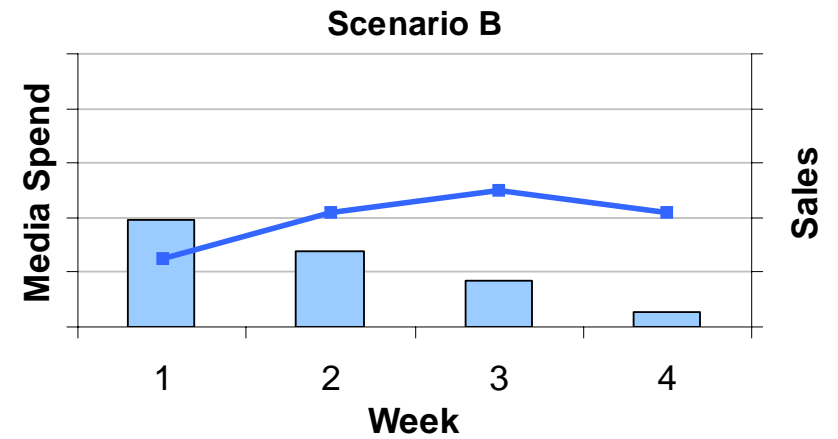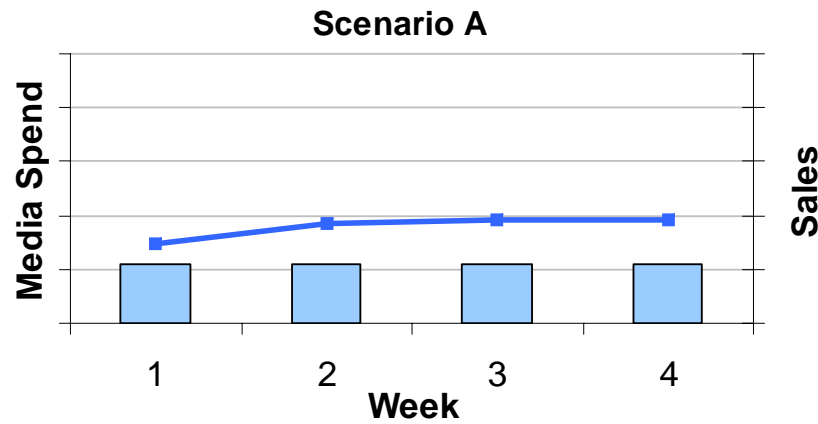Optimal Spend by Category by Month: Perth (Illustrative)

Tactical media allocation

- Certain mediums generate immediate responses whilst other mediums require sustained activities over a longer period before they generate significant lead volumes

- Understanding the 'response curve' of each medium in this way enables MortgageCo to choose the most appropriate media activities for short term tactical purposes

Optimising flighting patterns

Scenario A — Media Spend / Sales vs Week (1–4)

Scenario B — Media Spend / Sales vs Week (1–4)

Scenario C — Media Spend / Sales vs Week (1–4)

Scenario D — Media Spend / Sales vs Week (1–4)

Legend: Media Spend · Leads

Negotiating media placements

- **Knowing the impact of advertising with different media owners can give media buyers a significant advantage in their negotiating placement of advertisements**

- **In the case of MortgageCo we were able to identify which television networks provided the highest return on marketing investment in each region, enabling MortgageCo to use this information in the negotiation process if required**

Determining supply side strategies
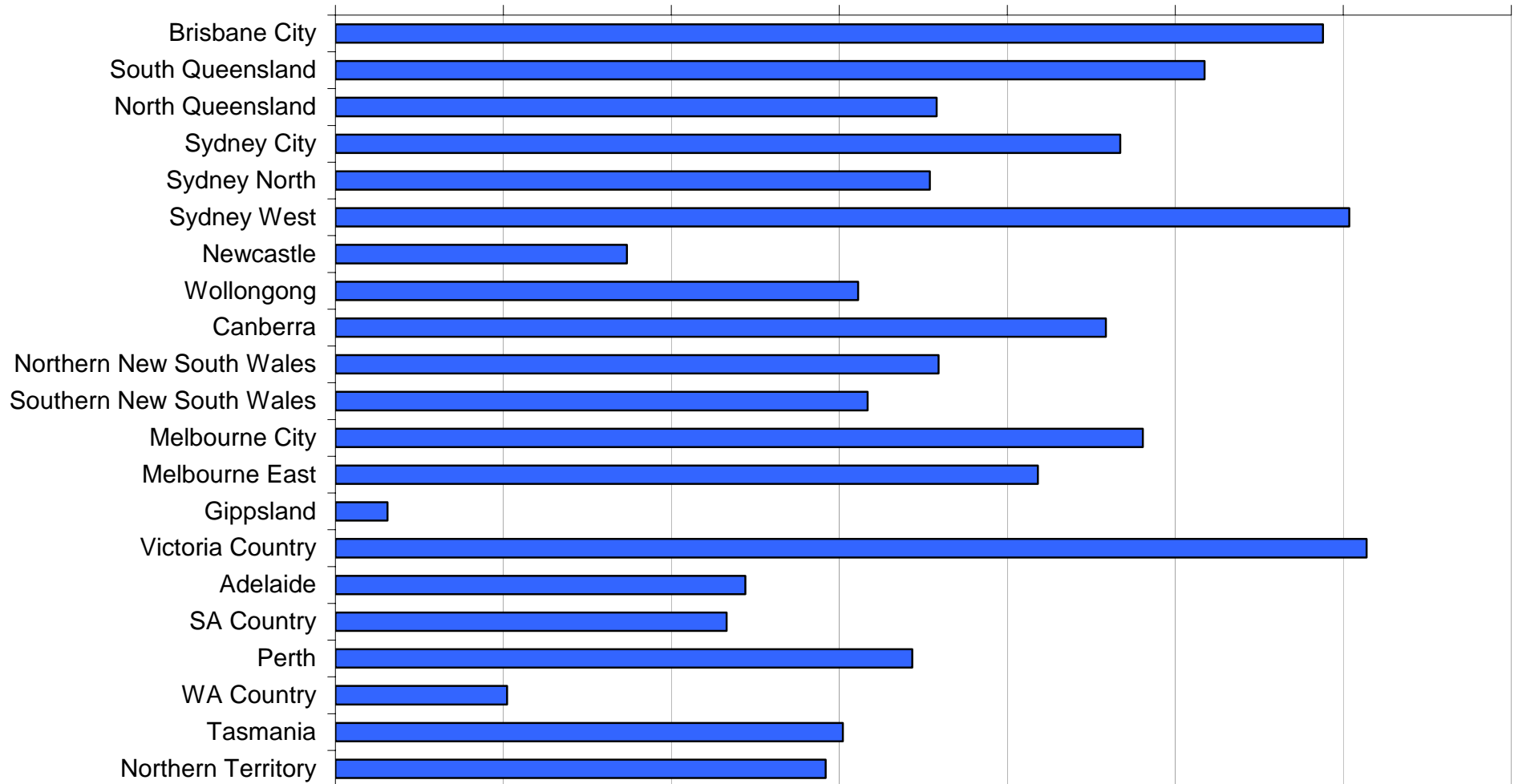
Determining supply side strategies
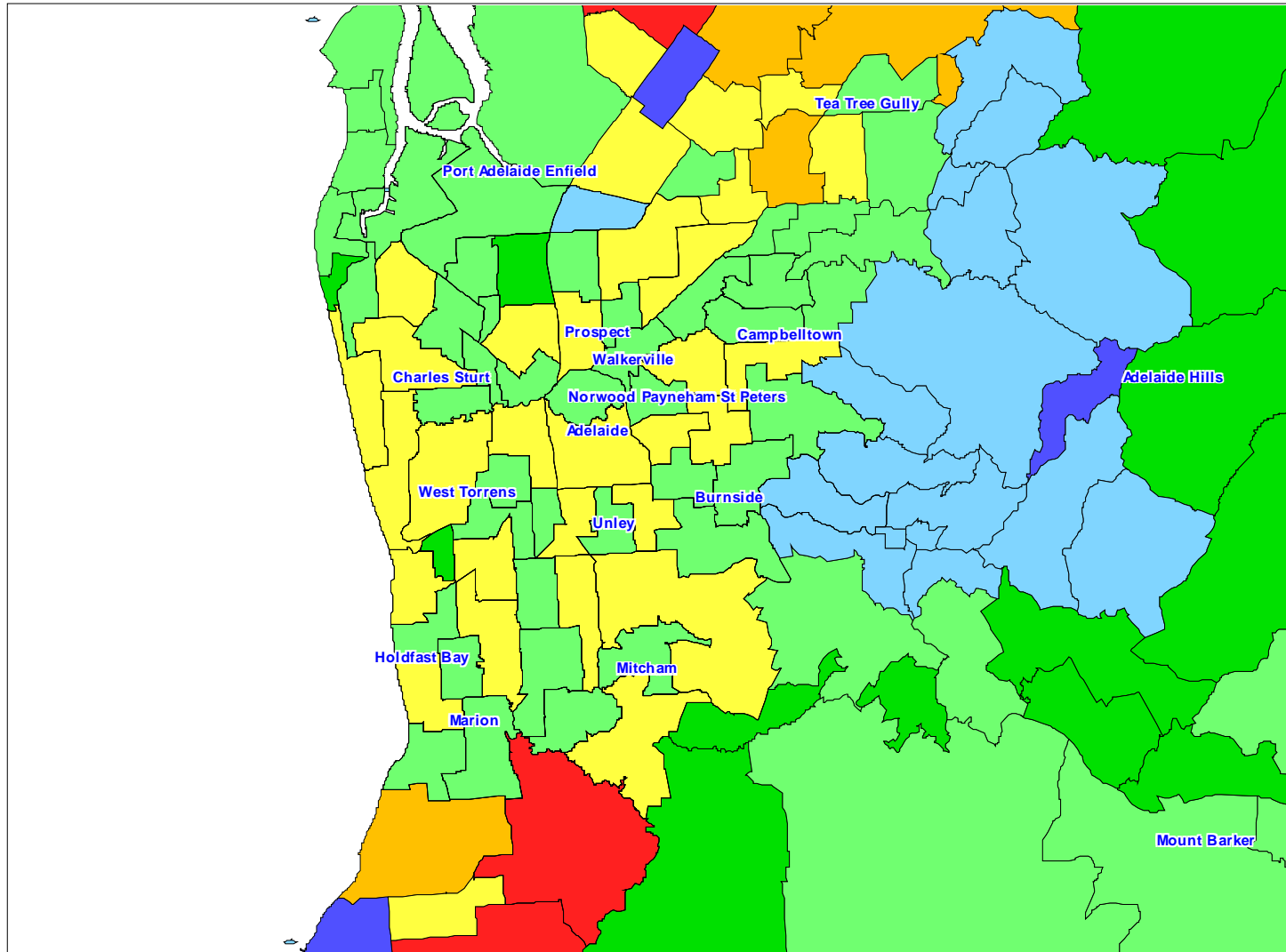
Measuring brand impact on sales

- By extracting the impact of media on short term sales, we are able to identify the volume of sales generated by the existing strength of the brand

- Allows us to effectively allocate and justify the cost of marketing activity between brand building for the long term, and short term sales activity

Conclusions

- Companies are increasingly evaluating every line of expenditure to drive down costs

- For those that do attempt to calculate ROI, the resulting metric is often seriously flawed

- By applying fundamental actuarial principles allowing us to understand the relationship between promotional activity and sales, we can help advertisers more efficiently allocate their budgets

- This promises to be a significant shift in thinking for an area relatively weak at evaluating performance, but perhaps one that is well overdue